

Original Article

The effect of Lazarus multimodal therapy on depression, anxiety, and blood glucose control in women with type 2 diabetes

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Abstract

Introduction: Considering the interactions between depression and anxiety on the increase in blood glucose in diabetic patients and the need for intervention to improve these variables, the aim of this study was to investigate the effectiveness of Lazarus multimodal therapy on reducing the symptoms of depression, anxiety and glycemic control in women with type 2 diabetes.

Materials and Methods: In this study, which was performed on women with type 2 diabetes with depression, high anxiety and glycosylated hemoglobin (HbA1C) level more than 7%, 24 subjects who entered the study were selected by convenient method and they were randomly assigned into two groups of experimental and control (each group included 12 subjects). The experimental group was trained at Lazarus multimodal psychotherapy group workshop for three months (12 weekly ninety-minute sessions) in the spring and summer of 2016 at Samen Health Center- Mashhad. The control group was in the waiting list. Also, multivariate analysis of covariance analysis was used to analyze the data through SPSS software.

Results: The results of this study showed that Lazarus multidimodal therapy significantly ($P= 0.001$) reduced the symptoms of depression, anxiety and decreased blood glucose levels in women with type 2 diabetes compared to control group.

Conclusion: Generally, Lazarus multidimodal therapy can be an effective treatment to reduce the symptoms of anxiety, depression and physical symptoms of diabetic patients.

Keywords: Anxiety, Blood glucose, Depression, Lazarus multidimodal therapy, Type 2 diabetes

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Introduction

Diabetes involves a group of metabolic diseases which indicated by high levels of glucose due to varying degrees of body resistance to insulin or dysregulation of insulin secretion. Type 1 and type 2 diabetes are two main forms of the disease, and type 2 diabetes concludes approximately 85% to 90% of the cases (1).

The classic symptoms of the disease include excessive thirst, urinary frequency and excessive hunger. 90% of people with diabetes have type 2 diabetes and 10% have type 1 diabetes mellitus and gestational diabetes, respectively. glycosylated hemoglobin (HbA1C) test, is a very common blood test which is effective in screening diabetics and shows how well patients have been successful in controlling diabetes (2). The spread of the disease as one of the chronic diseases is due to the consequences of industrialization and changes in the lifestyle of people such as high-fat and high-calorie foods, obesity, low physical activity, high blood pressure and high cholesterol, and anxiety and depression (3).

Following Holmes and Rahe's work in 1967 and expressing stressful life events as one of the risk factors for diseases and providing a bio-psycho-social model by Engel, clinical experts and researchers consider to the role of psychosocial factors in the emergence, exacerbation, or control and prevention diseases more than ever (4).

Research evidences suggest a high frequency of stressful events among diabetic patients compared with other patients, and there is a high probability of developing various psychiatric problems, including depression and anxiety in these patients (5). Stress contributes to secretion of epinephrine and cortisol in the body, and ultimately leads to an increase in blood glucose levels. Stress also disrupts insulin use in peripheral circulation and affects on self-care activities negatively (6).

Researches have also been conducted on the level of mental health in diabetic patients, including the research of Sadeghi Movahed,

Molavi and Sharghi, which showed that 54% of people with diabetes are suspected of having mental disorders. Women are also more likely to be exposed to a variety of mental health problems, including depression and anxiety, due to physical and cultural issues, especially with physical illness such as diabetes (4).

It seems that there is a two-way relationship between physical illness and psychological trauma. The domain in psychology of health, called neuropsychological immunology, addresses how psychological factors change the immune system and ultimately increases the risk of disease. There are several cases that show how depression, helplessness, frustration, and stressful events of life can lead to disease with a change in immunity (7).

Goldman's group suggests psychological and psychotherapy interventions for depressive symptoms in these patients. Methods such as cognitive-behavioral therapy, relaxation training, stressless training, insightful psychotherapy, supportive treatment and symptomatic treatment, and neurological rehabilitation are among the methods that have been implemented in the area of the problems of these patients and none of which do not pay attention to all aspects of problems and symptoms (8). One of the psychotherapy techniques that take into account the dimensions of health definition is Lazarus multimodal therapy. This kind of therapy is successfully used in a wide range of disorders and problems (9). Lazarus believes that human personality can be described entirely through seven dimensions (behavior, emotion, sensory receptions, imaging, cognition, interpersonal relationships, and drug-biological). Although these dimensions are described in isolation, they are really interacting with each other, and any human experience can be conceived with respect to a dimension that is related to other dimensions, and if a change in one dimension occurs it affects on the other dimensions (10). Accordingly, in this method, seven dimensions are evaluated separately, but interacting with each other, and therapy has a vision about significant relationship with these dimensions

(9). Since multifocal treatment has had a very significant effect on cognitive-behavioral management, all disorders that can be treated with cognitive-behavioral therapy are also treated through multidisciplinary therapy (11).

On the other hand, as mentioned earlier, many of these patients are easily experience depression, hopeless, anxiety and stress so they cause discomfort for themselves and their relatives. In this situation, conscious living, acceptance of situation and dealing with anxiety and stress from the disease certainly have an effective role in reducing the short-term and long-term complications and proper control of diabetes. Therefore, it seems that the discussion regarding the attention and impact of the basic concepts of Lazarus therapy (behavior, emotion, feeling, mental imagery, cognition, interpersonal relations and medications) on diabetes and the reduction of stresses of a diabetic patient (reducing the amount of stress) is a fundamental necessity to improving the mental health of people with diabetes. The purpose of this study was to investigate the effectiveness of Lazarus multimodal therapy on reducing the symptoms of depression, anxiety and blood glucose control in women with type 2 diabetes.

Materials and Methods

In this study, sample selection conducted among women with type 2 diabetes, covered by the diabetes center of Samen Health Center in Mashhad -2014, who had active records and symptoms of depression, anxiety and glycosylated hemoglobin more than 7%. The sampling method was convenient method. In this way, out of the 48 people who expressed their willingness to participate in the research, 24 cases were selected and randomly assigned into two groups of experimental and control (each group: 12 cases). Four patients refused so they were excluded from the two groups. The experimental group with 10 cases started group therapy sessions and 12 ninety-minute sessions were held weekly in the spring and summer of 2014 at Samen Health Center. In order to observe the ethics of the control group, they were placed on the waiting list, and after that, a series of sessions were held for them. At the end

of the treatment, the anxiety and depression questionnaires and the level of blood glucose were taken from both groups in the post-test, and finally the information analysis was done.

The inclusion criteria were: diabetic women aged 20-40 years, high score in anxiety, depression and glycosylated hemoglobin above 7%, having minimum mediate school education, at least 6 months from the onset of group therapy, and informed consent to participate in research. Exclusion criteria included: severe psychiatric disorders such as psychosis, bipolar disorder, and personality disorders, co-opted companies in other therapeutic programs, and received individual counseling or medication.

Research instrument

A) Beck Depression Inventory (BDI-II): This questionnaire was developed by Beck in the 1960s and 1970s to assess and evaluate the absence of depression and its severity in adolescents and adults (12). This questionnaire has 21 questions, each question has four options (0,1,2,3). Subjects will answer questions by pulling a circle around the number that is more relevant to their feelings in that week. The symptoms of this test are separated into three groups of seven components, including emotional symptoms, motivational and cognitive symptoms, and physical and vegetative symptoms. Recently, in a study in Tehran University of Medical Sciences, on depress patients of Roozbeh Hospital, the validity and reliability for this test has been obtained as 0.70 and 0.77, respectively (13). This test has a correlation of 0.71 with the Hamilton Depression Scale and a one-week re-test validity of 0.93. The internal consistency of this questionnaire is 0.91 (12).

B) Beck Anxiety Inventory (BAI): This questionnaire is of great importance for evaluating the symptoms of anxiety in diagnosis and treatment. It is a self-report questionnaire which provided to measure the severity of anxiety in adolescents and adults. The method of rating the answers is completely (0), mild (1), moderate (2) and severe (3). Thus the range of the person's score can fluctuate from zero to 63. The studies have shown that it has high validity

and validity and its internal consistency coefficient is 92% and its validity is 0.75 with a one-week test interval and its correlation is between 0.30 and 0.76 (12).

C) *Glycosylated hemoglobin (HbA1c)*: It is a fraction of hemoglobin, which is formed slowly and through a non-enzymatic process of hemoglobin and glucose, and its level depends directly on the concentration of glucose in the blood. Thus, glycosylated hemoglobin provides a glucose history over the past 120 days. The normal range of glycosylated hemoglobin is 4 to 6% in healthy individuals, and the American Diabetes Association has identified the level lower than 7% for good control of diabetes (14). High levels of glycosylated hemoglobin indicate poor blood glucose control (15). Glycosylated hemoglobin should be measured approximately

every 3 months to monitor the status of diabetes management and diabetes control (16).

Data were analyzed by SPSS software using descriptive statistics (mean and standard deviation) and inferential statistics of multivariate analysis of variance (ANOVA).

Results

In terms of demographic characteristics, the age range of the subjects was between 20 to 40 years and they were all female. The level of education of the subjects was in two groups of mediate, diplomas and bachelors, among which the number of people with diploma education was higher. The mean and standard deviation of anxiety, depression and glycosylated hemoglobin are reported in Table 1.

Table 1. Descriptive data of anxiety, depression and glycosylated hemoglobin in pre-test and post-test

Variable	Group	Pre-test		Post-test	
		Mean	Standard deviation	Mean	Standard deviation
Anxiety	Experimental	25.17	2.40	6.10	0.94
	Control	26.38	3.06	24.16	2.84
Depression	Experimental	18.13	2.24	6.79	1.02
	Control	17.78	2.19	16.07	2.05
Glycosylated hemoglobin	Experimental	11.21	0.46	5.41	0.67
	Control	11.47	0.61	9.78	1.33

To evaluate the effectiveness of Lazarus multimodal group therapy on anxiety, depression and glycosylated hemoglobin in women with type 2 diabetes mellitus, multivariate covariance analysis was used. Before the implementation of

the multivariate analysis of covariance test, the homogeneity assumption of variables of variables was investigated using the box test and showed that the variances are homogeneous. The results of this test are reported in Table 2.

Table 2. Box test to assurance about homogeneous variables

Indexes	F	Degree of freedom 1	Degree of freedom 2	P
Values	62.13	23	271.144	0.243

Table 3. The results of covariance for efficacy of Lazarus multimodal group therapy on anxiety

Source of effect	Degree of freedom	F	P	Coefficient of effect	Statistical power
Pre-test	1	0.724	0.615	0.013	0.033
Group	1	41.04	0.001	0.716	0.723
Error	18				
Total	20				

As shown in Table 3, the results indicate that the anxiety of the experimental group was significantly lower than that of the control group.

The results of Table 4 indicate that the anxiety of the experimental group was significantly lower than that of the control group.

Table 4. The results of covariance for efficacy of Lazarus multimodal group therapy on depression

Source of effect	Degree of freedom	F	P	Coefficient of effect	Statistical power
Pre-test	1	0.273	0.513	0.012	0.041
Group	1	37.02	0.001	0.658	0.697
Error	18				
Total	20				

Table 5. The results of covariance for efficacy of Lazarus multimodal group therapy on glycosylated hemoglobin

Source of effect	Degree of freedom	F	P	Coefficient of effect	Statistical power
Pre-test	1	0.224	0.327	0.017	0.045
Group	1	19.09	0.001	0.774	0.748
Error	18				
Total	20				

In addition, the results of Table 5 indicate that glycosylated hemoglobin of the experimental group was significantly lower than that of the control group.

Discussion

The purpose of this study was to investigate the effectiveness of Lazarus multimodal therapy on decreasing symptoms of depression, anxiety and blood glucose control in women with type 2 diabetes. The results indicated that participation in Lazarus multimodal group sessions reduced the anxiety, depression and glycosylated hemoglobin levels in women with type 2 diabetes. Lazarus multimodal therapy, based on individual differences, the use of special treatment and psychological training helps people to reduce their anxiety. This finding is consistent with other similar studies.

Like the outcomes of Biabangard research (17), the efficacy of Lazarus multimodal therapy, emotionally-rational-Ellis, and placebo treatment

on the reduction of student anxiety in Tehran suggested more effectiveness for multimodal therapy and emotionally-rational rather than placebo in reducing test anxiety. The effect of these two methods was equal. The results of Khazraee Vijafar, Janbozorgi and Alipour (18) indicated the significant effect of Lazarus multimodal therapy on reducing stress and increasing health and its sub-scales (depression, anxiety, social dysfunction and physical symptoms) in veterans with osteomyelitis.

Boardway, Delamater, Tomakowsky and Gutai (19) studied the effectiveness of stress management training in adolescents with diabetes. The results of the study showed a significant decrease in the level of stress associated with diabetes in the experimental group. In another study, Deborah et al. (20) examined the effectiveness of multi-system treatment on stress associated with diabetes in adolescents with type 1 diabetes. The results of this study showed that psychotherapy decreases

diabetes-induced stress among adolescents with type 1 diabetes.

Lazarus multimodal therapy focuses on the seven dimensions of the personality, the processes of consciousness and increased alertness help people to overcome their depression. This finding is also consistent with many other studies. Among the results of Abazari's research (21) on the effectiveness of the Lazarus multimodal counseling method on decreasing depression in women in Tehran, this treatment significantly reduced the symptoms of depression in women. The results of Soltani's (22) research on the effectiveness of group training with a multimodal Lazarus approach to increasing marital satisfaction and reducing depression in women who member of Basij Organization of Sabazdasht in Robat Karim showed that this treatment significantly increased marital satisfaction and decreased depression. The results of Mehrani's (23) study on the effectiveness of Lazarus multimodal approach on emotional maturity among third-year female high school students in 2nd educational zone of Mallard indicated the significant effect of this therapy on the emotional maturity in female students.

Psychotherapy and especially Lazarus multimodal therapy with increased mental health and psychological training, affects the improvement of symptoms such as blood glucose. As mentioned in various researches, psychological treatment has a two-way effect on individual health and psychological factors have a key role in patients with type 2 diabetes. This finding is also consistent with similar research. Like the results of Palizgar, Bakhtiari and Esteghamati research (24) about comparing cognitive-behavioral therapy and psychological training on blood glucose control in patients with type 2 diabetes showed that there was a significant difference between two groups of cognitive-behavioral therapy and psychological

training with control in depression and HbA1c in post-test and there was no significant difference between cognitive-behavioral and psychological training.

Sartippoor, Attari, Amini and Haghghi (25) tested the effect of stress tolerance training on short-term control of glucose in type 1 diabetic patients. The results showed a significant improvement in coping with stressors in the under-training group compared with the control group and improving the blood glucose control status in type 1 diabetic patients. The results of Bahramkhani, Jan Bozorgi and Alipour research (26), on the effectiveness of Lazarus multimodal therapy on widespread disability in patients with multiple sclerosis, showed that multimodal therapy had a significant effect on EDSS score and function of intestinal-bladder and cerebral systems. Foroughi, Kermanshahi, Mohammadi and Rajab (27) studied the effect of Benson relaxation training on diabetes control in diabetic patients.

The results showed that Benson relaxation method was effective on diabetes control, but there was no significant difference in insulin consumption in the two groups.

The present study also encountered some limitations, including the lack of long-term evaluation as a follow-up, which limited the conclusion on the sustainability of treatment outcomes. There was also limited access to a wider sample that the researcher could not compare the effectiveness of this therapeutic approach with other interventions. Therefore, it is suggested that other researchers consider these issues in their future research.

Conclusion

The results of this study showed that Lazarus multimodal therapy significantly reduced anxiety, depression and glycosylated hemoglobin levels in women with type 2 diabetes.

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