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Power of Stress Management Skill Training on Levels of Depression, Anxiety and Stress in Patients Suffering from Type-2 Diabetes

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Abstract

Stress management skill training was always been known to be beneficial on depression, anxiety and stress. We applied the same in patients suffering from type-2 diabetes through quasi-experimental method following the pre and post test design method with a control group. Twenty diabetic patients (10 females, 10 males) were selected and randomly divide into two groups; test and control (n=12 each) Levels of depression, anxiety and stress were measured by using depression, anxiety and stress questionnaire (Dass-21) in the pre-test phases which was followed by the stress reduction skill training conducted in 10 different sessions only for the test group. At the end of re-interventions, levels of depression, anxiety and stress of patients were measured and the data were analyzed by using analysis of variance. Significant differences between levels of depression, anxiety and stress in two groups were found which was finally reduced in the test group by the stress management skill training. Conclusively, stress management skill could be an appropriate treatment method for improving mood disorders, in patients suffering from type-2 diabetes.

Introduction:

Universally diabetes is one of the main dilemmas in public health sector and its incidence and prevalence are still increasing dramatically in most countries (Vares *et al.*, 2010). The number of diabetic patients was estimated as 118 million in 1995, which reached to 220 million in 2010 and it could be predicted that this number may reach to 300 million by 2025 (Shahrjerdi *et al.*, 2010). The rate of prevalence of this disease in different parts of Iran is between 5 to 8% (Ellis *et al.*, 2005). As per ADA (2005) type-2 diabetes includes 90 to 95% of patients having diabetes and which can ultimately cause to kidney diseases, blindness, and non-traumatic amputation. The severe complications of such diseases can impose considerable stress on the patients. Several studies have reported that the incidence of depression among patients having type-2 diabetes is 25% more than those who suffer from other types of diabetes (Boardman & Alexander, 2011). Even 20 percent of type-2 diabetic patients of over 30 years of age, tolerate severe anxiety (NCCAM, 2009). As per O'Connor *et al.* (2009) and Brod *et al.* (2009) type-2 diabetic patients suffer much from high levels of generalized depression and anxiety.

Depression in such patients reduces their desire, motivation and confidence to perform self-care activities (Li *et al.*, 2008). In in-health clinical psychology, during the treatment of type-2 diabetic patients, psychological adjustment, strategies to cope with the disease and to adhere to the treatment program to improve it are main areas to concentrate (Tak-Ying *et al.*, 2003). In addition to the physical complications, stress caused by diabetes has some undesirable psychological complications which make difficult the proper treatment and control diabetes. Thus, identification of psychological problems of such patients, removing or reducing them and providing training to improve their quality of life, constitutes an important part of a comprehensive treatment of diabetes (Engum, 2007). Stress management training can be beneficial in reducing anxiety and depression and in increasing strategies to cope with stress and it can serve as a solution to better control the disease and to reduce and prevent physical, psychosocial and social problems and complications associated with diabetes (Martinez, 2005).

Stress management is a set of techniques and methods used to reduce the stress suffered by people or to increase their ability to cope with daily stress (Shapiro *et al.*, 2005).

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This method is known to be effective in many psychological disorders such as anxiety and depression, psychosomatic diseases and even in diseases such as cancer and multiple sclerosis (Sarafino, 2002).

Considering physical and psychological problems of patients with diabetes and existence of evidences regarding the effectiveness of stress management training on depression, anxiety and stress in patients with diabetes and other chronic diseases, in the present study we attempted to find out the answer of "Do the stress management skill effective in the treatment of depression, anxiety and stress in patients with diabetes?" in order to determine the effectiveness of stress management skill on depression, anxiety and stress in these patients.

Methodology:

Among all the diabetic patients who referred to Imam Khomeini hospital in Tehran during the year 2015, twenty diabetic patients (10 females: 10 males) were selected and randomly divided into two groups; test and control with 10 individual in each. In this study we included the patients being diagnosed with type-2 diabetes, at least one year ago including the other characteristics as; except diabetes not suffering from any other chronic diseases, in between the age group of 20 and 55 years old, having no history of neurological and psychiatric diseases or hospitalization, no drug abuse, educated at least up to school level. Further, participants were subjected to group therapy sessions. We excluded such diabetic patients who were absence over two sessions in the intervention sessions, reluctance to continue participation in intervention sessions.

Employed protocol: for this study, we used a quasi-experimental method with pre and post-test design with a control group. After determining the test and control groups, depression, anxiety, and stress related questionnaires (Dass-21) were served to the participants and scores were collected at pre-test phase. This study was conducted in the internal medicine ward of Imam Khomeini Hospital in Tehran, by two graduates of psychology familiar with intervention method following the basics of moral research standards, such as informed consent and keeping the secrets of participants. Questionnaires were filled out by the participants in three occasions, before the intervention (pre-test), after the intervention (post-test) and 2 months after the intervention (follow-up). Group treatments were administered in 8 sessions. Octoploid intervention sessions were conducted based on stress management skill protocol (Nyenwe *et al.*, 2011) and they were administered once in a week, continuous for two hours among the participants of the test group. Participants in the control group received no intervention. Table 1 represents a summary of executive guideline for mindfulness-based stress reduction program sessions.

Table1. Protocol of stress management skill training sessions

Sessions	Issue
1st	Introducing group members to each other, getting to know each other, introducing stress, stressors, stress responses and awareness of the physical effects of stress
2nd	Informing participants about the effects of stress and understanding the importance of this awareness and increasing awareness of physical responses related to stressors
3rd	Explaining relationship between thoughts, emotions and physical feelings and offering several examples in different situations
4th	Introducing and identification of common types of negative thoughts and cognitive distortions
5th	Challenging common negative thoughts and cognitive distortions and replacing irrational thoughts with rational thoughts
6th	Training, practicing and implementation of effective coping strategies
7th	Continuing training, practicing and implementation of effective coping strategies
8th	Training and discussion about anger management, decisiveness, time management and recording daily events
9th	Training benefiting from problem solving skills in the conflicts, discussing the skills of saying no, delegation of authority
10th	Training the importance and benefits of social protection and over-viewing the program

Research Tools:

The following questionnaires were used for data collection.

Demographic questionnaire: this questionnaire was used to collect demographic data, included the basic information like- age, marital status, education, socioeconomic status, educational background and working experience. In addition, questions regarding system by which the patient manages his/her diabetes, the amount of received insulin, alcohol consumption, and smoking were also included.

Structured clinical interview (SCID): we followed the Structured Clinical Interview (SCID) forwarded by First *et al.* (1997). It is a tool for diagnosis, based on the fourth edition of the diagnostic, and statistical manual of mental disorders. It has two main versions:

1. SCID-I evaluates major psychiatric disorders (the first axis in DSM-IV). This form was translated and adapted by Sharifi *et al.* (2005). The interview is applicable and reliable in the diagnosis of mental disorders. For example, Zanarini (2000) conducted a study to evaluate diagnostic validity of evaluators which reported more than 70% Kappa, for most of the diagnoses. As per Bakhtiari (2000), the clinical psychology experts and professors confirmed the utility of this tool. Test-retest reliability, with a one-week interval, was 0.95 (Katon, 2008).

2- SCID-II evaluates personality disorders (the second axis in II DSM-IV). Bakhtiari (2000) quoted work of Kabir Nejad *et al.* (2009) translated and adapted this form. It is a

semi-structured clinical interview which evaluates personality disorders and it was first of all adopted in the year 1997. The content adaptability was tested according to the opinions of experts and reliability was also confirmed by trial and error method. Acceptable reliability and adaptability were reported for this tool in various studies (Pradhan *et al.*, 2007). Content adaptability of translated version was approved by three psychology professors and its trial and error reliability, with one-week interval was 0.87 (Bakhtiari, 2000).

Depression, anxiety and stress questionnaire (DASS-21): this questionnaire was prepared by Lovibond & Lovibond (1995) to measure the depression, anxiety, and stress. Also, the results of confirmatory factors analysis have confirmed the existence of three factors; depression, anxiety, and stress. Trial and error reliability coefficients of the three subscales of the questionnaire, with an interval of two weeks, in a unit composed of 20 patients were reported between 0.71-0.81 percent. Also, its reliability and adaptability were studied on a number of subjects in the UK (Mehta & Wolfsdorf, 2010) and trial and error reliability for depression, anxiety, and stress, were reported to be 0.80, 0.76 and 0.77 respectively and Cronbach's alpha for depression, anxiety, and stress were 0.81 0.74 and 0.78 respectively.

Results:

In our study, 20 patients with type-2 diabetes (10 persons in control group and 10 persons in test group) in the age group of 32-49 years were included. The mean age of patients in the test group was 42 ± 5.32 years whereas of the control group was 40 ± 4.56 years.

Table2. The frequency and percentage of frequency of demographic characteristics

Variables	Group		Frq*	%
Marital status	Control	Married	9	91/7
		Single	1	8/3
	Test	Married	9	91/7
		Single	1	8/3
Level of Education	Control	Guidance school & high school education	3	25
		College education	7	75
	Test	Guidance school & high school education	4	33/3
		College education	6	66/7
Level of income	Control	Low	-	-
		Medium	6	50
		High	4	50
	Test	Low	-	-
Work status	Control	Homemakers or retired	4	33/3
		Working	6	66/7
	Test	Homemakers or retired	6	50
		Working	4	50

*Frequency; %-percent

Table 2 shows the frequency and the percentage of frequency of demographic characteristics of patients with diabetes in the two groups.

Table3. The mean and standard deviation of subject's depression, anxiety and stress scores

Components	Test group (N=12)			Control group (N=12)		
	Follow up	Post -test	Pre -test	Follow up	Post -test	Pre -test
Depression	17.33 $\pm$ 2.83	14.91 $\pm$ 1.92	0.91 $\pm$ 2.83	21.16 $\pm$ 1.58	21 $\pm$ 1.41	21.4 $\pm$ 1.08
Anxiety	12.33 $\pm$ 1.47	11.83 $\pm$ 1.40	0.08 $\pm$ 1.72	14.33 $\pm$ 1.30	14.41 $\pm$ 1.29	15.33 $\pm$ 1.37
Stress	23.58 $\pm$ 0.90	16.25 $\pm$ 1.71	0.33 $\pm$ 2.18	23.58 $\pm$ 0.90	23.91 $\pm$ 0.90	24.25 $\pm$ 0.62

In our study, the mean scores of depression, anxiety, stress in the test group after the intervention and follow-up have significantly changed in comparison to the measurement at the base line (pre-intervention phase); while the means of control group have not significantly changed while comparing the three phases (Table 3).

Table4. Summary results of analysis of covariance with repeated measures to determine effectiveness of mindfulness-based stress reduction therapy

	SS	df	MS	F-Ration	SL	ES
Depression	9.375	1	9.375	7.924	0.01	0.265
Anxiety	100.042	1	100.042	78.839	0.0001	0.782
Stress	47.227	1	47.227	17.362	0.0001	0.441

* Abbreviations: SS-sum of squares; df-degree of freedom, MS-Mean Square, SL-Significance level; ES- Eta-squared

Reviewing the results of M-box test, regarding the components of depression ($F = 2.702$, $P < 0.05$), anxiety ($F = 2.091$, $P < 0.05$), and stress ($F = 5.096$, $P < 0.05$) showed that observed covariance matrix of dependent variables is equal among different groups. Further by applying an analysis of covariance test with repeated measures, we examined the effectiveness of stress management skill training on depression, anxiety, and stress in patients with diabetes and the results are summarized in Table-4. The results of analysis of variance repeated measures indicated that mindfulness interventions had created a significant difference on components of depression, anxiety, and stress among two groups at three evaluation sessions.

Discussion :

Previous studies have reported that people with diabetes faces an extreme reduction in -and even lack of- freshness and vitality, terrible fatigue, depression, quick anger and tension and stress complications (Tanaka *et al.*, 2007). Since diabetes affects patients' perception and their satisfaction towards their own health and decreases their physical, mental and social well-being; thus it is essential to consider the importance of the psychological aspect of such patients. Our results revealed that stress management skill training through using group method

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reduce depression, anxiety, and stress in patients with diabetes. This result is consistent with previous studies which showed that such applied training can be an effective psychological-social intervention in the improvement of patients' mood disorders (Oliveira *et al.*, 2009). The results of a research conducted by Carlson & Speca (2011) showed that stress management skill training –while reduces stress- can significantly increase patients' mental clarity and their mental health. These researchers concluded that stress management skill training plays a major role in the recovery signs and bring positive results, following the participation of the subject in the treatment program (Kautzky-Willer & Handisurya, 2009).

Since people with diabetes struggle with the complications of the disease for a long time which imposes severe stress on them. Finally, the patients leads to the formation of dysfunctional coping responses, including social isolation and negative self-criticism.

Stress management skill training with group approach creates tranquility through relaxation exercises and by enhancing self-awareness and self-acceptance abilities in patients (Nomura *et al.*, 2000). Meeting similar people is a source of comfort and reassurance for patients which can urge them to learn coping techniques to overcome the problem and to solve it. When patients with high blood sugar communicate with each other and sympathize and discuss their problems and experiences; it will create a supportive environment to transfer knowledge and awareness (Peyrot *et al.*, 1999). In general, factors of group therapy such as: releasing of excitement, sense of acceptance, philanthropy, public approval, sympathy, simulation, imitation, insight, interaction, learning, reality testing, transfer, considering universal and many other factors would lead to improvement of coping ability to adapt, creating a sense of hope and better response to the treatment and as a result they will reduce the anxiety and will increase the quality of life (Weijman *et al.*, 2005). This study has special limitations. i.e., the small sample size. Although the number of subjects (participants) didn't decline along the study; but the small sample size is a limitation which prevents for obtaining an accurate estimation of the degree of effectiveness of any program. The second limitation was related to applying self-report measures. These tools have some inherent problems (such as measurement error, lack of introspection, etc.). The third limitation was a lack of control on underlying and personal factors. It is due to some underlying factors the participants have overestimated the effectiveness of the program. Another possibility was that people have overestimated the effectiveness of the program, due to some personal desires, optimism and such factors. It is thus suggested to conduct some pseudo treatment programs (placebo programs) on the controller in future programs to control the effect of expectations. Also, it is suggested to use larger samples to achieve the true degree

of effectiveness of the program. This study was conducted on patients in Imam Khomeini Hospital, located in Tehran. It is suggested that researchers conduct stress management skill training with group approach in similar patients in other hospitals in order to develop the findings of this study.

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