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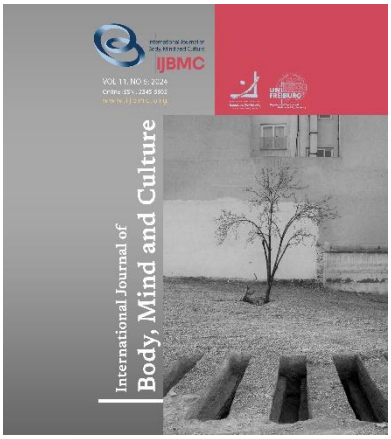
The Effectiveness of Emotion-Focused Therapy on Emotional Regulation, Quality of Life, and Pain Perception in Type 2 Diabetes Patients

Fazeleh. Karimi[1], Ehsan. Ebrahimi[2], Ensiyeh. Matinpour[3], Fatemeh. Khajeh Hassani Rabari[4], Roksana. Nakhaei Moghadam[5], Hanieh. Komeiti[6*]

1 M.A., Department of Clinical Psychology, Naein Branch, Islamic Azad University, Naein, Iran.
2 Ph.D. of Clinical Research Development Unit, Vasei Hospital Research Development Committee, Sabzevar Medical Sciences, Sabzevar, Iran.
3 M.A., Non-Commumicable Diseases Research Center, Sabzevar University of Medical Sciences, Sabzevar, Iran.
4 M.A. student in Clinical Psychology, Department of Psychology, Neyshabour Branch, Islamic Azad University, Neyshabour, Iran.
5 Assistant Professor, Department of Clinical Psychology, Zahedan Branch, Islamic Azad University, Zahedan, Iran.
6 M.A., Department of Psychology, Islamic Azad University, Hamadan, Iran.
Corresponding author email address: hani.kmt@yahoo.com



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ABSTRACT

Objective: Given the increasing prevalence of diabetes, researchers in the field of health and well-being have been emphasizing empirical investigations. The current research aimed to examine the effectiveness of emotion-focused therapy on emotion regulation, quality of life, and pain perception in patients with type 2 diabetes.

Methods and Materials: This semi-experimental study employed a pretest-posttest design with a control group. The study population consisted of type 2 diabetes patients affiliated with the International Diabetes Prevention and Control Foundation in Mashhad in June 2022. The sample included 30 individuals who were selected by simple random sampling and randomly assigned to two groups: 15 in the intervention group and 15 in the control group through random allocation. The intervention group received Greenberg and Goldman's (2019) emotion-focused therapy over eight sessions, each lasting 90 minutes once a week. Data were collected utilizing the Emotion Control Questionnaire (1997), the World Health Organization Quality of Life questionnaire, and the McGill Pain Perception Questionnaire (1997) and analyzed using multivariate analysis of covariance in SPSS version 26.

Findings: The results indicated that EFT improved emotion control (P=0.000, F=32.669), quality of life (P=0.000, F=20.360), and pain perception (P=0.000, F=94.358).

Conclusion: Emotion-focused therapy leads to increased emotion control, improved quality of life, and reduced pain perception in patients with type 2 diabetes.

Keywords: Diabetes, Emotion focused therapy, Emotion regulation, quality of life, Pain perception.

Introduction

Diabetes is a chronic, incurable disease that poses a significant threat to individuals' lives, causing some to question their quality of life and life expectancy upon diagnosis (Ugli et al., 2024). Type 2 diabetes is a chronic condition identified by elevated blood sugar levels due to the body's inability to effectively use insulin or produce sufficient insulin (Rasha Abed et al., 2022). It is often associated with obesity, sedentary lifestyles, and poor dietary habits (ElSayed et al., 2023). According to projections by the International Diabetes Federation in 2030, it is anticipated that the number of people affected by diabetes will surpass 552 million. Iran, as reported by the Iranian Diabetes Association, also faces a considerable number of diabetes cases, with nearly 5 million individuals being affected. Despite the World Health Organization's predictions indicating an increase to 6 million cases by 2030, it is noteworthy that half of the population remains unaware of their diabetes status. The World Health Organization recognizes diabetes as a serious threat to public health based on global statistics and trends (Kelting et al., 2019). Diabetes impacts various psychological variables, and among the noteworthy psychological factors are emotional control, quality of life, and pain perception.

Emotional control refers to the ability to understand emotions and feelings, regulate emotional experiences, and express emotions (Zetsche et al., 2023). In essence, it is not merely the suppression of emotions but the ability for an individual not to be in a perpetually stagnant emotional state. Emotional control involves processes that alter emotional experiences (Zheng et al., 2021). Emotional control and emotional regulation encompass the ability to understand emotions and feelings, regulate emotional experiences, and express emotions (Tze et al., 2022). The concept of quality of life includes potential abilities (functional status), access to resources and opportunities for utilizing these abilities to pursue and engage in one's interests (objective quality of life), and overall well-being (mental quality of life) (Sella et al., 2023). Today, quality of life has become a crucial and fundamental issue in human societies, encompassing all dimensions of their lives related to health. A reduction in quality of life not only diminishes the individual's satisfaction with life but also, influenced by the individual's commitment to therapeutic and care procedures, can impact the outcomes of disease treatment and care (Aghayousefi et al., 2020; Keramati, 2021; Şahin & Soylu, 2024; Swan et al., 2023).

There is a relationship between pain intensity and mental and emotional states. Pain is categorized based on duration into acute and chronic pain. Acute pain is typically a result of illness or injury and lasts less than three months, while chronic pain persists for at least three months and may be associated with tissue damage or recur over time (Sayed Alitabar & Goli, 2023). Chronic pain affects various aspects of an individual's life, including emotional, occupational, and physical functioning, imposing significant costs on society and the healthcare system (Kelting et al., 2019). The perceptual experience of pain involves psychological processes such as attention, interpretation, coping strategies, and pain behavior, all influenced by previous learning, cognitions, emotions, environmental factors, positive and negative consequences, culture, and family (Lopes & de Lima Osório, 2023).

One of which has gained popularity in recent years is the Integrative Emotion-Focused Therapy (IEFT) developed by Leslie Greenberg (1980). This approach is an amalgamation of narrative therapy and emotion-focused therapy, focusing on how to work with the "self" and "relationship" in terms of self-emotion regulation and regulating emotional relationships based on the situation. It emphasizes working on relational systems in some instances and on the self in others, mutually regulating each other (Moore et al., 2022). This approach strives to integrate the concepts of emotional growth and interaction in human relationships (Tapia-Fuselier Jr et al., 2022). Emotion-Focused Therapy (EFT) is an experiential approach that considers emotions as the foundation of experience in relation to adaptive and maladaptive functions (Koren et al., 2022). Evidence suggests that emotions play a crucial role in behavioral response, resolving marital conflicts, decision-making processes, enhancing memory for significant events, and facilitating interpersonal interactions (Greenman et al., 2019; Schafer et al., 2022), and studies demonstrated that emotion-focused therapy training leads to a reduction in cognitive-behavioral conflicts. This training enables individuals to access conflicting emotional patterns and

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gain acceptance and a fundamental sense of identity. It establishes a vital connection with the inner emotions that each experiences. Individuals perceive their identity as a "self" entity, gradually organizing emotional experiences of the "self" and others' opinions about the "self" into a coherent narrative. Over time, individuals shape and strengthen their emotional experiences and concepts of the "self," enhancing their ability for self-regulation and interpersonal regulation (Connolly-Zubot et al., 2020; Dillon et al., 2018; Fathi et al., 2021).

Although many researchers have separately investigated each of these variables, a study addressing the effectiveness of emotion-oriented skills on emotion regulation, quality of life, and pain perception in patients with type 2 diabetes has not been found. Given this gap in research and the importance of emotional control, quality of life, and pain perception in patients with type 2 diabetes, there is a need for an educational intervention that can effectively control these variables in the control group and have a positive impact. Therefore, this study aims to investigate the effectiveness of emotion-focused therapy on emotion regulation, quality of life, and pain perception in patients with type 2 diabetes.

Methods and Materials

Study Design and Participants

The current study was semi-experimental research with a pretest-posttest design and a control group. The statistical population consisted of 30 patients diagnosed with type 2 diabetes attending the International Diabetes Prevention and Control Foundation in the city of Mashhad in 2022. A sample of 30 individuals was selected using random sampling, and they were assigned to two groups: the experimental group (15 participants) and the control group (15 participants) through random assignment. Subsequently, the experimental group received emotion-focused therapy over eight 90-minute sessions, while no intervention was administered to the control group. After obtaining written and verbal consent from the participants, questionnaires were provided to them at the beginning of the research (pre-test phase) and were completed by the participants. The inclusion criteria for participation in the study included having a diagnosis of type 2 diabetes by a physician, voluntary consent to participate in the research, the ability to attend sessions and collaborate in tasks, and a minimum education level of the cycle. The age range of the participants was 30 to 45 years. Exclusion criteria encompassed the presence of other physical or psychological diseases (such as cancer or gastrointestinal disorders), as well as severe and acute symptoms of diabetes that could make the patient's participation in the study difficult or impossible.

Data Collection Tools

Emotion Control Questionnaire (ACQ): This 42-item questionnaire, developed by Williams et al. in 1997, assesses four dimensions: anger, depressed mood, anxiety, and positive emotion. Each item is rated on a 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7). The reliability of the ACQ was assessed through test-retest after four weeks, resulting in values of 0.73 for anger, 0.72 for depressed mood, 0.77 for anxiety, and 0.66 for positive emotion. Convergent validity was established by correlating the questionnaire with the Positive and Negative Affect Schedule (PANAS) and Watson et al.'s Negative Affect subscale (r = 0.58) (Talaeizadeh et al., 2023).

World Health Organization Quality of Life-Brief (WHOQOL-BREF) Questionnaire: Developed by the World Health Organization, this 26-item questionnaire assesses overall and general life quality in four domains: physical health, psychological health, social relationships, and environment. Scores range from 1 to 5 for each question, with inverted scoring for questions 3, 4, and 26. Subscale scores are transformed into a standardized score between 0 and 100, with higher scores indicating better life quality. The questionnaire has been validated internationally and in Iran, with reliability assessed (Ghaffari & Shirali, 2018)

McGill Pain Questionnaire (MPQ): Developed by Melzack in 1975, the MPQ consists of 20 sets of phrases aiming to measure individuals' perception of pain in various sensory, emotional, and evaluative dimensions. The cutoff point for this questionnaire is 70. Dorukin (2009) confirmed the validity of the MPQ, and its reliability, assessed using Cronbach's alpha, ranged from 0.83 to 0.87 for all dimensions (Alizadeh et al., 2023; Roshandel et al., 2022; Yusefi et al., 2022).

Intervention

Emotion-focused therapy: The training was based on the emotion-focused approach outlined in the practical guide by Greenberg and Goldman (2019):

First Session: The focus in the initial session is on establishing a strong therapeutic alliance and fostering cooperation. The therapist conducts an initial assessment and introduces the treatment rationale, emphasizing the connection between emotional experiences and interpersonal conflicts. The session also includes an exploration of the individual's communication challenges, particularly from an attachment perspective, to help identify areas requiring attention during the intervention.

Second Session: This session deepens the evaluation process, focusing on understanding the individual's intrapersonal and interpersonal interaction cycles. The therapist explores patterns in relationships and internal experiences that contribute to the client's challenges, identifying triggers, behaviors, and recurring emotional responses to gain insight into their relational and emotional landscape.

Third Session: The therapist works with the client to identify and explore underlying emotional experiences that sustain maladaptive interaction patterns. Attention is given to accessing previously unacknowledged or suppressed emotions, helping the client connect with their deeper emotional truths, which form the basis of their relational difficulties.

Fourth Session: The client and therapist collaboratively reframe the presenting problem by focusing on the negative emotional cycles that perpetuate conflict. By recognizing the impact of these cycles, the client is encouraged to view their difficulties from a new perspective, opening pathways for change and fostering emotional insight.

Fifth Session: This session aims to expand the client's emotional awareness and deepen their understanding of themselves. Through psychoeducation and experiential techniques, the therapist helps the client increase knowledge about emotions, the role they play in shaping interactions, and aspects of their self-concept, fostering greater emotional intelligence and self-awareness.

Sixth Session: The focus shifts to promoting the acceptance of new emotional experiences and interactions. The therapist guides the client in recognizing and overcoming obstacles to embracing these new experiences, encouraging openness and flexibility in their responses to emotions and relationships.

Seventh Session: This session emphasizes facilitating emotional needs and resolving conflicts through guided emotional expression. The therapist helps the client reconstruct key interactive situations, allowing them to practice healthier emotional responses and address unresolved relational dynamics in a supportive environment.

Eighth Session: The final session prepares the client for the conclusion of therapy by reviewing the key concepts and skills learned in previous sessions. The therapist resolves any remaining ambiguities, discusses how to apply learned strategies in daily life, and outlines steps for post-therapy actions. Clients complete final questionnaires, providing feedback and assessing progress, ensuring a smooth transition out of therapy.

Data analysis

For statistical analysis, a multivariate analysis of covariance (MANCOVA) was employed at the inferential statistical level, using SPSS software version 26.

Findings and Results

The reported mean age for the research participants, categorized by groups, was as follows. For the group receiving emotion-focused therapy: 51± 3.37 years. For the control group: 49.3 ±3.40 years. The minimum age reported for the participants in this study was 28, and the maximum age was reported as 40.

Table 1

Mean and standard deviation of the pre-test and post-test scores of the experimental and control groups

Source of Variables	Group	Pre-test		Post-test	
		Mean	Standard deviation	Mean	Standard deviation
Emotional regulation	Experimental	126.466	7.88	112.466	9.07
	Control	127.06	8.52	125.13	8.21
Quality of Life	Experimental	133.33	7.39	142.40	7.39

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	Control	131.80	8.14	131.53	8.29
Pain perception	Experimental	16.20	2.24	9.86	2.35
	Control	16.93	2.60	17.13	3.06

According to Table 1, the mean scores of the experimental group in the emotion control variable post-test show a significantly greater increase compared to the control group. However, there is not much difference in the control group. Additionally, the quality of life score in the experimental group decreased in the post-test, while in the control group, there was not much difference. Moreover, the pain perception scores decreased in the post-test for the experimental group, but there was not much difference in the control group. To determine effectiveness, fundamental assumptions of the covariance analysis were initially examined. The Shapiro-Wilk test was used to assess the normality of score distribution. The results indicated that the assumption of normal distribution of scores was met ($p > 0.01$). The results of the Box's M test to examine homogeneity of variance-covariance were not statistically significant, indicating the assumption of homogeneity of the covariance matrix ($p = 0.776$, $F = 0.556$, Box's $M = 18.79$). Also, Levene's test was employed, and the results showed that the scores of research groups in the post-test of dependent variables have homogenous variances ($p > 0.01$). Furthermore, the level of significance for the group and pre-test interaction in emotion control, quality of life, and pain perception was not significant ($p > 0.05$), indicating that the assumption of homogeneity of regression slopes has been observed and the necessary conditions for conducting the analysis of covariance test are met.

Table 2

Results of multivariate tests of research variables

Effect	value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's Trace	0.609	11.937	3	23	0.000	0.609
Wilks Lambda	0.391	11.937	3	23	0.000	0.609
Hoteling's Trace	1.557	11.937	3	23	0.000	0.609
Roy's Largest Root	1.557	11.937	3	23	0.000	0.609

The results of the quadruple test of multivariate covariance analysis in Table 2 showed that by controlling the effects of pre-test scores, there is a significant difference between the two experimental and control groups in at least one of the variables ($P>0.05$).

Table 3

The result of covariance analysis for research variables

Variable	Source of variations	Sum of squares	df	Mean of squares	F	P	Eta
Emotion control	Pretest	1154.057	1	1154.057	32.959	0.000	0.550
	Group	1143.925	1	1143.952	32.669	0.000	0.548
	Error	44.980	27	32.669			
Quality of Life	Pretest	771.383	1	771.383	21.742	0.000	0.446
	Group	722.396	1	722.396	20.360	0.000	0.430
	Error	957.950	27	35.480			
Pain perception	Pretest	113.613	1	113.613	32.684	0.000	0.548
	Group	327.994	1	327.994	94.358	0.000	0.778
	Error	93.845	27	3.476			

A one-way analysis of covariance (ANCOVA) was employed to analyze the data (Table 3). The results of the ANCOVA indicated a significant difference between the control and experimental groups in emotion control ($p < 0.001$, $F = 32.669$), quality of life ($p < 0.001$, $F = 20.360$), and pain perception ($p < 0.001$, $F = 94.358$) after controlling for pretest scores. In other words, emotion-focused therapy has been effective in improving emotion control, quality of life, and pain perception in patients with type 2 diabetes. Considering the eta squared index

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in both control and experimental groups, it can be stated that 54% of the variance in emotion control scale, 43% of the variance in quality of life scale, and 77% of the variance in pain perception scale related to the difference between the control and experimental groups are due to the interactive effect of the independent variable, which is emotion-focused therapy.

Discussion and Conclusion

The present study aimed to determine the effectiveness of skill training in the opinion of emotional control, quality of life, and pain perception in type 2 patients. The present research results indicate the effectiveness of emotion-focused therapy on emotion regulation, quality of life, and pain perception in patients with type 2 diabetes. The findings of this study align with the prior research (Fisher et al., 2018; Gamliel et al., 2018; Hajati et al., 2023; Naserinia & Borjali, 2020; Resurrección Mena et al., 2021).

In elucidating the findings, emotion-focused therapy emphasizes improving mental health and well-being by addressing psychological factors such as emotion control, feelings, and behavior. This focuses on an individual's ability to cope with challenges and demands from the environment, including emotional, cognitive, and behavioral responses appropriate to the situation, especially in managing the emotional and psychological impact of living with diabetes. Emotion-focused therapy assists individuals in understanding and managing their emotions, contributing to the enhancement of emotional intelligence and better coping with the challenges of living with diabetes. It teaches individuals how to effectively deal with challenges and demands in their environment, which may include changes in dietary patterns, physical activities, and social interactions. Individuals with diabetes learn how to cope with various emotional situations, including stress, anxiety, and other negative emotions (Resurrección Mena et al., 2021).

Regulating maladaptive emotional responses in individuals with diabetes can lead to emotional distress. Therefore, psychological intervention can address emotional control and the emotional well-being of diabetic patients, significantly improving blood glucose control and the emotional well-being of the patients (Fisher et al., 2018). Emotion-focused therapy, by regulating experiential avoidance and direct and indirect conditioning experiences, reduces the perception of uncontrollability and unpredictability of stressful events, creating cognitive changes in the mind and promoting emotional awareness, emotional expression, emotional regulation, and modification of emotional experiences. This therapy helps reduce anxiety sensitivity in individuals, particularly in the context of managing emotional challenges related to self-management, such as stress, hopelessness, guilt, and shame (Gamliel et al., 2018). Therefore, emotion-focused therapy with emotion regulation positively impacts diabetic patients, leading to improved symptoms.

Studies have shown that emotion regulation therapy based on acceptance can be beneficial for individuals with type 2 diabetes, resulting in improved self-care, quality of life, and glycemic control. Individuals with type 2 diabetes often experience a reduction in their quality of life due to the physical and emotional challenges associated with the disease. Emotional burdens of living with diabetes can negatively affect various aspects of a patient's life, including mental health, social relationships, and overall satisfaction. Group therapy based on emotion regulation and acceptance is useful in improving the quality of life for individuals with type 2 diabetes. This therapy helps patients develop acceptance and mindfulness skills, contributing to emotional well-being and overall life satisfaction (Hajati et al., 2023). In summarizing the findings, encouraging emotion control leads to the performance of actions toward achieving goals and reducing pain perception despite the challenges faced by patients. While achieving goals and happiness, this group of patients is freed from being stuck in a futile cycle of negative emotions such as anxiety and stress, thus improving their overall condition. Individuals with chronic pain who lack emotional control have been unsuccessful, and this failure exacerbates the problems. Emotion-focused therapy, with its novel approaches to emotional control and pain perception, enables individuals to effectively face difficulties and distress caused by this disease, leading to an improved and effective experience of pain perception in individuals with diabetes.

The results of the present study show that treatment increases emotional control and quality of life and reduces pain in type 2 patients. Limitations of the present research include the specific physical conditions and satisfaction of the sample in the study. The inability

to examine individuals without type 2 diabetes and compare two groups of individuals with and without the disease and the interdisciplinary nature of the research (psychological and medical) impose limitations on the generalizability of the findings and the cognitive understanding of the causal variables under investigation. It is suggested that healthcare professionals can incorporate these interventions into their treatment programs for individuals with type 1 diabetes. Collaboration with a treatment team, including a physician, nutrition specialist, and psychological counselor, can be effective in improving the quality of life for individuals with diabetes.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this study.

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