Comparison of the Effectiveness of Compassion-Focused Therapy and Attachment-Based Compassion Therapy on Blood Glucose Level and Medication Adherence in Diabetics

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Abstract

Background and Objective: Diabetes is one of the most rampant chronic diseases that is accompanied by numerous psychological problems. The present study aimed to compare the effectiveness of compassion-focused therapy (CFT) and attachment-based compassion therapy (ABCT) on blood glucose level and medication adherence in diabetic patients.

Materials and Methods: This quasi-experimental study was conducted based on a pretest and posttest design. At first, using the available voluntary sampling method, a number of 45 individuals were selected from 300 diabetic patients referred to Alborz Diabetes Association, Alborz, Iran. They were randomly divided into two experimental and one control groups. At the outset, in addition to the hemoglobin (Hb) A1c blood test, they completed a medication adherence questionnaire. Afterward, the first experimental group participated in eight two-h sessions of the compassionate therapy training course, and the second experimental group participated in 10 90-min sessions of the ABCT training course. All three groups received standard treatment for diabetic patients. At the end of the treatment, the HbA1c levels of blood in all three groups were re-evaluated, and again all patients completed the medication adherence questionnaire at the post-test stage. It should be mentioned that the collected data were analyzed using the analysis of covariance.

Results: Based on the results, CFT and ABCT could reduce blood glucose level (HbA1c) (F=5.13, P<0.008, Eta= 0.20) and increase medication adherence (F=2.82, P<0.035, Eta= 0.12) in both of the experimental groups.

Conclusions: The CFT and ABCT can be effective in improving medication adherence and blood glucose control (HbA1c) in diabetic patients. Therefore, it is suggested to provide such training together with other medical interventions as part of comprehensive therapy of diabetes.

Keywords: Blood glucose, Diabetes mellitus, Empathy, Medication adherence

Background

Diabetes is the most predominant metabolic disease that is characterized by high blood glucose, impaired carbohydrate, fat, and protein metabolism, and impairment in the secretion or function of insulin. The chronic nature of diabetes impacts the body, mind, and individual and social functions of patients [1]. Diabetes is a serious public health problem that reduces the quality of life of patients. It can lead to acute and chronic complications and is considered the main cause of debility and death in many countries. According to previous studies, diabetes has also a higher occurrence in Iran [2]. Diabetes mellitus is one of the prevalent chronic diseases that threaten the mental health of individuals [3].

The progressive increase of the incidence and prevalence of chronic diseases around the globe, higher rates of mortality, growing costs of taking care of these patients, and especially the vital role of psychological factors in the onset, persistence, and exacerbation of symptoms have led to a greater emphasis on psychological dimensions [4-6]. There are various types of psychological interventions that can significantly help to control blood glucose [7]. Various factors influence psychological problems, such as anxiety, depression, and low quality of life; one of these factors is the component of therapy adherence.

Therapy adherence is defined as the degree that one's behavior is in line with health or therapy

directives [8]. In type 2 diabetes, more than 95% of the therapy process is accomplished by the patient, and the therapy group has little control over the patient in the intervals between visits [9]. It has been reported in the performed studies that 23-93% of diabetics do not follow therapy guidelines while following therapy is one of the essential factors in controlling the disease. Accordingly, there is a high positive correlation between the rate of therapy adherence and maintenance of optimal blood glucose metabolism [10].

Nowadays, it is a common belief that a biopsychosocial approach is required to treat and control this disease in a way that any change in the lifestyle and adherence to therapy directives can reduce diabetes incidence and help the patients control it by 85% [11]. Therefore, the term comprehensive care is employed in its therapy in order to attract the required attention to the fact that diabetes treatment is more than the control of blood glucose and must include the influential psychosocial personality factors as well [12]. The reason is that those with poor mental health do not have enough motivation and emotional strength to manage their diabetes [13].

Non-adherence to the medication regimen in diabetic patients is associated with frequent hospitalizations, lack of reception of therapy resources, high medical costs, and frequent doctor visits. Mortality rates in patients who do not adhere to their medication are twice as high as that of other patients [14-18].

Compassion therapy is one of the third-wave psychotherapies used along with mindfulness during recent years. According to attachment style, this model describes the concept of psychoanalysis based on which the relationships of children with their parents influence their intrapersonal relationships and self-image [19]. Attachment-based compassion therapy (ABCT) is a compassionate protocol that is used in both the general population as well as medical and psychiatric situations. It is based on basic psychological structures that explain interpersonal relationships [20].

This intervention includes a compassion training program that focuses on strengthening the ability of patients to be cautious and affectionate with themselves, their experiences, and the experiences of the suffering of others [21]. This therapy aims to assess the effectiveness of this improvement protocol and self-compassion and also determine what enhancements in self-compassion are mediators of change of attachment styles. Based on the results of a study performed by Mayte Navarro-Gil et al., ABCT was significantly effective in the improvement of self-compassion [22].

However, no study has been performed about the effect of CFT and ABCT on the psychological treatment of diabetics.

Objectives

This study aimed to compare the effectiveness of CFT and ABCT on the blood glucose level following therapy in patients with diabetes. The present study tried to find out whether compassion-focused therapy (CFT) and ABCT influence blood glucose level and medication adherence in diabetics or not.

Materials and Methods

This quasi-experimental study was conducted based on a pretest and posttest design with two experimental and one control groups. The statistical population of this research included a total number of 300 individuals with diabetes referred to the Alborz Diabetes Association, Alborz, Iran. Regarding the sampling, at first, the researcher participated in the conferences of the Diabetes Association and delivered a speech about the goals and characteristics of the mentioned course and the inclusion criteria of this research project. Subsequently, the researcher collected the contact numbers of the volunteers.

Finally, 45 out of the 300 patients were invited to participate in the study through random assignment. The inclusion criteria in this study were 1) age range of 30-65 years, 2) minimum reading and writing ability, and 3) written confirmation of the disease by a qualified physician and based on the results of diagnostic tests. Moreover, the exclusion criteria were infliction with severe medical complications of diabetes and consumption of psychotropic medication or medication abuse.

The first experimental group received 10 two-h sessions of CFT while the second group received eight two-and-half-h sessions of ABCT. It must be noted that the control group did not receive any intervention during this period. All participants were randomly assigned to three groups with equal numbers and written informed consent was obtained from the participants. In addition, pretest assessments were performed on all the participants.

Medication adherence scale (MAS)

Morisky's medication adherence questionnaire includes seven two-point options (Yes (0), No (1)) and one five-point option ranging from never (0) to always (4). A score of six or higher on this scale shows optimal medication adherence [20]. This questionnaire was translated into Persian for the first time by Bakaian [21] and its validity and reliability were confirmed. Reliability of this

questionnaire was calculated at 0.89 by Cronbach's alpha coefficient.

Hemoglobin A1c Blood Test

The (Hemoglobin A1c) HbA1c is a protein that has been clinically recognized as the most important indicator of long-term blood control monitoring. This test measures the average blood glucose level for the preceding two to three months [22]. In fact, the effect of therapy and improvement in blood glucose control is manifested in HbA1c reduction [23]. This indicator is reported as a percentage and is interpretable based on the normal range which is specified by each laboratory.

First, a blood test was performed on the experimental groups; afterward, they were asked to complete a medication adherence questionnaire as well as a consent form for participation in this research. Subsequently, they underwent CFT and ABCT in group form during weekly sessions. The CFT included 10 sessions of self-compassion therapy based on the concepts of Gilbert (2010).

Attachment-based compassion therapy

This therapy includes eight two-and-half-hour sessions that include mindfulness and compassion training, such as receiving and offering love and compassion to friends, people who seem suspicious, strangers, and themselves. This program includes daily homework that lasts approximately 15-20 min. Moreover, it includes eight sessions as follows: 1) preparation of individuals for compassionate care with love, 2) discovery of the world of self-compassion, 3) development of a compassionate world, 4) comprehension of relationships with compassion, 5) development of one's own self (the importance of love towards themselves and others), 6) advanced compassion 1 (forgiveness), 7) advanced compassion 2 (adaptation of the form of attachment and examination of different relationships), and 8) beyond compassion: sobriety and serenity.

At the end of the intervention program, the HbA1c levels of blood in all three groups were re-evaluated, and all individuals completed a post-test medication adherence questionnaire. Analysis of covariance was used to analyze the data and to determine the effectiveness of CFT training and ABCT on medication adherence and control of blood glucose in diabetic patients.

The collected data were analyzed in SPSS software (version 22) using descriptive statistical methods, such as mean, standard deviation, and analysis of Covariance. Moreover, Levene's test was used to examine the assumption of variance equality of variables. In addition, the normality of distributing scores in the society was observed using the Skewness and Kurtosis tests.

Results

Based on the results, 10 (71%), 11 (73%), and 9 (60%) subjects in the first and second experimental, and control groups were female, respectively. It must be noted that each research group consisted of 15 participants. The mean, standard deviation, blood glucose levels, and medication adherence scores were calculated and the results are summarized in Table 1.

Based on Table 2, considering the intragroup factor, the calculated F value was significant for the effect of phases (i.e., pre-test, post-test, and follow-up) at a level smaller than 0.01 (Eta= 0.32, F=19.72, P<0.0001). As a result, there was a

Table 1. Mean and standard deviation of research variables

Group	Variable	Pretest		Posttest		Follow-up	
		M	SD	M	SD	M	SD
Compassion-focused therapy	Blood glucose level	7.9	1.3	7.2	1.2	7	1.2
	Medication adherence	3	1.6	2.07	1.5	2.1	1.4
Attachment-based compassion therapy	Blood glucose level	7.5	1.1	7.2	0.92	7.1	0.87
	Medication adherence	3.2	1.7	2.4	1.4	2.3	1.3
Control group	Blood glucose level	7.5	1.1	7.2	0.92	7.1	0.86
	Medication adherence	3.8	2.1	4.1	1.6	3.9	1.7

Table 2. Results of mixed analysis of variance with intragroup and intergroup factors regarding the blood glucose level variable

Variables	Factors	Sources of change	sum of squares	Degrees of freedom	Mean squares	F	Significance	Eta
Blood glucose level	Intragroup factors	Time phases	6.06	1.1	5.53	19.72	0.0001	0.32
		Interaction of phases*group	3.15	2.2	1.44	5.13	0.008	0.20
	Intergroup factor	Group	5.19	2	2.59	0.917	0.408	0.04
		Error	116.11	41	2.83			
Medication adherence variable	Intragroup factors	Time phases	8.45	1.2	6.88	6.45	0.01	0.136
		Interaction of phases*group	7.407	2.4	3.01	2.826	0.03	0.121
	Intergroup factor	Group	64.77	2	32.38	4.77	0.014	0.189
		Error	277.86	41	6.77			

Table 3. Summary of Bonferroni Post-Hoc test results

Phases/groups		Mean differences	Standard error	Sig.
Phases	Pretest-posttest	0.382*	0.096	0.001
	Pretest-follow up	0.503*	0.105	0.0001
	Pretest-follow up	0.122*	0.027	0.0001
Groups	Compassion-focused – attachment-based compassion therapy	0.107	0.361	0.99
	Compassion-focused – control	- 0.353	0.361	0.99
	Attachment-based compassion therapy – control	- 0.460	0.355	0.606
Phases	Pretest-posttest	0.576*	0.199	0.018
	Pretest-follow up	0.487*	0.208	0.043
	Pretest-follow up	0.089*	0.079	0.807
Groups	Compassion-focused – attachment-based compassion therapy	- 0.263	0.559	0.99
	Compassion-focused – control	- 1.59*	0.559	0.02
	Attachment-based compassion therapy – control	- 1.33	0.549	0.059

*P<0.05

significant difference between the mean scores of blood glucose levels of the three groups during the pretest, posttest, and follow-up stages. Moreover, regarding the intergroup factor, the calculated F value at the level of 0.05 was not significant (Eta=0.043, P>0.05, F=0.91). Therefore, there was no significant difference between the total mean blood glucose level in the experimental and control groups.

Given the intragroup factor, the calculated F value was significant for the effect of stages (i.e., pretest, posttest, and follow-up) at a level less than 0.01 (Eta=0.136, P<0.01, F=6.45). Therefore, there was a significant difference between the mean scores of medication adherence in the three groups during the

pretest, posttest, and follow-up stages. Besides, the calculated F value (0.05) was significant for the intergroup factor (Eta=0.189, P<0.05, F=4.77). As a result, there was a significant difference between the total mean value of medication adherence in the three experimental and control groups. The Bonferroni post-hoc test was performed to examine the difference between the means. The results are shown in Table 3.

Generally, it can be concluded that in the first experimental group, CFT was significantly effective in increasing medication adherence in diabetic patients, and this therapy has an enduring effect over the course of time (figures 1 and 2).
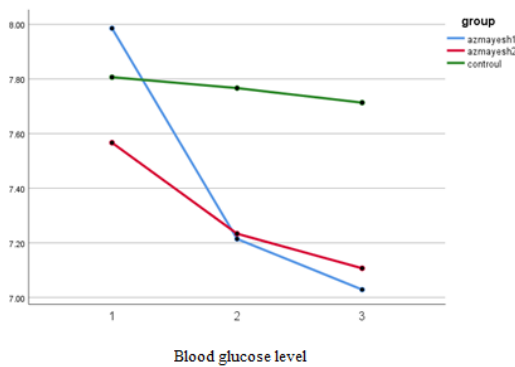

Figure 1. Adjusted means of blood glucose level in both experimental and control groups during the studied phases

Figure 2. Adjusted means of medication adherence scores in both experimental and control groups during the studied phases

Discussion

This study aimed to investigate the effectiveness of CFT and ABCT interventions on the control of blood glucose level (HbA1c) and medication adherence in diabetic patients. Based on the results, CFT and ABCT interventions had a significant effect on the improvement of blood glucose control and promotion of medication adherence in patients with diabetes.

It must be mentioned that no previous research had been performed about the effectiveness of these therapeutic interventions on the process of medication adherence and blood glucose control
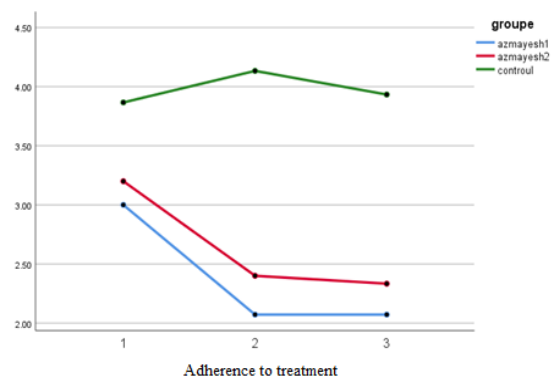
of diabetic patients. Nevertheless, it can be said that the findings of this study are somewhat in line with those of some previous studies carried out by Attari et al. [24] and Mehrabi et al. [25] on type 1 diabetic patients and Suruit et al. [26] and Dawazdah Emami et al. [27] on type 2 diabetic patients.

Since self-compassion helps many individuals to cope with their life problems, it should be noted that self-compassion does not reject negative emotions altogether. Through self-compassion we can create positive emotions in ourselves by accepting negative emotions and manipulating them

rather than substituting them with positive ones. Indeed, self-compassion is associated with higher mental powers needed for survival, such as happiness, optimism, alertness, curiosity, exploration, personal initiatives, and emotional awareness.

Self-compassionate people do not fear failure and are able to strive for success over and over again after each failure [28]. Bernice and Chen [29] found that self-compassion for previous personal weaknesses, failures, and moral problems cause individuals to have a higher motivation for change, try to learn more, and not repeat their past mistakes.

In the same way, self-compassion also increases the motivation regarding health and wellness issues, such as medication adherence and continuation of diet and nutrition regimen. Self-compassion is also associated with altruism, responsibility, and forgiving of others [30] which can help control the blood glucose level and increase medication adherence in diabetic patients [31]. Other studies have suggested that self-compassion is associated with attachment systems. Self-compassion leads to modification of interpersonal relationships and the resulting disorders which, in turn, leads to an increased level of acceptance and medication adherence in diabetic patients [32].

Self-compassion strategies and secure attachment used in this study included preparation of individuals for compassionate care, discovery and development of a compassionate world, adaptation of attachments and examination of relationships, calmness and serenity, absorbance of self-compassion from others, display self-compassion to others, and face its psychological consequences in a more logical way [33].

The subjects used their acquired skills to improve themselves and control their disease in an effective manner. Such a belief plays a significant role in the maintenance of one's mental health since being worried about high blood glucose and its consequences as well as a negative attitude towards therapy have harmful consequences. They can lead to a lot of mental energy consumption and in many cases can cause self-criticism, self-blame, frustration, a sense of failure, and mental rumination in the patient [34].

Furthermore, in this intervention, emotion regulation systems were managed; accordingly, the threat system activation was reduced, while the relief system activation was increased. For this purpose, negative emotions, including anxiety, anger, hatred, and behaviors, such as war-mongering and surrendering before this disease, were reduced and patients felt safe and healthy in their minds [35].

Conclusions

The CFT and ABCT can be effective in the improvement of medication adherence and blood glucose control (HbA1c) in diabetic patients. Therefore, it is suggested to provide such training together with other medical interventions as part of a comprehensive therapy of diabetes.

Conflicts of Interest
The authors declare that there was no conflict of interest in this study.

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