Original Article

Effectiveness of a family-centered psychological intervention program based on spiritual therapy and cognitive behavioral therapy on the lifestyle of patients with type 2 diabetes

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Abstract

Background: The aim of the present study was to design and validate a family-centered psychological intervention program based on spiritual therapy and cognitive behavioral therapy and its effectiveness on the lifestyle of patients with type 2 diabetes.

Methods: The method of the present study was a combination based on a guided exploratory approach with a classification model, whose qualitative phase was based on the grounded theory method and its quantitative phase was based on a quasi-experimental design based on a pre-test-post-test-follow-up design with a control group. The sampling method for the qualitative part was purposive based on theoretical saturation and the sampling method for the quantitative part was available to 30 people. The instrument used was the Lali et al. lifestyle questionnaire.

Results: Findings related to the qualitative section showed that the family-centered psychological intervention program based on spirituality and cognitive behavioral therapy for patients with type 2 diabetes included 12, 60-minute sessions, which was validated based on the seven-step technique of Lawshe. Also, findings related to the repeated measures variance test showed that the intervention program had a significant effect ($p<0.01$) on increasing lifestyle scores in the post-test and maintaining scores in the follow-up phase.

Conclusion: Overall, the results of the present study showed that the family-centered psychological intervention package based on spirituality and cognitive behavioral therapy for patients with type 2 diabetes can be used as a complementary technique alongside drug therapy to improve lifestyle and treatment process of diabetic patients.

Keywords: Cognitive Behavioral Therapy; Life Style; Spirituality; Validation Studies.

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Introduction

Diabetes is a chronic disease that has affected humans for many years. It is still one of the most important non-communicable diseases nowadays. It has attracted the attention of health systems due to reasons such as the prevalence of the

disease, the rate of destructive consequences, the mortality rate, and the high economic costs (1). Based on the World Health Organization's estimates, the mortality rate from this disease will double between 2005 and 2030 (2). This disease in Iran, a developing country, is also worrying, so current statistics indicate that it will be one in seven people in Iran will be diagnosed with diabetes by 2025 (3).

Lifestyle is a set of individual beliefs and a specific way of life. It consists of meaningful patterns and behaviors of individuals that occur repeatedly in a specific period and each period becomes widespread among a large number of people (4). Several studies have indicated that up to 95% of the deaths in people are due to their lifestyle (5). Psychologists have paid great attention to treatments such as cognitive behavioral therapy in diabetic patients given the importance of lifestyle and changing the attitude and behavior of patients with diabetes in controlling the disease and aggravating its symptoms (6-8).

This treatment can pave the way for modifying the lifestyle of diabetic patients. Cognitive behavioral therapy (CBT) is a form of psychotherapy in which clients are taught to identify and modify destructive thought patterns. This approach believes that thoughts can affect our feelings and behaviors in life (9). This treatment can improve symptoms and reduce the severity of the disease by modifying the lifestyle and the system of intellectual beliefs of diabetic patients. In addition to cognitive behavioral therapy, researchers have focused on the spiritual therapy approach to improve the conditions of patients with chronic diseases (10). Thus, this study develops and validates a family-centered psychological intervention program based on spiritual therapy and cognitive behavioral therapy and its effectiveness on the lifestyle of patients with type 2 diabetes.

Methods

Research environment and population

The present mixed method research was conducted based on an exploratory approach guided by a classification model. Its qualitative section was based on the grounded theory and the quantitative section was based on a quasi-experimental design based on a pre-test-post-test-follow-up design with a control group. In the qualitative section, a treatment package was designed based on in-depth interviews. Its subjects were selected using purposeful sampling among experts in the fields of health psychology, cognitive psychology, and clinical psychology. The statistical population of the quantitative section included all patients with type 2 diabetes referred to Shahid Madani Hospital in Karaj in 2023-2024. They were selected based on the criteria of consent to participate in the program, having type 2 diabetes with a medical record, not having other mental and physical diseases, being married, and living with a family. Accordingly, 30 people were selected using a convenient sampling method and randomly assigned to two experimental and control groups**.**

Data Collection Method
Lifestyle Questionnaire

This questionnaire was developed by Lali et al. (10), to assess lifestyle and its dimensions. It has 70 questions in 10 subscales of physical health, exercise and fitness, weight control and nutrition, disease prevention, psychological health, spiritual health, social health, avoidance of medications, drugs, and alcohol, accident prevention, and environmental health.

The questionnaire items are scored on a four-point Likert scale (never: 0, sometimes: 1, usually: 2, and always: 3). In this questionnaire, the highest score is 210 and the lowest score is zero. A score of 80 or higher indicates a healthy lifestyle and a score of 80 or lower indicates an unhealthy lifestyle. The score of each subscale is also calculated by summing the scores of the questions of each subscale (physical health = 1-8, exercise and fitness = 9-15, weight control and nutrition = 16-22, disease

prevention = 23-29, psychological health = 30-36, spiritual health = 37-42, social health = 43-49, avoidance of medications, drugs, and alcohol = 50-55, accident prevention = 56-63, and environmental health = 64-70).

Lali et al. (10), examined the validity and reliability of this questionnaire. Construct analysis was used to determine its validity. Construct analysis confirmed the existence of the ten factors. Cronbach's alpha method was also used to examine the validity (physical health=0.89, exercise and fitness=0.87, weight control and nutrition=0.85, disease prevention=0.87, psychological health=0.88, spiritual health=0.84, social health=0.82, avoidance of medications, drugs, and alcohol=0.79, accident prevention=0.85, environmental health=0.87, and total Cronbach's alpha=0.87). In the present study, Cronbach's alpha test was used to examine the research tool's reliability. The values of 0.78, 0.77, 0.85, 0.86, 0.79, 0.82, 80, 0.71, 0.83, and 0.86 were obtained for the components of physical health, exercise, weight control, disease prevention, psychological health, spiritual health, social health, avoidance of medications, drugs, and alcohol, accident prevention, and environmental health, respectively.

Treatment package

A family-centered psychological intervention program based on spiritual therapy and cognitive behavioral therapy for patients with type 2 diabetes included twelve 60-minute sessions, designed based on the seven-step technique of Lawshe (11).

Step 1: Setting the goals of the program: The expected goals of the program were set in this step.

Step 2: Determining the theoretical foundations of the package: In this step, the theoretical framework was carefully examined

Step 3: Developing the initial package: In this step, in-depth interviews were performed with experts using grounded theory and relevant codes were extracted and the initial package was designed

Step 4: In this step, the intervention package was piloted on four patients and its deficiencies were eliminated

Step 5: The members of the expert panel were identified to determine the psychometric properties

Step 6: The package validity was tested based on the content validity ratio (CVR) indices according to the Lawshe (11) method and the content validity index (CVI) according to the Waltz & Bausell (12). Table 1 presents the results.

The results of Table 2 show that both the content validity index and content validity ratio values are 0.75 and above, so these indices are at an appropriate level based on the Lawshe (11) criterion. Finally, in the seventh step, the final package was presented as follows:

Table 1. Content validity ratio and content validity index

Sessions	CVI			CVR
	Simplicity (1-4)	Relevance (1-4)	Clarity (104)	Session necessity (1-3)
1	0.9	0.9	0.8	0.8
2	0.9	0.8	0.7	0.7
3	0.8	0.8	0.8	0.8
4	0.7	0.9	0.8	0.9
5	0.7	0.9	0.7	0.9
6	0.8	0.7	0.9	0.7
7	0.8	0.7	0.9	0.9
8	0.9	0.7	0.9	0.9
9	0.8	0.8	0.8	0.7
10	0.9	0.9	0.9	0.9
11	0.7	0.8	0.9	0.8
12	0.9	0.9	0.8	0.7

Table 2. Final treatment protocol

Session	Goal	Content
1	Familiarity of participants, increasing motivation to participate in meetings, and explaining goals	An introductory session was held and the participants expressed their problems related to diabetes. In this session, the trainer or therapist also explained the goal of the intervention program, and the rules of the sessions in detail. Then, the therapist referred to the importance of these sessions and explained that patients must follow a social system with the family at the top to achieve appropriate and acceptable mental health. Therefore, educating family members about health can lead to controlling the consequences of diseases. One of the family members was preferably present in the initial sessions. Assignment: Writing the motivations and benefits of participating in the sessions and explaining them to the family members by the patient
2	Explaining the dimensions of diabetes, and the importance of full knowledge and understanding of this disease	In this session, with the help of a physician, the therapist explained the important aspects of diabetes and the consequences of not knowing how to control the disease. Additionally, in this session, the ways to measure blood sugar levels accurately and work with a needle were taught. In this session, the comorbidity of these diseases with psychological problems such as anxiety and stress was explained. One or two family members were also present in this session.
3	Ensuring accurate blood sugar measurement, familiarity with related medications, and healthy nutrition related to diabetes	In this session, the assignment related to measuring blood sugar in the previous session was reviewed. Also, with the help of a physician, the function and mechanism of action of each of the pills, drugs, and ampoules in controlling diabetes and blood sugar were explained. Additionally, the positive effects of a healthy lifestyle, including nutrition and exercise, in controlling this disease were also discussed. The presence of family members was also allowed in this session. Assignment: Reviewing and controlling the medications available at home, identifying the nearest medical centers, and playing a video or audio recorded at home for other family members.
4	Marital awareness and communication skills	In this session, the hormonal, biological, and chemical changes that diabetes and its medications may cause were discussed, and it was stated that this disease may affect sexual relationships. Thus, the role and importance of continuous education and support from family members were discussed. This session also discussed how the diabetic patient interacts and communicates with other family members and how other family members communicate with the diabetic patient. Assignment: Viewing the submitted clips about sexual changes related to diabetes, displaying the short video of the session to other family members
5	Reducing worry and rumination	After providing a full explanation of the nature of diabetes, this section addressed the management and control of emotions, especially the fear and worry of the patient and his family members about diabetes. In this session, patients listed their worries and the content of their ruminations and expressed them to the other participants. Then, with the help of the therapist, the members provided evidence regarding the incorrectness or harmfulness of the worries to identify the factors leading to their negative and unrealistic thoughts. Assignment: Family members also wrote down their worries and negative thoughts at home throughout the day.
6	Relaxation training and breathing exercises	In this step of training, relaxation or meditation was taught to reduce anxiety and stress, and manage it. First, the three . steps of proper breathing were explained. Then, the correct principles of muscle and physical relaxation were also explained, and finally, the technique of careful physical examination and coordination with breathing was taught. Assignment: Each participant performed the relaxation steps at home.
7	Acceptance and commitment	In the seventh session of the training, mindfulness, and body examination exercises were practiced again. Then, the values and goals of the participants were first visualized mentally and then written down; and the members reported their committed lives based on the results of this session, the necessary training, and their values. Finally, they tried to manage it while accepting the disease consciously and committedly. Homework: Body examination and mindfulness exercises based on exercises such as body examination, breaking habits in everyday behaviors such as eating with the non-dominant hand
8	Identifying cognitive errors and misappraisals	In this session, the assignments of previous sessions were reviewed. Then, cognitive errors and misappraisals were taught in general and specifically in the diabetes. Then, each member discussed their concerns and misappraisals. Assignment: Studying cognitive errors briefly at home and preparing a list of daily cognitive errors and misappraisals with the help of family members.
9	Avoid blaming self and others.	To prevent negative judgments toward self and others regarding the causes of the disease and to reduce feelings of guilt, the therapist stated that the disease is a phenomenon beyond the individual's control and that individual will is not involved, or that individual and volitional factors are only a small part of the set of causes. Thus, in the following session, sources of self-blame and causes of anger toward self and others were identified and examined. Assignment: Daily review of blameworthy thoughts and recording sources of blaming self and others and receiving feedback from family members
10	Belief in God, Gratitude, and Strengthening Spirituality	In this session, the trainer explained the concept of meaning and purpose in life and stated that it is possible to look at pain, suffering, and disease in a different way. In this session, the trainer summarized Frankel's book titled "Man's Search for Meaning and memoirs". Then, the participants discussed the meaning of their lives. The trainer also explained faith and belief in God and the importance of gratitude, and all members collectively practiced gratitude. Assignment: Writing the meaning of life and reasons for gratitude and practicing gratitude with family members
11	Improving distress tolerance and reviewing past assignments	At the beginning of this session, the assignments from the previous sessions were reviewed and reread by each member of the class, and the participants narrated their experiences from doing the exercises and the changes they have made. Then, the trainer taught the techniques for awareness of emotions and emotional sources, and then each member described their emotional sources and stressful situations. Finally, exercises related to adaptive responses to stressful situations were taught. Assignment: With the help of family members, members identified their sources of distress throughout the day and recorded the best possible solution to cope with it.
12	Review and Conclusion	In this session, all topics taught in previous sessions were briefly reviewed, members' questions were answered, and ambiguities were eliminated. Relaxation and breathing exercises were again performed in this session, and members committed to observing the taught items as much as possible throughout their lives. Also, a virtual group was created for exchanging thoughts and following up in this session.

Results

The analysis of variance test of the within-subject and between-subject design or variance of repeated measures was used to evaluate the effectiveness of the designed treatment program on the subjects' lifestyles. Table 3 presents the descriptive indices of the research subjects regarding this variable. Table 3 shows the mean and standard deviation indices for the components of healthy lifestyle in the two experimental and control groups in pre-test, post-test, and follow-up. The mean and standard deviation indices indicate the appropriate dispersion of the data. The skewness and kurtosis indices also indicate the normal distribution of the data. To examine the homogeneity of the covariance matrix of the dependent variables, the Box's M test was used. To examine the assumption of sphericity, the Mauchly test was used. The following results were obtained: (Box's M = 16.74, p = 0.22; Mauchly = 0.83, p = 0.09) for physical health; (Box's M = 6.47, p = 0.46; Mauchly = 0.83, p = 0.06) for exercise and wellbeing; (Box's M = 13.08, p = 0.07; Mauchly = 0.97, p = 0.67) for weight control, (26.11 = Box's M=11.26, p=0.12; Mauchly=0.90, p=0.26) for disease prevention, (Box's M=9.23, p=0.23; Mauchly=0.85, p=0.11) for psychological health; (Box's M=18.08, p=0.14; Mauchly=0.65, p=0.07) for spiritual health; (Box's M=26.66, p=0.10; Mauchly=0.96, p=0.58) for social health; (Box's M=5.68, p=0.54; Mauchly=0.96, p=0.58) for avoidance of medications; (Box's M=10.26, p=0.17; Mauchly=0.97, p=0.68) for accident prevention; and (Box's M = 1.74, p = 0.95; Mauchly = 0.81, p = 0.06) for environmental health. The results indicated that the assumptions of the repeated measures of variance test have been fulfilled.

The results of multivariate analysis of variance to examine the differences in scores of each of the lifestyle dimensions in three different periods are as follows: (Wilk's Lambda = 0.47, p<0.01) for physical health, (Wilk's Lambda = 0.71, p<0.01) for exercise and wellbeing, (Wilk's Lambda = 0.64, p<0.01) for weight control, (Wilk's Lambda = 0.44, p<0.01) for disease prevention, (Wilk's Lambda = 0.61, p<0.01) for psychological health, (Wilk's Lambda = 0.45, p<0.01) for spiritual health, (Wilk's Lambda = 0.59, p<0.01) for social health, (Wilk's Lambda = 0.59, p<0.01) for avoidance of medications, (Wilk's Lambda = 0.69, p<0.01) for accident prevention, and (Wilk's Lambda = 0.68, p<0.01) for environmental health. The results indicate the effectiveness of the intervention program on the difference in scores of the three periods. Table 4 reports the significance of within-group effects based on the within-group variance test.

The results in Table 4 show that the difference in scores in the prevention variable for each of the lifestyle dimensions was also significant based on the main effects of time and the interaction of time and group. Thus, the mean values in the descriptive indices and the significance of the main effects of time indicate that the treatment was effective in increasing the scores of all lifestyle dimensions in the post-test, and this increase has maintained its stability in the follow-up phase.

Discussion

The present study developed and validated a family-centered psychological intervention program based on spiritual therapy and cognitive behavioral therapy and its effectiveness on lifestyle among patients with type 2 diabetes. The results of the repeated measures test showed that the intervention program was effective in improving the scores of lifestyle components. The results of this test also showed that these improvements in scores had maintained their stability in the follow-up phase.

This result is consistent with the results of studies by Hook et al. (13), Alizadeh & Ghanbari (14), Soheili & Firoozi (15), Bonekamp et al. (16) and He et al. (17).

Table 3. Descriptive indices of the experimental and control groups in three periods for healthy lifestyle components

Variable	Group	Status	Mean	SD	Skewness	Kurtosis
Physical Health	Experimental	Pretest	11.13	3.20	-0.77	-0.72
		Posttest	18.86	2.03	-1.12	0.36
		Follow up	16.93	3.15	0.28	-1.22
	Control	Pretest	10.86	2.61	-1.54	1.94
		Posttest	11.06	3.19	-1.65	1.91
		Follow up	11.40	1.45	-1.49	1.38
Exercise and Wellbeing	Experimental	Pretest	11.20	2.27	0.57	-0.76
		Posttest	16.33	1.67	0.01	0.77
		Follow up	14.73	1.79	0.70	0.08
	Control	Pretest	10.20	2.88	-0.11	-1.12
		Posttest	11.01	2.29	0.86	-0.07
		Follow up	10.86	2.53	0.43	0.27
Weight Control and Nutrition	Experimental	Pretest	11.46	2.16	1.05	1.23
		Posttest	16.40	2.58	1.40	9.88
		Follow up	14.66	2.49	-0.55	-0.09
	Control	Pretest	10.93	1.66	1.01	0.45
		Posttest	11.20	1.65	1.55	0.11
		Follow up	11.53	2.77	1.04	0.99
Disease Prevention	Experimental	Pretest	11.33	2.79	-0.55	-0.45
		Posttest	15.80	2.04	1.23	1.12
		Follow up	14.06	2.98	1.98	1.09
	Control	Pretest	11.73	1.57	-0.22	-0.99
		Posttest	10.73	2.01	1.67	1.02
		Follow up	10.33	1.79	1.09	-0.55
Psychological Health	Experimental	Pretest	10.20	2.17	0.56	-0.11
		Posttest	15.60	2.47	-0.12	1.05
		Follow up	14.40	3.48	1.98	1.56
	Control	Pretest	10.01	2.59	1.03	1.13
		Posttest	10.06	2.81	-0.78	1.99
		Follow up	10.20	2.33	1.21	0.89
Spiritual Health	Experimental	Pretest	10.93	1.71	1.67	-0.34
		Posttest	14.20	1.14	1.03	1.45
		Follow up	12.01	1.19	-0.33	0.66
	Control	Pretest	10.73	1.86	-0.12	-0.45
		Posttest	10.01	1.77	0.56	1.09
		Follow up	10.20	3.72	1.32	1.89
Social Health	Experimental	Pretest	11.40	3.37	-1.49	1.38
		Posttest	15.80	1.78	0.57	-0.76
		Follow up	13.13	2.16	0.01	0.79
	Control	Pretest	11.46	1.24	0.70	0.08
		Posttest	11.20	2.33	-0.12	-1.12
		Follow up	11.73	3.01	0.86	-0.17
Avoidance of Medications	Experimental	Pretest	8.80	2.45	0.43	0.27
		Posttest	13.86	2.97	-1.56	1.38
		Follow up	11.46	2.72	0.57	-0.76
	Control	Pretest	8.66	2.35	0.21	0.90
		Posttest	8.46	2.28	-0.12	1.05
		Follow up	8.13	2.87	1.98	1.56
Accident Prevention	Experimental	Pretest	12.60	2.69	1.20	1.13
		Posttest	17.80	3.16	-0.78	1.60
		Follow up	14.53	3.58	1.21	0.89
	Control	Pretest	12.33	2.63	1.10	-0.34
		Posttest	12.46	2.87	1.03	1.32
		Follow up	12.40	2.47	-0.50	0.90
Environmental Health	Experimental	Pretest	10.01	3.42	-0.12	-0.45
		Posttest	15.80	2.56	0.45	1.09
		Follow up	13.60	2.92	1.32	1.60
	Control	Pretest	10.40	3.75	-1.509	1.38
		Posttest	10.73	3.26	0.57	-0.76
		Follow up	10.73	2.78	-0.12	1.13

Table 4. Results of within-group multivariate analysis of variance for differences in scores in the main effects of time and the interaction of time and group

Variable	Source	Sum of squares	df	Mean of squares	f	p	Effect size
Physical Health	Time	264.02	2	132.01	23.90	0.001	0.46
	time * group	224.06	2	112.03	20.28	0.001	0.42
Exercise and Wellbeing	Time	139.62	2	84.30	12.28	0.001	0.30
	time * group	72.86	2	43.99	6.41	0.001	0.19
Weight Control and Nutrition	Time	108.60	2	54.30	11.87	0.001	0.30
	time * group	82.02	2	41.01	8.97	0.001	0.24
Disease Prevention	Time	45.86	2	22.93	6.72	0.001	0.19
	time * group	121.86	2	60.94	17.87	0.001	0.39
Psychological Health	Time	125.95	2	62.97	11.78	0.001	0.29
	time * group	115.55	2	57.77	10.82	0.001	0.28
Spiritual health	Time	26.75	2	18.04	3.04	0.001	0.10
	time * group	60.80	2	40.99	6.90	0.001	0.20
Social health	Time	64.08	2	32.04	5.67	0.001	0.17
	time * group	85.42	2	42.71	7.55	0.001	0.21
Avoidance of medications	Time	89.26	2	44.63	9.54	0.001	0.25
	time * group	105.62	2	52.81	11.29	0.001	0.29
Accident Prevention	Time	108.88	2	54.44	7.47	0.001	0.21
	time * group	98.48	2	49.24	6.76	0.001	0.19
Environmental Health	Time	144.82	2	72.41	9.11	0.001	0.25
	time * group	113.48	2	56.74	7.14	0.001	0.20

In this regard, the study by Kurnik Mesarič et al. (6), showed that psychotherapy based on cognitive-behavioral and family-centered approaches can be effective in modifying health-promoting lifestyles in diabetic patients. This study revealed that psychotherapy can lead to weight control, healthy nutrition, and better self-care in diabetic patients.

A study by Bahramnezhad et al., also indicated that psychotherapy based on a cognitive-behavioral approach can be effective in modifying the lifestyle of diabetic patients as psychotherapy interventions can lead to treatment adherence, improvement in quality of life, reduced fatigue, and control of sugar consumption in these patients (18). In explaining this result, it can be stated that an unhealthy lifestyle and lack of self-care behaviors are among the important factors in the progression of the disease in diabetic patients and the integration of cognitive behavioral therapy and family-centered therapy can significantly improve these behaviors. In this regard, it can be stated that diabetes requires continuous blood sugar control, insulin injection, adhering to a healthy diet, and regular physical activity and exercise, and the awareness and support of families can play a vital role in modifying the lifestyle of these patients (19).

Since a major part of the intervention protocol in the present study was based on family therapy and family members' awareness of the disease process and its mechanism of action and the importance of adhering to diet are among the effective methods of controlling diabetes, it is expected that this training will have a fundamental impact on lifestyle modification in the present study. In this regard, in the study by Kurnik Mesarič et al. (6), psychotherapy based on a family-centered approach could significantly prevent the progression of diabetes, and these patients showed a significant change in their lifestyle after completing the intervention. Additionally, the intervention

program's emphasis on the cognitive-behavioral approach was another important part of the present study. Controlling diabetes requires modifying the patient's lifestyle and increasing self-care, which cannot be achieved without changing the patient's belief system and behaviors. Cognitive behavioral therapy causes the patient to abandon certain eating habits, increase self-control, increase self-monitoring, increase motivation for treatment, and life expectancy, and replace healthy habits. It can significantly control diabetes if it is also implemented in family members (8).

In this regard, the study by Kurnik Mesarič et al., reviewed studies on the effectiveness of cognitive behavioral therapy in modifying the lifestyle of diabetic patients. The results showed that previous studies have confirmed the effectiveness of cognitive-behavioral therapies in modifying the lifestyle of diabetic patients and psychotherapy can increase patients' self-care (6). Consistent with the results of the present study, a study revealed that cognitive-behavioral therapies can improve internal and external sources of control and treatment adherence by affecting irrational health beliefs. Thus, it can be stated that the family-centered psychological intervention program based on spiritual therapy and cognitive behavioral therapy in the present study can be effective in the lifestyle of people with type 2 diabetes (13, 16 and 18). The present study, like other studies, suffers from some limitations. The study sample limitation to diabetic patients in Tehran and the inability to control all confounding variables involved in lifestyle were among the limitations of the present study. Thus, we should treat with caution in generalizing and interpreting the results. However, the results of the present study revealed that the family-centered psychological intervention program based on spirituality and cognitive behavioral therapy was effective in the lifestyle of diabetic patients. Thus, health psychology consultants and therapists can use this protocol in their treatment programs. Since the statistical population of the present study included diabetic patients in Tehran, repeating the implementation and evaluation of the intervention program designed in the present study in other cities and populations may yield better results regarding the validity of this protocol. Additionally, researchers can examine the moderating role of variables such as age, ethnicity, socioeconomic class, or disease duration on the effectiveness of the educational-therapeutic package designed in the present study on dependent variables.

Conclusion

The primary goal of this study is to develop and validate a family-centered psychological intervention program that combines spiritual therapy and CBT approaches. This program seeks to improve the quality of life and lifestyle of diabetic patients. A family-centered psychological intervention program based on spiritual therapy and CBT can be used as an effective strategy in the management of type 2 diabetes. This approach improves the psychological state of patients and positively affects their lifestyle. This project requires further studies in various fields, including its long-term impacts on the quality of life of patients.

Authors' contribution

Delara Sadat Madahzsd and Reza Pourhosein developed the study concept and design. Masoud Gholamali Lavasani and Gholamali Afrooz acquired the data. Delara Sadat Madahzsd and Reza Pourhosein analyzed and interpreted the data, and wrote the first draft of the manuscript. All authors contributed to the intellectual content, manuscript editing and read and approved the final manuscript.

Informed consent

Questionnaires were filled with the participants' satisfaction and written consent was obtained from the participants in this study. This article was derived from the thesis entitled "Designing and

evaluating a family-centered psychological intervention program based on spiritual therapy and cognitive behavioral therapy on lifestyle and anxiety symptoms of people with type 2 diabetes" at the Faculty of Psychology and Educational Sciences - University of Tehran with a code of ethics of ID IR.UT.PSYEDU.REC.1401.109.

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Conflict of interest

The authors declare that they have no conflict of interests.

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