

SUPPLEMENTARY FILE 1: CONSORT 2010 CHECKLIST

CONSORT 2010 Checklist of Information to Include When Reporting a Randomized Trial

Section/Topic	Item No.	Checklist Item	Reported on Page No.
TITLE AND ABSTRACT			
Title	1a	Identification as a randomized trial in the title	Title page
Abstract	1b	Structured summary of trial design, methods, results, and conclusions	Abstract
INTRODUCTION			
Background and objectives	2a	Scientific background and explanation of rationale	Introduction
	2b	Specific objectives or hypotheses	Introduction (last paragraph)
METHODS			
Trial design	3a	Description of trial design (parallel group) including allocation ratio	Methods – Study Design
	3b	Important changes to methods after trial commencement, with reasons	Not applicable; no changes made
Participants	4a	Eligibility criteria for participants	Methods – Setting and Participants
	4b	Settings and locations where data were collected	Methods – Setting and Participants

Interventions	5	The interventions for each group with sufficient details to allow replication	Methods – Intervention; Table 1; Supplementary File 4 (Intervention Manual)
Outcomes	6a	Completely defined prespecified primary and secondary outcome measures	Methods – Outcome Measures
	6b	Any changes to trial outcomes after the trial commenced, with reasons	Not applicable; no changes made
Sample size	7a	How sample size was determined	Methods – Sample Size
	7b	When applicable, explanation of any interim analyses and stopping guidelines	Not applicable
Randomization:			
Sequence generation	8a	Method used to generate the random allocation sequence	Methods – Randomization and Allocation
	8b	Type of randomization; details of any restriction	Methods – Randomization and Allocation
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence	Methods – Randomization and Allocation
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	Methods – Randomization and Allocation
Blinding	11a	If done, who was blinded after assignment to interventions and how	Methods – Randomization and Allocation; Data Collection Procedure
	11b	If relevant, description of the similarity of interventions	Methods – Intervention

Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	Methods – Statistical Analysis
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	Methods – Statistical Analysis
RESULTS			
Participant flow	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analyzed for the primary outcome	Results – Participant Flow; Figure 1
	13b	For each group, losses and exclusions after randomization, together with reasons	Results – Participant Flow; Figure 1
Recruitment	14a	Dates defining the periods of recruitment and follow-up	Methods – Setting and Participants
	14b	Why the trial ended or was stopped	The trial ended upon completion of planned follow-up
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	Table 2
Numbers analyzed	16	For each group, number of participants (denominator) included in each analysis	Results – Participant Flow; Table 3
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision	Table 3; Figure 3
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	Not applicable
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses	Results; Sensitivity analysis for primary outcome
Harms	19	All important harms or unintended effects in each group	No harms were observed or reported

DISCUSSION			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and multiplicity	Discussion
Generalizability	21	Generalizability (external validity, applicability) of the trial findings	Discussion
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	Discussion
OTHER INFORMATION			
Registration	23	Registration number and name of trial registry	Clinical Trial Registration
Protocol	24	Where the full trial protocol can be accessed, if available	Clinical Trial Registration; Supplementary Files
Funding	25	Sources of funding and other support; role of funders	Funding/Support

SUPPLEMENTARY FILE 2: CONSORT-NPT (NON-PHARMACOLOGICAL TREATMENTS) EXTENSION CHECKLIST

Checklist of Items for Reporting Non-Pharmacological Trials

Section/Topic	Item No.	CONSORT-NPT Extension Item	Reported on Page No.
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TITLE AND ABSTRACT			
	1*	In the abstract, description of the experimental treatment, comparator, care providers, centers, and blinding status	Abstract
METHODS			
Participants	4*	When applicable, eligibility criteria for centers and those performing the interventions	Methods – Setting and Participants; Intervention
Interventions	5*	Precise details of both the experimental treatment and comparator	Methods – Intervention; Table 1
	5a*	Description of the different components of the interventions and, when applicable, descriptions of the procedure for tailoring interventions to individual participants	Methods – Intervention; Supplementary File 4
	5b*	Details of how the interventions were standardized	Methods – Intervention
	5c*	Details of how adherence of care providers to the protocol was assessed or enhanced	Methods – Intervention
Outcomes	6*	—	Methods – Outcome Measures
Sample size	7*	When applicable, details of whether and how the clustering by care providers or centers was addressed	Not applicable
Randomization:			
Sequence generation	8*	When applicable, how care providers were allocated to each trial group	Not applicable
Allocation concealment	9*	—	Methods – Randomization and Allocation
Implementation	10*	—	Methods – Randomization and Allocation

Blinding	11a*	Whether or not those administering co-interventions were blinded to group assignment	Methods – Randomization and Allocation
	11b*	If blinding was not feasible, description of methods used to limit bias	Methods – Randomization and Allocation; Data Collection Procedure
Statistical methods	12*	When applicable, details of whether and how the clustering by care providers or centers was addressed	Not applicable
RESULTS			
Participant flow	13*	The number of care providers or centers performing the intervention in each group and the number of patients treated by each care provider or in each center	Methods – Intervention; Results – Participant Flow
Implementation of intervention	14*	Details of the experimental treatment and comparator as they were delivered	Results – Participant Flow
Baseline data	15*	When applicable, a description of care providers (case volume, qualification, expertise, etc.) and centers (volume) in each group	Methods – Intervention
Numbers analyzed	16*	—	Results – Participant Flow
Outcomes and estimation	17*	—	Table 3
Ancillary analyses	18*	—	Results
Harms	19*	—	Not applicable
DISCUSSION			
Interpretation	22*	In addition, take into account the choice of the comparator, lack of or partial blinding, and the specific expertise of care providers and centers	Discussion

SUPPLEMENTARY FILE 3: STUDY PROTOCOL SUMMARY

STUDY PROTOCOL

Protocol Title: Effects of a Psycho-Spiritual Program on Hope, Resilience, and Diabetes Burnout Among Women with Type 2 Diabetes: A Randomized Controlled Trial

Trial Registration: Iranian Registry of Clinical Trials (IRCT20220704055367N6)

1. BACKGROUND AND RATIONALE

Type 2 diabetes mellitus (T2DM) is associated with substantial psychological challenges, including reduced hope, diminished resilience, and diabetes-related burnout. Women with T2DM may be particularly vulnerable to these psychological burdens. Psycho-spiritual interventions that integrate psychological strategies with spiritual and meaning-centered components have shown promise in improving psychological outcomes in chronic illness populations. However, evidence from randomized controlled trials specifically targeting hope, resilience, and diabetes burnout in women with T2DM remains limited.

2. OBJECTIVES

Primary Objective:

- To evaluate the effect of a structured psycho-spiritual intervention on hope (measured by the Herth Hope Index) compared to usual care alone in women with type 2 diabetes.

Secondary Objectives:

- To evaluate the effect of the intervention on resilience (measured by the CD-RISC-25).
- To evaluate the effect of the intervention on diabetes burnout (measured by the DBS-12).
- To assess whether intervention effects, if present, are maintained at two-month follow-up.

3. TRIAL DESIGN

Parallel-group, two-arm, superiority randomized controlled trial with 1:1 allocation ratio.

4. STUDY SETTING

Two diabetes outpatient clinics affiliated with Hormozgan University of Medical Sciences, Iran.

5. ELIGIBILITY CRITERIA

Inclusion Criteria:

- Female sex
- Age ≥ 18 years
- Diagnosis of type 2 diabetes mellitus for ≥ 1 year
- Proficiency in reading and writing Persian
- Willingness to participate and provide informed consent
- Access to a mobile phone for follow-up contact

Exclusion Criteria:

- Diagnosed severe psychiatric disorder (e.g., psychotic disorders, severe major depression)
- Cognitive impairment precluding participation
- Concurrent participation in another psychological intervention
- Severe diabetes-related complications (e.g., end-stage renal disease, blindness, major amputation)
- Absence from two or more intervention sessions (post-randomization exclusion)

6. INTERVENTIONS

Intervention Group: Eight-session psycho-spiritual group intervention (weekly, 90 minutes per session) plus usual diabetes care. Delivered by a trained clinical psychologist and co-facilitated by a psychiatric nurse.

Control Group: Usual diabetes care only (quarterly physician visits, medication management, biannual HbA1c testing, access to diabetes educator).

7. OUTCOMES

Primary Outcome: Hope (Herth Hope Index; range 12–48)

Secondary Outcomes:

- Resilience (Connor–Davidson Resilience Scale, 25-item; range 0–100)
- Diabetes Burnout (Diabetes Burnout Scale, 12-item; range 12–60, higher scores indicate greater burnout)

Assessment Time Points: Baseline (T0), immediately post-intervention (T1, approximately 8 weeks after baseline), two-month follow-up (T2, approximately 16 weeks after baseline)

8. SAMPLE SIZE

A priori power analysis using G*Power 3.1 (F-test, repeated measures, within-between interaction): effect size $f = 0.25$ (medium), $\alpha = 0.05$, power = 0.80, 2 groups, 3 measurements, correlation among repeated measures = 0.5, nonsphericity correction = 1. Required total sample size = 72. Allowing for approximately 20% attrition, 90 participants will be randomized (45 per group).

9. RANDOMIZATION AND ALLOCATION

Computer-generated randomization sequence with variable block sizes of 4 and 6. Allocation concealment via consecutively numbered, opaque, sealed envelopes prepared by an independent researcher not involved in recruitment, intervention delivery, or outcome assessment.

10. BLINDING

Participants and intervention providers cannot be blinded due to the nature of the intervention. Outcome assessors and the statistician will be blinded to group assignment.

11. STATISTICAL ANALYSIS

Analysis Population: Intention-to-treat (ITT), defined as all randomized participants who complete at least one post-baseline assessment, analyzed according to their original group assignment.

Primary Analysis: Linear mixed-effects models with fixed effects for group, time, and group $\times$ time interaction, and participant-level random intercepts. Unstructured covariance matrix. REML estimation. Clinic site included as fixed covariate.

Sensitivity Analysis: Multiple imputation by chained equations (MICE) for the primary outcome to assess the impact of missing data.

Multiplicity: Hierarchical testing: primary outcome (hope) analyzed first; secondary outcomes (resilience, diabetes burnout) considered exploratory.

Software: IBM SPSS Statistics Version 28.0.

Significance Level: $\alpha = 0.05$ (two-sided).

12. ETHICAL CONSIDERATIONS

- Ethical approval: Ethics Committee of Hormozgan University of Medical Sciences (Approval No. IR.HUMS.REC.1403.317)
- Informed consent: Written informed consent obtained from all participants before enrollment.
- The control group will receive educational materials on psychological well-being and diabetes self-management after study completion.

SUPPLEMENTARY FILE 4: STATISTICAL ANALYSIS PLAN (SAP)

STATISTICAL ANALYSIS PLAN

Study Title: Effects of a Psycho-Spiritual Program on Hope, Resilience, and Diabetes Burnout Among Women with Type 2 Diabetes: A Randomized Controlled Trial

1. PURPOSE

This Statistical Analysis Plan (SAP) provides a detailed description of the statistical methods to be employed in the analysis of data from this randomized controlled trial. The SAP was finalized prior to database lock and unblinding of the statistician.

2. STUDY OBJECTIVES AND ENDPOINTS

2.1 Primary Objective and Endpoint

- **Objective:** To evaluate the effect of a psycho-spiritual intervention on hope compared to usual care.
- **Primary Endpoint:** Herth Hope Index (HHI) total score (continuous, range 12–48) at two-month follow-up.

2.2 Secondary Objectives and Endpoints

- **Objective 1:** To evaluate the effect of the intervention on resilience.
- **Endpoint:** Connor–Davidson Resilience Scale (CD-RISC-25) total score (continuous, range 0–100) at two-month follow-up.
- **Objective 2:** To evaluate the effect of the intervention on diabetes burnout.
- **Endpoint:** Diabetes Burnout Scale (DBS-12) total score (continuous, range 12–60) at two-month follow-up.

2.3 Assessment Time Points

- T0: Baseline (pre-randomization)
- T1: Post-intervention (approximately 8 weeks after baseline)
- T2: Two-month follow-up (approximately 16 weeks after baseline)

3. STUDY DESIGN

Parallel-group, two-arm, superiority randomized controlled trial with 1:1 allocation.

4. SAMPLE SIZE DETERMINATION

Power analysis conducted using G*Power 3.1:

- Test: F-test, repeated measures, within-between interaction
- Effect size $f = 0.25$ (medium)

- $\alpha = 0.05$ (two-sided)
- Power = 0.80
- Groups: 2
- Measurements: 3
- Correlation among repeated measures: 0.5
- Nonsphericity correction: 1
- Required total N = 72
- Planned recruitment: 90 (45 per group), allowing ~20% attrition

5. ANALYSIS POPULATIONS

5.1 Intention-to-Treat (ITT) Population (Primary)

All randomized participants who complete at least one post-baseline assessment, analyzed according to their original randomized group assignment regardless of protocol adherence or intervention attendance. This is the primary analysis population for all efficacy analyses.

5.2 Per-Protocol (PP) Population (Sensitivity)

All randomized participants who complete all three assessments and attend at least 6 of 8 intervention sessions (intervention group only). This population will be used in sensitivity analyses.

6. GENERAL STATISTICAL CONSIDERATIONS

6.1 Software

IBM SPSS Statistics for Windows, Version 28.0 (IBM Corp., Armonk, NY, USA).

6.2 Significance Level and Multiplicity

- All tests are two-sided with $\alpha = 0.05$.
- Multiplicity is addressed through a prespecified hierarchy: the primary endpoint (hope) is tested first. Secondary endpoints (resilience, diabetes burnout) are considered exploratory; no further correction for multiplicity across outcomes is applied.
- Post-hoc pairwise comparisons within significant group $\times$ time interactions are Bonferroni-adjusted.

6.3 Missing Data

- The pattern and extent of missing data will be summarized by group and time point.
- The primary analysis using linear mixed-effects models provides valid estimates under the missing-at-random (MAR) assumption, using all available data without imputation.
- A sensitivity analysis for the primary outcome will employ multiple imputation by chained equations (MICE) with 20 imputed datasets to assess robustness to missing data.
- Baseline variables predictive of dropout will be identified and included in the imputation model.

6.4 Covariates

- The primary model includes clinic site as a fixed covariate.
- Additional covariates evaluated for inclusion: baseline value of the outcome, age, diabetes duration, HbA1c.
- Covariates will be retained if they appreciably alter the treatment effect estimate ($\geq 10\%$ change) or improve model fit (reduction in AIC ≥ 2).

7. BASELINE CHARACTERISTICS

7.1 Descriptive Summaries

Continuous variables: mean $\pm$ standard deviation (SD) and/or median with interquartile range (IQR). Categorical variables: frequencies and percentages.

7.2 Baseline Comparability

Baseline characteristics will be presented descriptively by group. No formal hypothesis tests will be conducted to compare baseline characteristics, as such tests are inappropriate for assessing randomization success. Clinically meaningful differences will be noted descriptively.

8. EFFICACY ANALYSES

8.1 Primary Analysis Model

Linear mixed-effects models (LMMs) will be fitted separately for each outcome with the following specification:

- **Fixed Effects:** Group (intervention vs. control), Time (T0, T1, T2), Group $\times$ Time interaction, Clinic site (covariate).
- **Random Effects:** Participant-level random intercepts.
- **Covariance Structure:** Unstructured (UN), selected based on lowest AIC among UN, compound symmetry (CS), and first-order autoregressive (AR1) structures.
- **Estimation Method:** Restricted maximum likelihood (REML).

8.2 Model Diagnostics

- Residual plots (standardized residuals vs. fitted values) to assess homogeneity of variance.
- Q–Q plots of residuals and random intercepts to assess normality.
- Cook's distance to identify influential observations (threshold: 4/n).

8.3 Treatment Effect Estimation

- Adjusted mean differences between groups at T1 and T2, with 95% confidence intervals, extracted from the LMM.
- Cohen's d effect sizes at T2 calculated as the adjusted mean difference divided by the pooled baseline SD of both groups.
- Interpretation: d = 0.2 (small), d = 0.5 (medium), d = 0.8 (large).

8.4 Within-Group Comparisons

- Following a statistically significant group $\times$ time interaction, Bonferroni-adjusted pairwise comparisons will examine within-group changes from T0 to T1 and from T0 to T2.

8.5 Sensitivity Analyses

- MICE for the primary outcome to assess the impact of missing data under the MAR assumption.
- Per-protocol analysis for all outcomes as a sensitivity check.

9. REPORTING CONVENTIONS

- Continuous outcomes: mean $\pm$ SD for descriptive summaries; adjusted mean difference [95% CI] for treatment effects.
- P-values reported to three decimal places; $p < 0.001$ reported as such.
- F-statistics reported with numerator and denominator degrees of freedom.
- All tables and figures will clearly indicate the analysis population and statistical model used.

SUPPLEMENTARY FILE 5: INTERVENTION MANUAL SUMMARY

PSYCHO-SPIRITUAL INTERVENTION MANUAL: SESSION-BY-SESSION OUTLINE

Target Population: Women with Type 2 Diabetes Mellitus

Format: Group-based (6–8 participants per group)

Duration: 8 weekly sessions, 90 minutes each

Facilitators: Clinical and trained nurse with spiritual care training (co-facilitator)

GENERAL PRINCIPLES

1. **Cultural and Spiritual Adaptation:** All content is tailored to the Iranian-Islamic cultural and spiritual context. Participants' personal beliefs, values, and preferences are respected throughout. Participation in explicitly spiritual exercises is voluntary; alternative secular exercises are available.
2. **Group Process:** Each session includes a check-in (10 minutes), psychoeducation/didactic content (25 minutes), experiential exercise or group discussion (35 minutes), home practice assignment and session summary (15 minutes), and check-out (5 minutes).
3. **Home Practice:** At the end of each session, participants receive a handout with the week's home practice assignment(s). Completion is assessed via a brief self-report checklist at the beginning of the following session.
4. **Fidelity Monitoring:** All sessions are audio-recorded (with participant consent). A randomly selected 25% of sessions are reviewed by the principal investigator using a standardized fidelity checklist. Weekly supervision meetings address any deviations.

SESSION 1: INTRODUCTION AND ORIENTATION

Objectives:

- Establish group rapport and a safe, supportive environment.
- Introduce the rationale for integrating psychological and spiritual approaches in diabetes care.
- Normalize the psychological challenges of living with diabetes.

Content:

- Facilitator and participant introductions; group agreements (confidentiality, mutual respect, attendance).
- Psychoeducation: The mind–body–spirit connection in chronic illness; common emotional reactions to diabetes.
- Group discussion: "What has been the most challenging part of living with diabetes?"

Home Practice: Complete the "My Diabetes Journey" reflection worksheet (brief narrative about diagnosis experience and current coping).

SESSION 2: STRESS, EMOTIONS, AND ADAPTIVE COPING

Objectives:

- Identify sources of diabetes-related stress and common emotional responses.
- Introduce adaptive vs. maladaptive coping strategies.
- Teach basic stress-management techniques.

Content:

- Psychoeducation: The stress response, diabetes-related stressors, and the distinction between problem-focused and emotion-focused coping.
- Experiential exercise: Diaphragmatic breathing and progressive muscle relaxation (10-minute guided practice).

- Group discussion: "Which coping strategies have worked for you, and which haven't?"

Home Practice: Daily relaxation practice (5–10 minutes); complete the "Stress and Coping Log" for one week.

SESSION 3: SPIRITUAL SELF-AWARENESS AND MEANING

Objectives:

- Introduce the concept of spirituality as a resource for coping with chronic illness.
- Facilitate exploration of personal values and sources of meaning.

Content:

- Psychoeducation: Distinguishing spirituality from religiosity; spiritual well-being as a dimension of health.
- Experiential exercise: "Values Clarification" – participants identify and rank their top five personal values using a card-sort activity.
- Group discussion: "What gives your life meaning, and how has diabetes affected your connection to what matters most?"
- **Cultural Note:** The facilitator emphasizes that spirituality is understood broadly and may include religious faith, connection to nature, family, art, or personal philosophy. Participants may choose not to disclose personal spiritual beliefs.

Home Practice: "Sources of Meaning" journaling: identify moments during the week when you felt connected to something meaningful.

SESSION 4: HOPE ENHANCEMENT AND GOAL SETTING

Objectives:

- Understand hope as a cognitive and motivational resource.
- Practice goal-setting and pathways thinking.
- Identify personal strengths and past successes.

Content:

- Psychoeducation: Snyder's hope theory (agency + pathways); the difference between wishful thinking and active hope.
- Experiential exercise: "Hope Mapping" – participants identify a personally meaningful short-term goal related to diabetes or well-being, then brainstorm multiple pathways to achieve it and potential obstacles with solutions.
- Group discussion: Sharing goals and strengths; participants offer encouragement and suggestions.

Home Practice: Work toward the identified goal; complete the "Personal Strengths Inventory."

SESSION 5: BUILDING RESILIENCE

Objectives:

- Define resilience and its components.
- Practice cognitive reframing and positive reinterpretation.
- Explore the concept of post-traumatic growth.

Content:

- Psychoeducation: Resilience as a dynamic process (not a fixed trait); the role of cognitive appraisal in shaping emotional responses.
- Experiential exercise: "Reframing Challenge" – participants share a recent diabetes-related difficulty; the group practices generating alternative, more balanced interpretations. Introduce the concept of "benefit-finding."
- Group discussion: "What have you learned about yourself through living with diabetes?"

Home Practice: Daily "Three Good Things" exercise (adapted from positive psychology); note one positive aspect or learning from the day.

SESSION 6: SPIRITUAL COPING STRATEGIES

Objectives:

- Introduce spiritual coping strategies (gratitude, forgiveness, inner peace).
- Practice applying these strategies to diabetes-related challenges.

Content:

- Psychoeducation: Positive vs. negative spiritual coping; the role of gratitude, forgiveness, and acceptance in well-being.
- Experiential exercise: "Gratitude Letter" – participants write a brief letter of gratitude to someone or something (may or may not be shared). Guided meditation for inner peace (10 minutes, with optional spiritual framing).
- Group discussion: Reflecting on the gratitude and meditation exercises; sharing culturally relevant spiritual practices.

Home Practice: Gratitude journal (three entries per week); daily brief meditation or prayer practice (participant's choice).

SESSION 7: MANAGING DIABETES BURNOUT AND SELF-COMPASSION

Objectives:

- Normalize diabetes burnout as a common experience.
- Teach self-compassion as an antidote to burnout and self-criticism.
- Develop a plan for recognizing and responding to early signs of burnout.

Content:

- Psychoeducation: The burnout cycle (emotional exhaustion → detachment → loss of control); self-compassion as defined by Neff (self-kindness, common humanity, mindfulness).
- Experiential exercise: "Self-Compassion Break" – guided practice applying the three components of self-compassion to a personal diabetes-related struggle. Development of a personalized "Burnout Early Warning and Response Plan."
- Group discussion: Sharing burnout experiences and self-compassion practices.

Home Practice: Practice the "Self-Compassion Break" daily when noticing self-critical thoughts or burnout symptoms.

SESSION 8: INTEGRATION AND RELAPSE PREVENTION

Objectives:

- Review and consolidate key learning from the program.
- Develop a personalized plan for maintaining gains and preventing relapse.
- Provide closure and celebrate progress.

Content:

- Review: Brief recap of each session's key concepts and skills.
- Experiential exercise: "Personal Wellness Plan" – participants synthesize strategies that worked best for them into a written plan, including goals for the next three months, anticipated challenges, coping strategies, and social/spiritual support resources.
- Group discussion: Each participant shares one key takeaway and one personal commitment moving forward.
- Closing ritual: Facilitators express appreciation; participants are invited to share a word or phrase describing their experience; certificates of completion distributed.

Home Practice: Continue using the Personal Wellness Plan as a living document; participants are encouraged to maintain contact as peer supporters if desired.

FACILITATOR QUALIFICATIONS AND TRAINING

Primary Facilitator: Master's-level clinical psychologist with a minimum of three years of experience in group therapy and familiarity with chronic illness populations.

Co-Facilitator: Psychiatric nurse with training in spiritual care and experience in diabetes education.

Protocol-Specific Training: Both facilitators must complete an eight-hour training program covering:

- Theoretical foundations (positive psychology, spiritual care, meaning-centered therapy, CBT).
- Session-by-session walkthrough and role-play of all exercises.
- Cultural adaptation principles and management of spiritual diversity within groups.
- Fidelity monitoring procedures and documentation requirements.

Supervision: Biweekly supervision sessions with the principal investigator throughout the intervention period. Supervision includes case discussion, fidelity review, and management of any challenges.

MATERIALS AND RESOURCES

- Facilitator manual (detailed scripts for each session)
- Participant handouts (one per session, including home practice instructions)
- Relaxation audio recordings (diaphragmatic breathing, progressive muscle relaxation, guided meditation)
- Values card-sort set (one per participant)
- Whiteboard or flipchart and markers
- Pens and notebooks for journaling exercises
- Attendance and fidelity checklists

SUPPLEMENTARY FILE 6: INTERVENTION FIDELITY CHECKLIST

SESSION FIDELITY CHECKLIST

Study: Psycho-Spiritual Intervention for Women with T2DM

Session Number: ____ **Date:** ____ **Facilitator(s):** ____

Reviewer: ____ **Review Date:** ____

Instructions: Rate each item as: 2 = Fully addressed, 1 = Partially addressed, 0 = Not addressed, N/A = Not applicable for this session.

Fidelity Item	Rating (0–2)	Comments
STRUCTURE AND PROCESS		
1. Session started on time		
2. Check-in completed with all participants		
3. Session objectives stated clearly		
4. Didactic content delivered as per manual		
5. Experiential exercise(s) conducted as described		
6. Adequate time allocated for group discussion		
7. Home practice from previous session reviewed		
8. New home practice assigned with clear instructions		
9. Session summary and check-out completed		
10. Session ended within allotted time (90 minutes $\pm$ 10)		

CONTENT FIDELITY		
11. Psychoeducational content accurate and complete		
12. Spiritual content presented with appropriate cultural sensitivity		
13. Participants' beliefs and preferences respected		
14. Optional/alternative exercises offered where appropriate		
FACILITATION QUALITY		
15. Facilitator encouraged participation from all members		
16. Facilitator managed group dynamics effectively		
17. Facilitator modeled non-judgmental acceptance		
18. Facilitator balanced structure with flexibility		
19. Co-facilitators worked collaboratively		
DOCUMENTATION		
20. Attendance recorded		
21. Adverse events or concerns documented (if any)		

Total Fidelity Score: ____ / ____ (____%)