

Research Paper

The Effectiveness of Spiritual Therapy on Cognitive Emotion Regulation and Life Satisfaction in Individuals With Type 2 Diabetes Working in Education in Mashhad



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ABSTRACT

Background and Objectives: Type 2 diabetes is a chronic condition that can significantly impact emotional well-being. Individuals often struggle with emotional regulation, leading to decreased life satisfaction. Therefore, this study aimed to determine the effect of spiritual therapy on cognitive emotion regulation (CER) and life satisfaction in individuals with type 2 diabetes.

Methods: This study employed a quasi-experimental design utilizing a pre-test and post-test approach with a control group. The target population encompassed all individuals diagnosed with type 2 diabetes working within the Mashhad education sector in 2023. A convenience sampling method was employed to recruit a sample of 24 participants (equally divided into two groups) who met the study's inclusion criteria. Random assignment allocated participants to either the experimental or control group. Both groups completed the CER questionnaire and the satisfaction with life scale at both the pre-test and post-test stages. The experimental group received spiritual therapy delivered in eight sessions, each lasting 90 minutes. Data analysis was conducted using analysis of covariance (ANCOVA).

Results: The findings revealed a significant reduction in maladaptive CER scores in the post-test stage for the group receiving spiritual therapy compared to the control group ($P < 0.001$). The results also showed that spiritual therapy led to an increase in adaptive CER and life satisfaction at post-test ($P < 0.001$).

Conclusion: The findings demonstrated that spiritual therapy yielded significant benefits for the intervention group. These results suggest that spiritual therapy can be a valuable complementary approach for managing emotional challenges and improving overall well-being in individuals with type 2 diabetes.

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Introduction

Type 2 diabetes is the most common form of diabetes, accounting for 90 to 95% of cases. It is caused by a combination of reduced insulin secretion and insulin resistance [1]. In type 2 diabetes, the body's cells are unable to properly absorb glucose from food. Individuals with diabetes often face a long-term struggle with the disease and its management, leading to feelings of defeat and discouragement, and often losing motivation for self-care and strict disease control [2]. Type 2 diabetes is a serious condition, in which the insulin produced by the pancreas either does not function properly or the pancreas is unable to produce enough insulin. As a result, blood sugar (glucose) levels rise above normal [3]. The onset of type 2 diabetes typically occurs after the age of 30, but due to changes in lifestyle and dietary habits, the onset of type 2 diabetes can now occur as early as 15 years of age [4]. Individuals respond differently to the diagnosis of a chronic illness, such as diabetes. These responses can affect personality, coping skills, social support, the nature of the illness, and the individual's quality of life and functioning [5]. Risk factors for type 2 diabetes include obesity, abdominal fat, lack of physical activity, and family history of the disease. The main symptoms of the disease are intense hunger and thirst, frequent urination, dry skin, weakness and fatigue, and unintentional weight loss [6, 7]. If left uncontrolled, diabetes can lead to eye disease, nerve damage, heart disease, and expensive healthcare costs [8].

One of the common challenges faced by diabetic individuals is the stress and anxiety associated with confronting and coping with the disease. Cognitive emotion regulation (CER) appears to play a crucial role in this regard [9]. Studies have demonstrated that CER plays a significant role in managing type 2 diabetes, as these individuals often struggle with chronic stress and psychological problems, such as depression and anxiety [10]. CER, through cognition, is inextricably linked to human life and helps individuals manage or regulate their emotions and feelings when faced with stressful or threatening events, enabling them to overcome these emotions and avoid becoming overwhelmed [11]. In diabetic individuals, the ability to regulate emotions cognitively is particularly important in stressful situations. Many individuals feel powerless when faced with medication prescriptions, which negatively impact their mood and blood glucose control. Additionally, negative emotions, such as sadness, anger, and guilt are common among diabetic individuals, further increasing their need

for emotion regulation [12]. On the other hand, emotion dysregulation, characterized by the use of maladaptive strategies to respond to emotions, is a transdiagnostic risk factor for the persistence of various psychological disorders and diabetes itself [13, 14].

On the other hand, life satisfaction is an important psychological variable associated with type 2 diabetes. It can directly and negatively impact self-care and treatment outcomes in these individuals [15]. Individuals with diabetes often have a negative evaluation of their lives due to the physical problems associated with the disease. Individuals' evaluations of their lives can be in the form of cognitions or emotions. The cognitive component is information-based and involves an overall judgment of life satisfaction or dissatisfaction [16]. The emotional component involves evaluating life based on the emotions and feelings that individuals experience in response to their lives. A positive emotional component means maximizing positive emotions and minimizing negative emotions [17]. Research indicates that many diabetics engage in emotional responses (primarily sadness and grief) that include denial, anger, doubt and distrust, depression, and withdrawal, which exacerbate the complications of diabetes and lead to an unsatisfactory lifestyle [18, 19].

While medication and lifestyle changes are considered the mainstays of treatment in diabetes management, the impact of psychotherapy on improving the quality of life of individuals with various diseases has been well established. However, the psychological problems of chronic diseases, such as diabetes, which are often overlooked, highlight the need for greater attention to appropriate treatment [20]. Studies have shown that spirituality therapy can be effective in reducing the problems of individuals with chronic diseases, such as diabetes [21-23]. According to positive psychology theory, one of the effective treatments for increasing self-care in diabetic individuals is spirituality therapy, which has also been mentioned in many other studies and theories. Spiritual support for individuals whose hopes for normal treatment have been dashed can rekindle their hope for salvation [24].

Coping with the consequences of diabetes causes countless physical, psychological, and mental consequences for individuals, sometimes even depriving them of their ability to cope. Spirituality therapy helps them cope with these problems [25]. Peyravi et al. [26] showed that spiritual therapy had an effect on the quality of life in women with diabetes. Sadati and Mahdavi [27] showed that spiritual therapy with emphasis on the

teachings of Islam is effective in resilience, religious orientation, and life satisfaction of divorced women. Davrouri et al. [28] in a review study showed that spirituality provides individuals with a sense of control, which is very important for the prognosis of the disease. Controlling the negative emotions that result from spirituality can be an appropriate strategy for improving diabetes management. Ameyaw Korsah and Ameyaw Domfeh [29] pointed to the spiritual needs of diabetic individuals to improve emotion regulation. Safara et al. [30] showed that group spirituality therapy is effective in improving the psychological well-being of girls from divorced families. Onyishi et al. [31] showed that spirituality helps to cope with chronic diseases by providing social support, self-confidence, life satisfaction, and hope. Personal adaptation and self-care practices are associated with spiritual beliefs, and spiritual beliefs influence the choice of effective management strategies.

There are gaps in the treatment of psychological problems associated with diabetes. Based on the reviewed literature, spirituality therapy appears to be an effective and efficient approach to improving the quality of life and biological indices of diabetic individuals. However, given the acute condition of these individuals, it is crucial to choose the most effective treatment that yields the best results in the shortest possible time and is effective in improving their biological indices alongside medical treatments. Therefore, this study aimed to investigate the effect of spirituality therapy on the psychological problems of individuals with type 2 diabetes. Accordingly, we aimed to determine the effectiveness of spirituality therapy on CER and life satisfaction in individuals with type 2 diabetes.

Methods

This study utilized a quasi-experimental design with a pre-test-post-test control group structure to investigate the effectiveness of spiritual therapy in a population of individuals with type 2 diabetes. The target population comprised all individuals with type 2 diabetes employed within the Mashhad Education Department during 2023. A convenience sampling approach, considering pre-established inclusion criteria, yielded a sample size of 24 participants ($n=12$ per group). A power analysis conducted using G*Power software determined that a sample size of 24 participants was necessary to detect a medium effect size ($d=1.28$) with a desired power of 0.90 and an alpha level of 0.05. To ensure a balanced distribution across the experimental and control groups, a random allocation process was employed. A table of random numbers was generated using software for

generating random numbers. Participants were then sequentially assigned to either group based on the generated random numbers. This process helped to minimize potential biases and ensure that the groups were comparable at baseline. With the necessary ethical approvals secured, an announcement outlining participation procedures and therapy sessions was disseminated to potential participants. Following eligibility screening, informed consent was obtained from all participants. To uphold ethical standards, participant confidentiality was assured. Inclusion criteria encompassed employment within the Mashhad Education Department, an age range of 18-45 years, and no current participation in alternative treatment programs or individual counseling/medication therapy. Exclusion criteria comprised concurrent psychological treatment, use of psychiatric medications, unwillingness to continue participation, and exceeding two missed therapy sessions. Both groups completed a pre-test before the intervention, implemented solely for the experimental group. The control group received no treatment during this period. A post-test was administered to all participants upon completion of the intervention sessions. Notably, the control group received a condensed version of the intervention following the conclusion of the research.

Instruments

CER questionnaire (CERQ): The CERQ developed by Garnefski and Kraaij [32], is an 18-item self-report measure designed to assess cognitive coping strategies employed in response to stressful or threatening life events. The CERQ categorizes these strategies into two broad categories: Adaptive and maladaptive. Adaptive strategies, measured by subscales, like “putting into perspective,” “positive refocusing,” “positive reappraisal,” “acceptance,” and “refocusing on planning,” focus on healthy emotional processing. Conversely, maladaptive strategies, assessed by subscales, like “self-blame,” “other-blame,” “focusing on thought/rumination,” and “catastrophizing,” reflect unhealthy coping styles. Each item is rated on a five-point Likert scale ranging from “never” (1) to “always” (5). The Persian version of the questionnaire has demonstrated satisfactory psychometric properties in previous studies conducted in Iran. Hasani et al. [33] reported a Cronbach’s α coefficient of 0.81, indicating good internal consistency. Additionally, the questionnaire has shown adequate convergent and discriminant validity, as well as sensitivity to change following interventions.

Table 1. A summary of the spiritual therapy sessions

Sessions	Description
1	Introduction and participant interaction: Discussion on diabetes, its physical and psychological implications; assessment of meaning and spirituality in life; exploring personal values; understanding the concepts of spirituality and religion and their impact on life
2	Cultivating self-awareness and fostering a connection with the inner self; identifying personal needs and goals; bringing attention to diabetes management; practicing positive thinking and avoiding negative thoughts; enhancing self-knowledge and understanding of others' perspectives; recognizing personal strengths, achievements, and talents; discussing the availability of spiritual knowledge and power to address challenges; fostering faith in a higher power.
3	Enhancing mindfulness through conscious efforts to focus attention on positive aspects of situations; practicing mindfulness techniques such as meditation and reflection; implementing self-reward mechanisms to reinforce mindfulness practices; developing insights for resolving internal conflicts and enhancing adaptation to external environments.
4	Emphasizing personal responsibility in overcoming obstacles; examining personal and internal qualities; practicing self-compassion and self-love; discussing methods of pleasing others to achieve spiritual growth; and designing a model for cultivating spiritual growth.
5	Uncovering inner treasures and self-esteem; guiding participants to discover their innate and external God-given gifts and talents; encouraging rational thinking about these gifts and talents; achieving inner contentment and its impact on enhancing self-belief, self-reliance, and self-esteem.
6	Learning methods to support others, practice empathy, and love others to foster happiness; promoting physical, mental, and social self-care to achieve spiritual selfhood; exploring the components of spiritual selfhood and nurturing its development.
7	Practicing and discussing techniques for living joyfully and savoring the present moment; sharing personal spiritual experiences; learning how to cultivate a sense of purpose and happiness by resolutely relinquishing egoism in connection with God.
8	Reviewing and summarizing key takeaways from previous sessions Emphasizing gratitude, acceptance of challenges, and reliance on God Practicing trust in God through a 35-second guided meditation with eyes closed, followed by silent gratitude towards the Almighty.

Satisfaction with life scale (SWLS): Life satisfaction was assessed using the SWLS, a well-validated five-item \pm instrument developed by Diener et al. [34]. Employing a seven-point Likert scale (one=strongly disagree, seven=strongly agree), the SWLS yields total scores ranging from 5 to 35. The SWLS has demonstrated strong psychometric properties in previous Iranian studies. Bayani et al. [35] reported a Cronbach's α coefficient of 0.83 for the Persian version of the SWLS, indicating excellent internal consistency. This finding is consistent with previous research, which has consistently shown Cronbach's α coefficients exceeding 0.80 for the SWLS in various populations.

Intervention

Spiritual therapy protocol with a religious approach: This study employed the spiritual therapy protocol proposed by Richards and Bergin [36], which comprises eight psycho-spiritual components: Reliance on God, prayer and supplication, gratitude, patience and tolerance, forgiveness and letting go of anger, connection with God and inner dialogue with God, self-awareness and listening to the inner voice, and reading sacred texts

and using spiritual and religious books. A summary of the spiritual therapy sessions is presented in Table 1.

Statistical analysis

Data were analyzed using analysis of covariance (ANCOVA) by SPSS software, version 27.

Results

The study participants comprised 24 individuals (15 men and 9 women) diagnosed with type 2 diabetes. The Mean \pm SD age of the participants in the experimental group was 35.71 \pm 4.53, while the mean age in the control group was 36.54 \pm 5.12 years. Table 2 presents the Mean \pm SD, and Kolmogorov-Smirnov normality test results for the study variables at pre-test and post-test assessments.

As evident in Table 2, the mean scores of the study variables for the experimental group exhibited changes from pre-test to post-test, while no significant changes were observed in the control group. Consequently, ANCOVA was employed to examine the statistical significance of

Table 2. Mean±SD, and Kolmogorov-Smirnov test results for CER and life satisfaction

Variables	Group	Mean±SD		Kolmogorov-Smirnov	
		Pre-test	Post-test	Z	P
Adaptive CER	Spiritual therapy group	17.08±5.31	59.08±3.82	0.12	0.200
	Control group	21.58±6.70	18.75±7.04	0.13	0.200
Maladaptive CER	Spiritual therapy group	81.42±2.46	40.83±3.09	0.16	0.200
	Control group	79.25±2.59	79.75±3.76	0.17	0.200
Life satisfaction	Spiritual therapy group	11.08±3.77	23.92±2.61	0.22	0.110
	Control group	14.33±5.63	10.92±2.87	0.21	0.098



Table 3. Results of MANCOVA on scores of research variables in the experimental and control groups

Variables	Value	df	Error df	F	P
Pillais trace	1.94	9	50	32.35	0.001
Wilks lambda	0.01	9	48	77.28	0.001
Hotelling's trace	24.52	9	46	135.35	0.001
Roy's largest root	22.20	9	25	392.32	0.001



differences between the two groups. Prior to conducting the ANCOVA, the assumptions underlying the test were assessed. The absence of influential outliers in the study variables was initially verified using the Kolmogorov-Smirnov normality test presented in Table 2. The results confirmed the normal distribution of data, fulfilling the prerequisite for ANCOVA. The homogeneity of variance assumption was examined for both the experimental and control groups using Levene's test. The results indicated homogeneity of variance for the following variables: Adaptive CER (F=0.43, P=0.519), maladaptive CER (F=0.02, P=0.877), and life satisfaction (F=0.74, P=0.398). The MANCOVA showed that there was a sig-

nificant difference between the groups at least in one of the dependent variables (P<0.001) (Table 3).

To compare the experimental and control groups based on post-test scores while controlling for the effect of pre-test scores, ANCOVA was employed to determine the impact of spiritual therapy intervention on CER and life satisfaction in individuals with type 2 diabetes (Table 4). The results of the ANCOVA revealed a significant difference between the mean pre-test and post-test scores for adaptive CER after controlling for the effect of the pre-test scores (F=185.64, P<0.001, η²=0.91). This indicates that spiritual therapy had a positive effect on enhancing adaptive CER. Similarly, a significant difference was

Table 4. ANCOVA results for post-test scores of CER and life satisfaction

Variables	SS	df	MS	F	P	η ²	Power
Adaptive CER	6207.61	1	6207.61	185.64	0.001	0.91	1.00
Maladaptive CER	5663.59	1	5663.59	432.38	0.001	0.96	1.00
Life satisfaction	632.02	1	632.02	82.69	0.001	0.81	1.00



observed between the mean pre-test and post-test scores for maladaptive CER after controlling for the effect of the pre-test scores ($F=432.38$, $P<0.001$, $\eta^2=0.96$). This finding suggests that spiritual therapy was effective in reducing maladaptive CER. The results also demonstrated a significant difference between the mean pre-test and post-test scores for life satisfaction after controlling for the effect of the pre-test scores ($F=82.69$, $P<0.001$, $\eta^2=0.81$). This implies that spiritual therapy had a positive impact on increasing life satisfaction (Table 4).

Discussion

The present study aimed to investigate the effectiveness of spiritual therapy on CER and life satisfaction in individuals with type 2 diabetes. The results showed that spiritual therapy was effective in increasing adaptive CER and decreasing maladaptive CER in individuals with type 2 diabetes. These findings are consistent with the results of Ameyaw Korsah and Ameyaw Domfeh [29] and Poorakbaran et al. [37], who showed that spiritual therapy is effective in increasing emotion regulation. In explaining these findings, it can be said that emotion regulation, as an important psychological skill, plays a vital role in mental health. Impaired emotion regulation can lead to various problems, including anxiety, depression, and physical problems [10]. One of the new approaches to improving emotion regulation is spiritual therapy, which, by emphasizing the spiritual and religious dimensions of a person's life, strives to strengthen psychological well-being and mental peace [30]. Various theories, such as the theory of spirituality and mental health, emphasize that spirituality and religiosity can act as powerful resources in coping with life's stresses and challenges. These theories state that by relying on their faith and spirituality, individuals can better regulate their emotions and achieve mental peace [36].

Spiritual therapy has emerged as an effective treatment approach for improving the quality of life and mental health of individuals with type 2 diabetes. Recent research demonstrates that spiritual therapy can have a significant positive impact on self-care, emotional regulation, and psychological well-being in these individuals. Spiritual therapy can help reduce stress and anxiety levels [29]. Additionally, it can lead to substantial improvements in quality of life. Studies have shown that individuals who participate in spiritual therapy programs experience enhancements in life satisfaction and overall quality of life. These improvements may include increased feelings of meaning and purpose in life. Spiritual therapy can also empower individuals to better cope with and manage negative emotions. By utilizing spiritual and

religious resources, this form of therapy provides individuals with tools to better identify and regulate their negative emotions [37].

The findings of this study demonstrated that spiritual therapy was effective in enhancing life satisfaction among individuals with type 2 diabetes. This aligns with the results of previous research by Sadati and Mahdavi [27], and Onyishi et al. [31], who also found spiritual therapy to be beneficial in increasing life satisfaction. To explain this finding, it can be posited that spiritual therapy, by strengthening spiritual connections and fostering a sense of meaning and purpose in life, can lead to significant improvements in various aspects of individuals' lives. With enhanced spiritual understanding and experiences, individuals may experience more positive emotions, such as tranquility, hope, and overall life satisfaction. Research has shown that spiritual interventions can help reduce stress, anxiety, and depression while improving social relationship quality and mental health [27]. Spiritual therapy can empower individuals to better cope with life's challenges and enhance their sense of control and self-efficacy. This form of therapy may assist individuals in discovering deeper meaning and purpose in their lives, leading to increased overall life satisfaction. Additionally, spiritual therapy can contribute to the development of a stronger support system through spiritual and social connections, which can further contribute to improved life satisfaction. Overall, spiritual therapy can be considered a comprehensive and effective approach to enhancing life satisfaction and promoting individuals' quality of life [26].

One limitation of this study is that it was conducted on individuals with type 2 diabetes who were employed in the education sector in Mashhad, Iran. Caution should be exercised in generalizing the results to individuals with type 1 and type 2 diabetes in other cities and with different cultures. Diabetic individuals may vary greatly in their level of religiosity and spiritual beliefs. These differences could potentially influence the outcomes of spiritual therapy and make it difficult to accurately analyze the effects. Type 2 diabetes and its severity can impact the patient's stress levels and psychological needs. These variations could lead to differential outcomes in spiritual therapy. The study did not examine gender differences and employed self-report measures, which may be susceptible to social desirability bias and response distortion. Since a follow-up phase was not included, the sustainability of the effects of spiritual therapy was not assessed.

Conclusion

The current study yielded significant positive outcomes. Participants receiving spiritual therapy demonstrated a statistically significant decrease in maladaptive emotion regulation scores at the post-test compared to the control group. Furthermore, spiritual therapy resulted in a significant increase in adaptive emotion regulation and life satisfaction at the post-test. These findings suggest that spiritual therapy may be a valuable tool for enhancing emotional well-being and quality of life in individuals with type 2 diabetes. By fostering the development of adaptive emotion regulation skills and promoting feelings of life satisfaction, spiritual therapy could empower individuals to better manage the challenges associated with chronic illness. Future research endeavors could explore the long-term sustainability of these benefits and elucidate the mechanisms through which spiritual therapy exerts its positive effects.

Ethical Considerations

Compliance with ethical guidelines

The study protocol was approved by the Ethics Committee of **Ahvaz Branch, Islamic Azad University**, Ahvaz, Iran (Code: IR.IAU.AHVAZ.REC.1402.032).

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Authors' contributions

Conceptualization, study design, data acquisition, analysis, interpretation, and statistical analysis: Mahrokh Javaherforooshzadeh and Parvin Ehteshamzadeh; Project administration, technical, and material support, and supervision: Farzaneh Hooman and Saeed Bakhtiarpour; Review and editing: Parvin Ehteshamzadeh and Farzaneh Hooman.

Conflict of interest

The authors declared no conflict of interest.

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