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Effectiveness of compassion-focused therapy in alexithymia, adaptive behavior, treatment adherence, and biological factors in patients with type 2 diabetes

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Abstract

Background and Objective: Diabetic patients experience a plethora of emotional problems in addition to physiological physical problems, which can affect the course of their disease. Therefore, the purpose of the present study was to investigate the effectiveness of compassion-focused therapy (CFT) in alexithymia, adaptive behavior, treatment adherence, and blood sugar of patients with type 2 diabetes.

Materials and Methods: In this study, a quasi-experimental design with pretest-posttest and control group was adopted. The study population included the patients with type 2 diabetes in Ahvaz, Iran, in 2020 referring to my center. The sample size (n=30) was selected using convenience sampling, and the participants were randomly and equally assigned to the experimental (CFT) and control groups. To collect study data, the Toronto Alexithymia Scale, Psychosocial Adjustment to Illness Scale, Treatment Adherence Questionnaire, and blood sugar test were used. The CFT group received eight sessions of intervention (each session lasting for 2 h). Multivariate analysis of covariance was used to analyze the data.

Results: The obtained results showed that CFT had a significant effect on alexithymia (F=9.27; P=0.006), adaptive behavior (F=6.75; P=0.016), and treatment adherence (F=15.26; P=0.001) of patients with type 2 diabetes in the posttest. There was no significant difference between the experimental and control groups in the blood sugar test (F=0.08; P=0.786).

Conclusion: Based on the obtained findings, it can be concluded that CFT is effective in increasing the level of adaptive behavior and treatment adherence.

Keywords: Adaptation, Alexithymia, Compassion, Treatment Adherence, Type 2 Diabetes

1. Introduction

In the 21st century, the elevated life expectancy, improved control and treatment of acute diseases, and development of health care, along with the adoption of inappropriate lifestyles, have contributed to the prevalence of chronic diseases around the world [1]. Chronic disease is an illness with indefinite persistence and duration causing complications, such as disability, suffering, lasting and progressive pain, and reduced quality of life [2]. Living with a chronic illness means distancing yourself from pre-illness life. In this context, diabetes is a type of chronic disease and diabetic patients, in addition to physiological-physical problems, endure a host of emotional disorders, including depression, stress, anxiety, and even aggression [3]. Moreover, diabetic patients suffer from psychological and social disorders due to some physical complications, such as cardiovascular, kidney, and eye diseases or even amputation [4]. Therefore, the recognition of psychological disorders in patients with diabetes and attempts to eliminate, mitigate, or treat them is of paramount importance due to the prevalence and relatively high costs of this disease [5].

The results of studies have shown that patients with type 2 diabetes experience negative emotions, such as fear, anger, and sadness. For this reason, due to the association between emotions and internal states of diabetes, emotional processing plays a crucial role in this process. Alexithymia, a special emotion processing disorder, describes the inability to recognize, identify, and describe emotions in these patients [7-6]. Diabetic patients with alexithymia tend to exaggerate normal physical and mental emotions, misinterpret the symptoms of emotional arousal in the body, display emotional distress with physical complaints, and even look for physical injuries during the treatment phase [8]. Alexithymia is associated with maladaptive coping, pathological behavior, and

physical and mental disorders [9].

In addition to the inability to express emotions, health recovery in chronic diseases, such as diabetes, can be achieved by adaptation to different dimensions of the disease (i.e., physical and mental). In general, adaptive behavior for such patients is defined as being able to foster one's ability to adapt to situations without the supervision and leadership of others. Adaptive behavior is associated with physical and mental development, promoting self-management and ultimately the quality of life in various dimensions of a patient's life, especially in diseases, such as diabetes [10]. Given the direct relationship between psychosocial adaptation and self-care behavior, this component represents a major behavioral variable in chronic diseases, such as diabetes [11]. One of the positive and desirable outcomes of adaptive behavior in chronic diseases, such as diabetes, is treatment adherence [12].

The incorporation of psychotherapy in medical diseases can reduce the need for costly medical services and improve the mental health of patients, which will subsequently boost their physical health. Therefore, the design and implementation of interventions based on useful and effective psychotherapeutic approaches are vital to medical and chronic diseases, such as type 2 diabetes [13]. One of the latest behavioral psychotherapies is compassion-focused therapy (CFT), developed by Paul Gilbert, which is aimed at improving mental well-being, adaptation, and quality of individuals' life [14]. Gilbert describes this approach as a multifaceted process with emotional, cognitive, and motivational elements, which underscores change and growth with gentleness and care [15]. Pinto-Gouveia et al. investigated the association between self-compassion and quality of life in chronic diseases, finding that these two variables are significantly related [16].

Mohamadzadeh et al. observed that educational interventions intended to control blood sugar and diet in prediabetic individuals and implement preventive measures to regulate blood pressure and weight which will induce relatively positive effects [17]. Afshar and Khorasani also reported that educational programs using the group discussion method were effective in improving the quality of life and controlling the metabolism of glycosylated hemoglobin in type 2 diabetic patients [18]. In general, considering the adverse consequences of diabetes and important role of psychological factors in its control, the main way to improve the quality of life in type 2 diabetic patients and control their diabetes is the proper and comprehensive training of mental and psychological issues [18].

The results of previous studies demonstrated the effectiveness of psychological interventions in controlling various physical illnesses. Therefore, given that the effectiveness of CFT intervention in variables, such as alexithymia, adaptive behavior, treatment adherence, and blood sugar, in type 2 diabetic patients has not been explored, the present study investigated the effectiveness of CFT in psychological dimensions and biological factors of blood sugar in type 2 diabetic patients. Therefore, the main goal of the current study was to examine the effectiveness of CFT in alexithymia, adaptive behavior, treatment adherence, and blood sugar in patients with type 2 diabetes.

2. Procedure

In the present study, a quasi-experimental design with pretest-posttest and control group was adopted. The study population consisted of type 2 diabetic patients in Ahvaz, Iran, in 2020 referring to my center. The study subjects were chosen using convenience sampling. Accordingly, the researchers referred to the hospitals and clinics specific to these patients, and 100 individuals who were willing to participate in the treatment process were selected. Then, according to the inclusion criteria, 30 participants were singled out and randomly divided into experimental (n=15) and control (n=15) groups. Both groups completed the questionnaires in the pretest and posttest stages. After collecting the data, two participants in the control group were excluded because their questionnaires were distorted. The experimental group underwent eight sessions of CFT (each session lasting for 2 h). The inclusion criteria were patients with type 2 diabetes, age range of 30-70 years, minimum of middle school education, interest and willingness to participate in the study, and history of type 2 diabetes for at least 6 months. The exclusion criteria included illiteracy, neuropsychiatric disorders, participation in other medical interventions, other types of diabetes, and reluctance to continue the study.

In compliance with ethical principles, prior to the group meetings, the participants signed an informed consent form for participation in the sessions. The participants were assured that their information would remain confidential and data analysis would be performed in groups. They were also informed that study results for each individual could be provided upon demand. The present study was approved by the Ethics Committee of Biomedical Research Center in Hormozgan University of Medical Sciences, Bandar Abbas, Iran (ethics code: ID IR.HUMS.REC.1399.105).

The main research instruments were the following self-report questionnaires:

Toronto Alexithymia Scale: The Alexithymia Scale was developed in 1994 by Taylor. This scale includes 20 items and three subscales, including difficulty in recognizing emotions (7 items), difficulty in describing emotions (5 items), and objective thinking (8 items) [19]. The scoring method is based on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The reliability of the Alexithymia Scale in the present study was assessed using Cronbach's alpha coefficient (0.71).

Psychosocial Adjustment to Illness Scale: The Psychosocial Adjustment Scale was developed by Leonard Derogatis in 1990 [38]. This scale includes 46 items and seven subscales of attitude toward illness (8 items), work environment (6 items), family environment (8 items), sexual relations (6 items), expansion of family ties (5 items), social environment (6 items), and psychological disorders (7 items). The items are scored based on a 4-point Likert scale from 0 (never) to 3 (absolutely). In the present study, given the conditions of participants in the treatment plan, who may or may not be employed or married, the two subscales of work environment and sexual relations were omitted. The reliability of the scale

was measured by the Cronbach's alpha coefficient without the two aforementioned subscales (0.82).

Treatment Adherence Questionnaire: The Treatment Adherence Questionnaire was designed and validated by Modanloo in 2013 for chronic patients [21]. This questionnaire comprises 40 items, including devotion to treatment (9 items), willingness to take part in treatment (7 items), adherence ability (7 items), coalescing treatment with life (5 items), sticking to treatment (4 items), commitment to treatment (5 items), and discretion in treatment (3 items). The answers are scored based on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). In the present study, the reliability of the Treatment Adherence Questionnaire was calculated using Cronbach's alpha coefficient (0.81).

Blood sugar test: The participants in the pretest were subjected to undergo routine laboratory tests, and in the posttest, owing to coronavirus disease 2019 (COVID-19) restrictions, the blood sugar was measured by a blood sugar meter (EasyGluco, South Korea) at the participant's home.

In the experimental group, the intervention was held twice a week (a total of eight sessions), with each session lasting for 2 h. In the first orientation session, the goals of the sessions were explained to the participants and the relationship between the therapist and patient was forged. The general axes covered in the experimental group are presented in Table 1. The general axes of CFT are adapted from Gilbert's book relative to the special conditions of the participants [22].

The data analysis was conducted using multivariate analysis of covariance (MANCOVA) and Chi-square test in SPSS software (version 24). The significance level was estimated at 0.05 in the present study. The assumptions underlying the analysis of covariance (ANCOVA), including the normality of score distribution, homogeneity of variance, and homogeneity of regression slopes, were tested. The Kolmogorov-Smirnov test was used to assess the normality of score distribution for the dependent variables.

Table 1. General axes of compassion-focused therapy sessions based on Gilbert's Therapy Plan

Session	Content
First	Getting to know and communicating with patients, describing therapy sessions, conceptualizing self-care education and compassion-focused therapy, exploring differences between how you treat yourself and those who love you, understanding self-compassion, and assigning tasks
Second	Reviewing assigned tasks, understanding the concept of mindfulness, impact of internal and external vexing factors, shame, self-criticism, relationship, and interaction with compassion elements, and assigning tasks
Third	Reviewing tasks, elaborating on how to empathize with others, providing instances and cases, teaching and learning, internalizing, understanding the three main elements of compassion, namely difficult and painful moments (mindfulness), suffering in life (common human principles), an being kind to yourself (kindness and compassion), and assigning tasks
Fourth	Reviewing tasks, explaining six characteristics of compassion, including sensitivity, well-being, empathy, sympathy, nonjudgment, and tolerance of chaos, defining a compassionate individual and his/her characteristics, such as wisdom, power, kindness, nonjudgment, and sense of responsibility, identifying the place of compassion within the self, learning to express feelings and worries, and assigning tasks
Fifth	Reviewing tasks, providing verbal compassion training (i.e., practical, cross-sectional, and continuous) to parents, children, friends, and colleagues, compassionate perception, compassionate attention, compassionate reasoning, and compassionate behavior, learning patience, teaching optimal adaptation and adjustment to the situation, kindness to oneself, and assigning tasks
Sixth	Reviewing tasks, learning how to write a letter of compassion, self-management, playing a compassionate role, analyzing and finding the tone of a compassionate voice, showing modesty and kindness to others, listening skills and proper compassionate listening, having compassion for others, managing difficult emotions (e.g., anger and rage), and assigning tasks
Seventh	Reviewing tasks, understanding change in personal, interpersonal, and transpersonal relationships, calming and soothing breathing, comforting, compassionate illustrating and coloring, wandering mind, working on the concept of fear and fear of self-compassion, desensitizing, giving, being compassionate in the bed, introducing compassionate or critical chair technique, and assigning tasks
Eighth	Reviewing task, summarizing, developing skills to do things and understand emotions in a compassionate way, reviewing exercises, understanding happiness and living delightfully, learning to maintain strategies and models of compassion and applying them in the treatment stages, generating compassionate behavioral ideas, doing something kind to yourself every day, learning, recording, and jotting down self-compassion, and showing acknowledgment and appreciation in the presence of patients

3. Results

The study sample consisted of 28 participants with mean age values of 52.27±10.77 (experimental group) and 51.23±8.89 (control group) years. Other demographic characteristics and results of the Chi-square test regarding the differences between the two groups are shown in Table 2.

According to the results of Table 2, there was a significant difference between the experimental and control groups in terms of marital status (P=0.705), gender (P=0.257), and educational level (P=0.052).

Table 3 shows the mean and standard deviation of the dependent variables in both groups in the pretest and posttest stages.

According to the results of Table 3, the mean scores of alexithymia and blood sugar of the participants in the CFT group were lower than those reported for the control group in the posttest. In addition, the mean scores of adaptive behavior and treatment adherence in the posttest were higher in the CFT group than those reported for the control group.

The results of MANCOVA revealed that a significant difference between the experimental and control groups (P=0.0006; F=5.11). For the comparison of the groups in terms of the dependent variables, the univariate ANCOVA in the MANCOVA context was used. The obtained results showed a significant difference between the CFT and controls group in terms of alexithymia (F=27.9; P=0.006), adaptive behavior (F=75.6; P=0.016), and treatment adherence (F=15.26; P=0.001). However, since the value of F for blood sugar (P=0.786) was not significant, the two groups did not demonstrate any significant difference.

4. Discussion:

The present study aimed to evaluate the effectiveness of CFT in alexithymia, adaptive behavior, treatment adherence, and blood sugar in patients with type 2 diabetes. The findings of the current study showed that CFT had a positive effect on alleviating alexithymia in patients with type 2 diabetes. This result is consistent with the findings of studies by Barghandan et al. [15], Shiralinia et al. [23], and Fares et al. [24]. The effect of CFT on alexithymia in type 2 diabetic patients, compared to the control group, could be explained through the fact that CFT, using the elements of compassion, such as compassionate reasoning, to find a valid reason(s) for each event, adopting a compassionate tone instead of aggression or anger, avoiding a wandering mind that causes rumination, and sensory compassionate experiences, help patients learn to practice anxiety tolerance and well-being motivation. Therefore, by controlling their mind, they channel alexithymia in the direction of empathy, sympathy, and

Table 2. Demographic characteristics of the participants and differences between two groups

Variable		Group	Frequency (n)	Frequency (%)	P-value
Marital status	Single	Experimental	1	6.7	0.705
		Control	1	7.7	
	Married	Experimental	14	93.3	
		Control	12	92.3	
Gender	Male	Experimental	7	46.7	0.257
		Control	6	46.2	
	Female	Experimental	8	53.3	
		Control	7	53.8	
Educational level	Middle school	Experimental	5	33.3	0.052
		Control	6	46.2	
	Diploma	Experimental	4	26.7	
		Control	6	46.2	
	Associate degree	Experimental	2	13.3	
		Control	0	0.0	
	Bachelor's degree	Experimental	4	26.7	
		Control	1	7.6	

Table 3. Mean and standard deviation of dependent variables

Dependent variable	Group	Pretest		Posttest	
		Mean	Standard deviation	Mean	Standard deviation
Alexithymia	Experimental	62.40	6.46	53.66	8.67
	Control	57.23	8.35	58.76	9.38
Adaptive behavior	Experimental	117.06	14.62	122.33	16.14
	Control	114.15	20.09	108.46	13.34
Treatment adherence	Experimental	147.60	13.80	159.86	9.83
	Control	154.38	11.99	150.76	14.50
Glycemic index	Experimental	207.13	74.29	179.93	54.74
	Control	178.08	65.45	162.85	55.53

sensitivity to suffering, which subsequently reduces the intensity and negative effects of the disease.

The results of the present study demonstrated that CFT fosters adaptive behavior in patients with type 2 diabetes. This finding is in line with the results reported by Samadzade et al. [11], Barghandan et al. [15], and Taher-Karami et al. [25]. Elaborating on the rationale behind compassion therapy, Barghandan et al. argued that this approach helps improve psychological flexibility and saves patients from entrapment in dysfunctional thoughts and behaviors. Adopting a compassionate attitude forges an emotional bond between an individual and others, leads to greater life satisfaction, and nurtures positive thinking [15].

Taher-Karami et al. stated that CFT, by changing attitudes and beliefs, leads to increased positivity, self-acceptance, and resilience to problems, which promotes the ability to adapt in these patients. Therefore, CFT education has been successful in the improvement the psychological dimension [25]. According to the biological pattern of adaptation to the disease, the life threat in chronic diseases creates stress so that this menace overshadows psychosocial dimensions, self-satisfaction, efficiency, and even emotional balance in individuals, which could only be treated by acceptance and attempt for adaptation [26].

In addition, the results of the present study suggested that CFT increases the treatment adherence in patients with type 2 diabetes, which is in line with the findings of other studies [27, 25, 28]. Taher-Karami et al. expounded on the effectiveness of CFT in their study, asserting that because this therapy urges patients to be kind to themselves in the first place and understand the reasons for their failure, and then resolves failure and inadequacy with compassionate arguments, it cultivates a need for love and self-care to gain internal control over the course of treatment [25].

Finally, the results of the present study showed that CFT did not have a significant effect on blood sugar control in patients with type 2 diabetes. This finding is not in line with the results reported by Oraki et al., Asaadi et al., and Mohamadzadeh Larijan et al. [5, 29, 17]. The ineffectiveness of this intervention in type 2 diabetic patients in the current study could be justified in light of major factors, such as the COVID-19 pandemic, unemployment of individuals who have lost their occupations due to the pandemic, staying at home, immobility, lack of motivation, cessation of balanced daily activities, interruption of sports and exercises, prohibited or restricted provision of foodstuff, limited access to drugs in medical interventions, fear, poor personal and interpersonal communication, frustration with wants and shortcomings, hearing bad news, inability to solve problems in crises, disruption and inefficiency of the analysis system, and its impact on the unbalanced secretion of hormones related to patients' blood glucose.

From another perspective, since diabetic patients were among high-risk groups in the COVID-19 pandemic due to their weak immune systems, an endocrinologist advised against referring them to a laboratory for blood sugar testing under quarantine conditions. Therefore, to complete the evaluation of intervention and run the posttest for data collection, the blood sugar was measured by a blood sugar meter at the patient's home. Since these devices are not as accurate as precise laboratory devices, the error margin can cast doubt on the effectiveness of the intervention.

The present study, similar to other studies, had a number of limitations. In the wake of the COVID- 19 pandemic, physical presence in classes was not possible. As a result, the rest of the intervention sessions were held online. In addition, the study population of the present study was limited to type 2 diabetic patients in Ahvaz which constrains the generalization of the results. Finally, a questionnaire for data collection was used in this study, which is likely to affect the authenticity of the data due to its self-report nature and ambiguity of some questions from the subjects' point of view. The main limitation of the current study, which was exerted out of concern for the COVID-19 pandemic, was the change in the blood sugar measuring method.

5. Conclusion

Overall, based on the obtained results of the present study, CFT is effective in reducing emotional distress and increasing the levels of adaptive behavior and treatment adherence. Accordingly, it is suggested to adopt the CFT approach in order to help improve the psychological dimensions and components of type 2 diabetic patients and other chronic diseases. It is also suggested to utilize this technique in hospitals, counseling centers, psychotherapy clinics, and group therapies in order to help patients in need of these approaches for treatment.

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