Comparing the Effectiveness of Emotional Regulation Training and Autogenic Training on Perceived Anxiety Control in Women with Type 2 Diabetes

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Abstract

Objective: Type 2 diabetes is conceptualized as a complex interaction of psycho-physiological factors and considering the factors against this chronic disease is necessary. Accordingly, the present study aimed to compare the effectiveness of emotional regulation training and autogenic training on the perceived anxiety control in women with type 2 diabetes.
Method: Using a quasi-experimental method with a pretest-posttest design, 33 women with type 2 diabetes were selected by purposive sampling from Tehran and randomly assigned to two experimental groups and one control group. Members of each experimental group received emotional regulation training and autogenic training in ten 90-minute sessions, separately. All respondents were asked to answer the demographic information and the Perceived Anxiety Control Questionnaire (ACQ) before and after interventions. To analyze data, MANOVA and Schefee post hoc test were used.
Result: The results of the analysis showed that both interventions were effective in increasing the perceived anxiety control ($p < 0.05$); however, the difference between the two groups was not significant ($p > 0.05$).
Conclusion: Explaining the effectiveness of the interventions, it can be said that both interventions were able to increase the perceived anxiety control through special techniques, hence using them along with medical treatments is recommended.

Keywords: Emotional Regulation Training, Autogenic training, perceived anxiety control, Type 2 diabetes.

Introduction

The prevalence of non-communicable diseases (NCDs) is the most important threat to human health today, and the burden of these diseases is increasing in countries with low and medium income (Maheshkumar, Venugopal, Poonguzhali, Mangaiarkarasi, Venkateswaran & Manavalan, 2020). Non-communicable diseases kill more than 35 million people annually, accounting for nearly two-thirds of all deaths worldwide (Fleischmann & De Leo, 2014); in this regard, diabetes mellitus is the fifth leading cause of death, accounting for approximately 4 million deaths worldwide (Cho, Colagiuri, Distiller, Dong, Dunning & Sinay, 2013). According to the World Health Organization, the number of people suffering from this disease will increase from 200 million in 2000 to 592 million in 2035, which will be most prevalent in developing countries, including the Middle East (Saydah, Gregg, Kahn & Ali, 2018).

Diabetes is one of the most common chronic diseases caused by abnormalities in the metabolism of carbohydrates, proteins, and fats and glucose intolerance or hyperglycemia are its main symptoms. A person with diabetes either does not produce or does not respond to insulin; as a result, it leads to high blood sugar in the patient which makes

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him/her more vulnerable to various forms of both short- and long-term complications (Care, 2013). Because type 2 diabetes is one of the psychiatric diseases, it directly results in some behaviors and psychological characteristics associated with stress and anxiety, which in long run increases the risk of progression and complications of the disease (Hills, Arena, Khunti, Yajnik & Misra, 2018). Hence, type 2 diabetes is conceptualized as a biomedical problem and a complex interaction of physiological and psychological factors (Ogden, 2011). In fact, the chronic nature of this disease affects the patient's body, mind, and personal-social functioning; therefore, new medical-behavioral advances have drawn the attention of health psychologists to the key role of non-biological factors in the progression of diabetes (Tamir, Wainstein, Raz, Shemer & Heymann, 2012). In this regard, research results indicate that depression and anxiety in chronic patients, especially diabetics, are accompanied by disabilities, susceptibility to other diseases (such as cardiovascular disease), reducing optimal self-care, and rising health care costs (AlBuhairan, Nasim, Al Otaibi, Shaheen, Al Jaser & Al Alwan, 2016; Agah Heris, Ramezani & Rafiemanzelat, 2018). In addition, it has been shown that anxiety coexists with diabetes and can have negative effects on disease control (Hendrieckx, Halliday, Russell-Green, & Speight, 2020). Anxiety is a complex combination of unpleasant emotions and cognitions that are more forward-looking. It has a cognitive-mental element, including worrying about a possible threat or danger in the future, mental engagement, and a feeling of inability to predict the threat, and is a physiological behavioral element that often creates a kind of chronic excessive stress and tension. Mild to moderate levels of anxiety contribute to an individual's performance, but if it is severe and chronic, it becomes incompatible (Feki, Turki, Zitoun, Sellami, Baati & Masmoudi, 2019). In addition, anxiety is a cognitive-emotional process in which a person feels unpredictability and uncontrollability over harmful or negative events and emotions, which is associated with physiological arousal, anxious nervousness, and uncertainty about one's ability to manage threats (Brown, White, Forsyth & Barlow, 2004).

Percieved anxiety control is the degree of perceived control over anxiety in the internal and external threatening events associated with anxiety (Brown et al., 2004). Gallagher, Gainey, and Brown (2014) believe that the perception of anxiety control is a mediating variable in a significant number of mental disorders, especially anxiety, psychosomatic, and quasi-physical disorders. Therefore, in the process of stress-related diseases, what is more important than stress itself and its severity is the degree of perception of control over internal and external stressful events, hence the difficulty in regulating emotion is a determining factor in predicting the degree of responses to worry and anxiety; thus, unregulated emotions can be the source of many different types of psychological problems and also affect the individual perception of control over stressful events (Roozbehani, Tarkhan, Alipour & Saffarina, 2020). Therefore, due to the direct relationship between psychological risk factors in the progression of type 2 diabetes, controlling these risk factors with psychological therapies can play the greatest role in preventing the progression or occurrence of its complications as well as meeting psychological needs; consequently, the basis of treatment of chronic diseases such as type 2 diabetes is both pharmacological and non-pharmacological therapies. In principle, non-pharmacological therapies include complementary psychological therapies to modulate psychological factors in these patients.

Among non-pharmacological treatments, especially for psychological problems, is Affect Regulation Training (ART). Researchers in psychopathology believe that emotional regulation problems may contribute to the severity of symptoms of psychological distress, such as anxiety and stress and emotional regulation skills can act as a mediator in coping with psychological distresses

(Kiamarsi, Abolghasemi, Taherifard & Alian, 2020). Thus, ART therapy techniques as a mediator factor can influence the physiological symptoms of emotional responsiveness (Aldao, Jazaieri, Goldin & Gross, 2014). In recent years, the role of emotional regulation interventions in various types of disorders has been considered in many studies and the results of some related research confirmed the role of emotional regulation in relation to increasing the perception of anxiety control (Najimi, Asgari & Agahheris, 2017), promoting resilience (Cisler, Olatunji, Feldner & Forsyth, 2010), reducing anxiety (Mazaheri, Mohammadi, Daghaghzadeh & Afshar, 2014) and depression reduction (Gili, Haghayegh, Sadeghifiroozabadi, Alizadehghavidel & Rezayijamalooyi, 2020).

On the other hand, relaxation is one of the intervention techniques that, with no exaggeration, is the core of anxiety and stress interventions and is used in the treatment of various chronic physical and psychological disorders (Schetter & Dolbier, 2011). Relaxation techniques disrupt the defective cycle of distress and normalize the physiological currents affected by the sympathetic nerves. It also leads to an increase in the response of the parasympathetic nervous system and an increase in a person's sense of self-efficacy and evokes relaxation responses. As a result, in addition to reducing emotional distress (Troy, 2012), they cause changes in body function such as modulating blood pressure and heart rate (Mazaheri et al., 2014), oxygen consumption, respiration rate, and also modulating other physiological parameters (Garnefski & Kraaij, 2006). One type of relaxation is autogenic training (AT) invented by the German psychiatrist Johannes Heinrich Schultz (Agee, Danoff-Burg & Grant, 2009; Seo, Hong, Choi, Kim, Brandt & Im, 2018), which is the oldest Western approach in facilitating self-management and enhancing improvement in the symptoms of diseases and psychophysiology illnesses (Santos, 2018). This technique involves a series of effective therapeutic exercises that use self-directed mental instructions

on slow heartbeat, regular breathing, warmth, and heaviness in the limbs, and finally, a cold forehead that can play an important role in promoting health by paying attention to the reciprocal links of body and mind (Beauchamp, Harvey & Beauchamp, 2012; Vessel & Russo, 2015).

Given the high prevalence and chronicity of type 2 diabetes and its many psychological consequences for patients, their families, and society, and the fact that in the control of this disease, mostly medical cares, have been paid so far and psychological therapeutic aspects have been neglected, and because previous research has not specifically focused on the perceived anxiety control in patients with type 2 diabetes, also, since each intervention has its own techniques for influencing the psychological mediators of chronic diseases, the aim of this study was to compare the effectiveness of emotional regulation training and autogenic relaxation on perceived anxiety control in women with type 2 diabetes.

Method

Participants and Procedure

This quasi-experimental study used a pretest-posttest design with the control group. Two experimental groups (emotional regulation training and autogenic relaxation) and a control group participated in this study and the effectiveness of the interventions on the dependent variable of perceived anxiety control was examined in three groups. The statistical population of this study consisted of all female patients with type 2 diabetes who had referred to diabetes control centers in Tehran in 2020. Using targeted purposive sampling from a group of patients diagnosed with type 2 diabetes by an endocrinologist and after obtaining permission from the Ethics Committee, they were invited to a semi-structured interview. Of them, 33 volunteers with the age range of 46-53 were selected based on inclusion and exclusion criteria and were randomly assigned to three groups (two experimental groups and one control group). The inclusion criteria were having type 2 diabetes, being female, having a high

school diploma, not being pregnant, not participating in other medical interventions at the same time, and signing an ethical consent to participate in the study. The exclusion criteria included having one of the autoimmune diseases, the presence of obvious mental disorders such as personality disorder, bipolar disorder, obsessive-compulsive disorder (based on clinical interview and criteria (DSM-5), debilitating diseases such as extreme fatigue or physical disability, taking certain medications, absence more than three intervention sessions, and non-compliance with group therapy rules.

the sessions, he/she is free to withdraw from the research. The researchers guaranteed the participants that all their personal details would not be disclosed to anyone else except to the researchers.

Instruments

Anxiety Control Questionnaire (ACQ): The perceived Anxiety Control Questionnaire was designed by Rapi, Crossk, Brown, and Barlow (1996) and consisted of 30 items that were validated based on DSM-IV criteria on the outpatients and non-clinical participants. Exploratory factor analysis has extracted three emotional control, threat control, and stress

Table 1 - Content of Emotional Regulation Training Sessions Based on Berking & Whitley (26)

Session	Content of training sessions
First	Introducing the mind-body relationships and the pattern of chronic physical diseases
Second	Mental training: The nature of functions of emotion or excitement
Third	First and second skills: muscle relaxation training along with breathing regulation
Fourth	Mental training: The importance of practicing emotional regulation
Fifth	skill 3: teaching awareness without judgment
Sixth	skill 4: Teaching to accept and tolerate emotions
Seventh	Skill 5: Teaching Compassionate Self-Support (With Compassion)
Eighth	Skill 6: Teaching Emotion Analysis
Ninth	Skill 7: Teaching to adjust and correct emotions
Tenth	More exercises of coping emotional states

Ethical statement

Informed consent forms were given to the participants and all necessary information, including the aims, confidentiality, and nondisclosure of participants' information, were provided to them. It has been explained that if a participant is not willing to attend

control factors. The items in this questionnaire are scored on a 6-point Likert scale from zero (strongly disagree) to 5 (strongly agree), with higher scores indicating a greater degree of perceived anxiety control. This questionnaire has internal validity and acceptable test-retest reliability. Rapi et al. (1996)

also reported Cronbach's alpha coefficient of 0.87 to 0.89 for this questionnaire. In Zeb and Moore's (1999) research, the test-retest reliability of this scale has been reported r = 0.88 and r = 0.82, respectively, after one week and one-month interval. Najimi et al. (2017) in a study done in Iran on 45 participants with cardiovascular disease reported an initial Cronbach's alpha of 0.623 with a mean of 87.81 and a standard deviation of 13.41 and reported the desirable validity and reliability for this questionnaire.

Sadigh's "Autogenic" book for group performance, which is accomplished based on a 10-week program (90 minutes per session). The content of the sessions is shown in Table 2.

Data analysis

Frequency, percentage, mean, standard deviation, and minimum and maximum values were used to analyze the collected data at the descriptive statistic part. Also, at the inferential statistic, the necessary assumption tests were used for univariate analysis

Table 2 - Content of autogenic relaxation sessions based on Sadigh's Autogenic book (2004)

Session	Content of training sessions
First	Introducing the mind-body link and the logic of autogenic relaxation
Second	Basic exercises, general instructions
Third	Practicing the first standard exercise: weight
Fourth	Practicing the second standard exercise: heat
Fifth	Practicing the third standard exercise: the heart
Sixth	Practicing the fourth standard exercise: Breathing
Seventh	Practicing the fifth standard exercise: Abdominal Heat
Eighth	Practicing the sixth standard exercise: Cooling the forehead
Ninth	Teaching advanced autogenic stress relaxation
Tenth	Autogenic meditation training

Content of emotional regulation training sessions:
The Emotional Regulation Intervention Protocol Based on the Affect Regulation Training (ART) by Berking and Whitley (2014) is a 10-session program that is held weekly for 90 minutes. The content of the sessions is presented in Table 1.

Content of autogenic relaxation sessions:
The protocol of autogenic relaxation intervention was designed by Agahi Herris, Mirza Mohammad Alaeni, and Mohammadi (In Press) based on

of variance (ANOVA) and comparison (pairwise comparison of the means of subscales), and the Scheffe post hoc test was used to ensure the equality assumption of groups. SPSS version 26 was used to analyze data.

Results

Demographic information showed that a total of 33 subjects in three groups with a mean age of 48.1±85.78 (48 years, 9 months, and 3 days)

participated in this study, with the age range of 46 to 53 years. Descriptive characteristics of the duration of type 2 diabetes in the subjects were 33 months and 2 days with a standard deviation of 18 months and 8 days, with a duration range of 10 to 96 months. Also, out of a total of 33 subjects in three groups, 51.5% had a diploma, 6.1% had a master's degree, 24.2% had a bachelor's degree, and 18.2% had a master's degree or higher. In terms of employment status, 45.5% were employees, 6.1% were teachers, 21.2% were hairdressers, and the rest were housewives (27.3%).

the dependent variable of the study, perceived anxiety control, and its subscales in three groups. As can be seen in Table 3, the mean scores of perceived anxiety control and its three subscales (stress control, emotion control, and threat control) increased in the post-test compared to the pre-test in the experimental groups, but in the control group, these values not only did not change but also somehow decreased slightly. Analysis of variance was also used to evaluate the significance of these changes. Before performing the analysis, its assumptions were tested. Based on

Table 3 - Descriptive characteristics of perceived anxiety control and its subscales by groups

Variable	Group	Pre-test		Post test		Mean difference	
		M	SD	M	SD	M	SD
Stress control	Emotional regulation	54/10	009/4	18/16	15/3	63/5-	11/2
	Autogenic relaxation	18/8	45/3	81/15	13/2	63/7-	05/4
	Control	18/11	09/5	27/10	38/5	91/0	83/0
Emotion control	Emotional regulation	63/10	07/6	26/20	07/3	72/9-	85/4
	Autogenic relaxation	09/14	73/2	63/20	23/3	54/6-	46/2
	Control	63/13	33/5	45/12	75/5	18/1	4/1
Threat control	Emotional regulation	9/15	65/4	36/20	95/3	45/4-	91/1
	Autogenic relaxation	72/14	44/5	81/21	56/2	09/7-	91/4
	Control	8/14	57/3	27/13	79/3	54/1	36/1
Perceived anxiety control	Emotional regulation	09/37	81/10	91/56	42/9	81/19-	86/5
	Autogenic relaxation	37	04/9	57/58	4/6	27/21-	62/9
	Control	63/39	91/11	36	21/13	63/3	29/2

Table 3 presents the descriptive characteristics of perceived anxiety control scores and their three subscales in both pre-test and post-test stages and mean differences in the three groups of emotional regulation, autogenic relaxation, and control groups. Table 3 demonstrates descriptive characteristics of

the obtained results, the homogeneity assumption of variances as well as the normality of data distribution were examined and confirmed by using Levin and Kolmograph-Smirnov tests, respectively

(p> 0.05). Thus, Levin test for stress control (P =

0.061, F = 7.73), for emotion control (P = 0.056, P = 0.9.42), for threat control (P = 0.052, F = 3.97), and the total score of perceived anxiety control (P = 0.051, F = 4.434) was obtained. Examining the required assumptions, the results of the analysis of variance are shown in Table 4.

in two stages of pre-test and post-test. As shown in the Table, the results of the Pilaie test show significant changes in the collective effect of the scores of the three subscales of perceived anxiety control in both pre-test and post-test in the three groups (emotional regulation, autogenic relaxation, and control groups)

Table 4: Results of Pilaei, Wilkes Lambda and Hoteling tests in MANOVA

	Test	Value	F	df1	df2	Sig. level	Effect size
Group membership	Pilaei - Bartlett	064/1	982/10	6	58	0001/0	532/0
	Wilkes Lambda	162/0	876/13	6	56	0001/0	598/0
	Hoteling tests	79/3	054/17	6	54	0001/0	655/0
	The biggest roy root	377/3	645/32	3	29	0001/0	772/0

Table 5 - ANOVA test results for comparatively differences in meanscores of perceived anxiety control subscales

Resource	Index of Resource change	SS	df	MS	F	Sig. level	Effect size
Group membership	Mean difference in stress control	51/439	2	758/219	522/30	0001/0	67/0
	Mean difference in emotion control	424/692	2	212/346	812/32	0001/0	68/0
	Mean difference of threat control	97/430	2	485/215	813/21	0001/0	59/0
	Mean difference in perceived anxiety control	87/4299	2	939/2149	775/48	0001/0	76/0

Table 4 presents the results of multivariate analysis (MANOVA) of the collective effect of the difference between the mean scores of the three subscales of perceived anxiety control in the three emotional regulation, autogenic relaxation, and control groups

(P <0.05), with the effect size of 53.2%.

Table 5 shows the results of the univariate analysis to examine the difference between the mean scores of perceived anxiety control in both pre-test and post-test stages separately in three groups. As shown in

the Table, the results of ANOVA show a significant difference in the perceived anxiety control and all three subscales in two pre-test and post-test stages for the groups of emotional regulation, autogenic relaxation, and control groups (p<0.05). The effect size of these changes is 76% for perceived anxiety control, 67% for stress control, 68.6% for emotion control, and 59.3% for threat control.

three subscales in emotional regulation and autogenic relaxation groups is significant with the control group (p<0.05); however, there is no significant difference between emotional regulation and autogenic relaxation groups (p>0.05). Additionally, in the emotional regulation and autogenic relaxation groups, the scores of perceived anxiety control and all three subscales of stress control, emotion control, and threat control were

Table 6 - Scheffe test for pairwise comparison of the difference between the mean scores of perceived anxiety control and its subscales

Variable	Group I	Group J	Mean difference (I-J)	SD	Sig. level
Stress control	Emotion regulation	Autogenic relaxation	2	144/1	233/0
		Control	545/6-*	144/1	0001/0
	Autogenic relaxation	Emotion regulation	2-	144/1	233/0
		Control	545/8-*	144/1	0001/0
Emotion control	Emotion regulation	Autogenic relaxation	181/3-	385/1	088/0
		Control	91/10-*	385/1	0001/0
	Autogenic relaxation	Emotion regulation	181/3	385/1	088/0
		Control	72/7-*	385/1	0001/0
Threat control	Emotion regulation	Autogenic relaxation	63/2	34/1	162/0
		Control	6-*	34/1	0001/0
	Autogenic relaxation	Emotion regulation	63/2-	34/1	162/0
		Control	63/8-*	34/1	0001/0
Perceieved anxiety control	Emotion regulation	Autogenic relaxation	45/1	83/2	877/0
		Control	45/23-*	83/2	0001/0
	Autogenic relaxation	Emotion regulation	45/1-	83/2	877/0
		Control	91/24-*	83/2	0001/0

05/0>*P

Table 6 presents the results of the Scheffe post hoc test for pairwise comparison of the difference between the mean scores of perceived anxiety control and its subscales in pre-test and post-test stages in the three research groups. It is shown that the difference between the perceived anxiety control scores and all

significantly increased compared to the control group, but this increase in the two experimental groups was not significant.

Discussion and Conclusion
The aim of this study was to compare the effectiveness

of emotional regulation training and autogenic relaxation training on the perceived anxiety control in women with type 2 diabetes. Findings showed that emotional regulation training based on Breking and Whitley protocol (2014) and autogenic relaxation intervention designed by Sadigh and Montero (2001) were effective in that both interventions have improved the perceived anxiety control in respondents. In this regard, the descriptive results of Table 2 indicate that the scores of perceived anxiety control and subscales of stress control, emotion control, and threat control of the experimental groups in the post-test compared to the pre-test have changed and both intervention groups (emotional regulation and autogenic relaxation) are associated with an increase in these indicators. Also, a pairwise comparison with Scheffe post hoc test indicates that the differences in perceived anxiety control scores and all three subscales (stress control, emotion control, and threat control) are significant in emotional regulation and autogenic relaxation group with the control group, but these changes are not significant between the emotional regulation group and the autogenic relaxation group. Therefore, the two interventions, i.e. emotional regulation and autogenic relaxation, are not significantly different in improving the perception of anxiety control in women with type 2 diabetes and have the same effectiveness. This finding is consistent with similar studies in terms of the significant effect of each intervention in increasing perceived anxiety control with an acceptable effect size. No study has been done on the effectiveness of emotion regulation training on the perceived anxiety control in women with type 2 diabetes directly. The finding of this study is indirectly consistent with the results of previous studies done in different contexts and populations. For example, the effectiveness of the emotional regulation intervention on increasing the perceived anxiety control and modulating cardiovascular responses in women with coronary heart disease (Najimi et al., 2017), modulating emotion control in patients with coronary heart disease (Jentsch & Wolf, 2020), reducing anxiety disorders and promoting women's

physical and mental health (Otto, Misra, Prasad & McRae, 2014), and increasing positive emotions, reducing negative emotions, and thus increasing the feeling of happiness in individuals (Yazdi, Saffarnia & Zare, 2020) have been examined. Emotions play an important role in various aspects of life, such as adapting to life changes and stressful events. Due to the chronic nature of diabetes and intermittent periods of fluctuations in serum blood sugar levels, these patients are exposed to emotional distress (Jentsch & Wolf, 2020). Therefore, experiencing negative emotions is very common in patients with diabetes, in that patients are quite susceptible to experience emotions such as anxiety, stress, fear, and depression (Tamir et al., 2012). Thus, emotion regulation skills are an important and determining factor in psychological well-being and recognition of personality traits that play a key role in adapting to stressful life events, especially for people with chronic diseases. Accordingly, ART techniques represent the range of processes through which individuals can change the nature, fluctuations, and duration of emotions (Hasanzadeh, 2017), and specifically explains how people experience, adjust, and organize emotions, and how this type of management affects health (Martini & Busseri, 2010). Levy Gigi and Shamay-Tsoory (2017) and Foolad Chang and Hassania (2015) in their research showed that the use of emotional regulation techniques leads to an increase in positive emotions, a decrease in negative emotions, and thus an increase in people's happiness. Explaining this finding, it can be said that emotional regulation training - by trying to influence the type, time, and manner of experience and expression, changing the duration or intensity of behavioral, experimental, or physical processes of emotions and feelings automatically, training controlled, conscious, or unconscious throughs, and applying techniques and skills such as the nature of emotion functions, acceptance, and tolerance of emotions, emotion analysis, emotion modification, and coping exercises to the subject - helps patients identify their emotions more accurately, be aware of the existence

of negative emotions and their negative effects on themselves, and attempt to keep their emotional life healthy by evaluating emotions in different situations, as well as reducing their negative emotions by using emotions correctly through accepting and expressing them, especially positive emotions in life situations. In addition, emotional regulation teaches people to evaluate stressful situations from a different perspective, change the intensity of their emotional reactions, manage emotions well, help elevate positive emotions, and play an effective role in emotion regulation. Therefore, it can be concluded that emotional regulation intervention, by promoting emotion regulation skill, plays an effective role in controlling and inhibiting impulse in subjects, improves self-perception, and increases self-efficacy beliefs, and as a result, increases the person's sense of competence and adequacy, and thus improves the individual's perceived anxiety control.

One of the complementary medicine treatments is relaxation, which is a low-cost non-pharmacological intervention and at the same time provides the most experimental support for the treatment of emotional disorders. For example, Najimi et al. (2017) in their study found that autogenic training can be used as a complementary intervention to reduce psychological distress, modulate emotion control, and increase the perceived anxiety control in cardiovascular patients. Also, the results of Geranmayeh, Bikdeloo, Azizi, and Mehran (2019) showed that relaxation reduces anxiety and modulates blood sugar in patients with type 1 diabetes. Soheili, Nazari, Shaygannejad, and Valiani (2017) also showed in their research that the implementation of relaxation techniques is effective in reducing anxiety, stress, and depression in patients with MS. The results of these studies confirm the findings of the present study. So in explaining the effectiveness of mechanisms of autogenic training, it can be pointed out that, since any experience of anxiety is directly related to physical symptoms, and on the other hand, autogenic training (relaxation) in turn, through teaching standard exercises (Seo et al., 2018)

creates adverse emotional arousal effects, training, and application of standard exercises in the form of autogenic training, causes a balance between the posterior and anterior hypothalamus and, by reducing the stimulation of the sympathetic system (as opposed to increasing parasympathetic activity) and reducing heart rate, increasing peripheral blood flow, and creating nerve stability, prevents the adverse effects of anxiety and stress, which in turn has the opposite physical effect with the emotional arousal effects and relaxation (Seo, et al., 2018).

This training is designed to enhance the body's self-regulatory mechanisms to cope with the effects of stress and anxiety. This training includes exercises that focus primarily on weight and warmth in the extremities. This highly advanced relaxation strategy is based on a strong psychophysiological theory of stress reduction and self-regulation. Schultz and Luthe (1969) emphasized that the goal of autogenic training is to change the state from anxiety to autogenic, which facilitates and activates regenerative and self-normalizing brain mechanisms. Thus, the performed intervention, by creating an autogenic state, can be effective in reducing the anxiety of patients in the experimental group, thus reducing the negative emotions associated with anxiety, and through this, the patients feel more efficient in the perception of anxiety control.

One of the limitations of the present study is that this research is cross-sectional and the data are limited to a specific time period, and therefore, caution should be considered in generalizing the findings. Also, the geographical limitation of this study to the city of Tehran makes it difficult to generalize the results to other regions. The sample of the present study included female patients aged 46-53 years with type 2 diabetes mellitus, which makes it difficult to generalize the results to other age groups, or other chronic patients. Therefore, it is suggested that similar studies be performed comparatively on different patient groups using longitudinal studies. Also, by examining other psychological and social variables, the pattern of

psychological reactions around chronic patients should be expanded. In addition, it is suggested that in all diabetes control centers, multifaceted bio-psychological approaches such as medication and complementary medicine (such as emotional regulation training and autogenic relaxation) be used to make the treatment more effective. Finally, it should be pointed out that the researchers and authors of this article have had an equal share in compiling it.

Acknowledgments

Refrences:

Agah Heris, M., Ramezani, N., & Rafiemanzelat, I. (2018). Comparison Personality Traits and Perceived Anxiety Control among Individuals with and without Psoriasis. *Journal of Research in Psychological Health*, *12*(3), 49-62.

AgahHeris, M., Mirzaalaenee, E., & Mohamadi, S. (In Press). Autogenic Training a Mind-Body Approach to the Treatment of Fibromyalgia and Chronic Pain Syndrome. Arjmand.

Agee, J. D., Danoff-Burg, S., & Grant, C. A. (2009). Comparing brief stress management courses in a community sample: Mindfulness skills and progressive muscle relaxation. *Explore*, *5*(2), 104-109.

AlBuhairan, F., Nasim, M., Al Otaibi, A., Shaheen, N. A., Al Jaser, S., & Al Alwan, I. (2016). Health related quality of life and family impact of type 1 diabetes among adolescents in Saudi Arabia. *Diabetes research and clinical practice*, *114*, 173-179.

Aldao, A., Jazaieri, H., Goldin, P. R., & Gross, J. J. (2014). Adaptive and maladaptive emotion regulation strategies: Interactive effects during CBT for social anxiety disorder. *Journal of anxiety disorders*, *28*(4), 382-389.

Berking, M., & Schwarz, J. (2014). Affect regulation training. *Handbook of emotion regulation*, *2*, 529-547.

Brown, T. A., White, K. S., Forsyth, J. P., & Barlow, D. H. (2004). The structure of perceived emotional control: Psychometric properties of a revised Anxiety Control Questionnaire. *Behavior Therapy*, *35*(1), 75-99.

Care, D. (2013). Economic costs of diabetes in the US in 2012.

Cho, N. H., Colagiuri, S., Distiller, L., Dong, B., Dunning, T., & Sinay, I. (2013). International Diabetes Federation: Global guideline for managing older people with type 2 diabetes. *Brussels, Belgium: International Diabetes Federation*.

Cisler, J. M., Olatunji, B. O., Feldner, M. T., & Forsyth, J. P. (2010). Emotion regulation and the anxiety disorders: An integrative review. *Journal of psychopathology and behavioral assessment*, *32*(1), 68-82.

Feki, I., Turki, M., Zitoun, I., Sellami, R., Baati, I., & Masmoudi, J. (2019). Depression and coping strategies in the elderly with type 2 diabetes. *L'Encephale*, *45*(4), 320-326.

Fleischmann, A., & De Leo, D. (2014). The World Health Organization's report on suicide: a fundamental step in worldwide suicide prevention.

Foolad Chang, M. & Hassannia, S. (2015). The effectiveness of emotion regulation training on happiness and self-efficacy of female-headed households. *Journal of Women and Society*. 6 (1). 103 - 120)

Gallagher, M. W., Naragon-Gainey, K., & Brown, T. A. (2014). Perceived control is a transdiagnostic predictor of cognitive–behavior therapy outcome for anxiety disorders. *Cognitive therapy and research*, *38*(1), 10-22.

Garnefski, N., & Kraaij, V. (2006). Relationships between cognitive emotion regulation strategies and depressive symptoms: A comparative study of five specific samples. *Personality and Individual differences*, *40*(8), 1659-1669.

Geranmayeh, M., Bikdeloo, S., Azizi, F., & Mehran, A. (2019). Effect of relaxation exercise on fasting blood glucose and blood pressure in gestational diabetes. *British Journal of Midwifery*, *27*(9), 572-577.

Gili, S., Haghayegh, S. A., Sadeghifiroozabadi, V., Alizadehghavidel, A., & Rezayijamalooyi, H. (2020). Effectiveness of Emotionally-Focused Therapy on Depression of Patients with Coronary Heart Disease. *Biquarterly Iranian Journal of Health Psychology*, *3*(1).

Hasanzadeh, H. (2017). Effectiveness of coping skills training on cognitive emotion regulation and postdivorce adjustment in divorced women. (Unpublished master's thesis). Islamic Azad University, Kashan.

Hendrieckx, C., Halliday, J. A., Russell-Green, S., & Speight, J. (2020). Adults with diabetes distress often want to talk with their health professionals about it. Findings from an audit of four Australian specialist

diabetes clinics. *Canadian Journal of Diabetes*.

Hills, A. P., Arena, R., Khunti, K., Yajnik, C. S., & Misra, A. (2018). Epidemiology and determinants of type 2 diabetes in south Asia. *The lancet Diabetes & endocrinology*, *6*(12), 966-978.

Jentsch, V. L., & Wolf, O. T. (2020). The impact of emotion regulation on cardiovascular, neuroendocrine and psychological stress responses. *Biological Psychology*, 107893.

Kiamarsi, A., Abolghasemi, A., Taherifard, M., & Alian, B. (2020). Emotional Deregulation, Dissociative Experiences and Cognitive Failures in Patients with and without Posttraumatic Stress Symptoms. *Iranian Journal of Health Psychology; Vol*, *3*(1).

Levy-Gigi, E., & Shamay-Tsoory, S. G. (2017). Help me if you can: Evaluating the effectiveness of interpersonal compared to intrapersonal emotion regulation in reducing distress. *Journal of behavior therapy and experimental psychiatry*, *55*, 33-40.

Maheshkumar, K., Venugopal, V., Poonguzhali, S., Mangaiarkarasi, N., Venkateswaran, S. T., & Manavalan, N. (2020). Trends in the use of Yoga and Naturopathy based lifestyle clinics for the management of Non-communicable diseases (NCDs) in Tamilnadu, South India. *Clinical Epidemiology and Global Health*, *8*(2), 647-651.

Martini, T. S., & Busseri, M. A. (2010). Emotion regulation strategies and goals as predictors of older mothers' and adult daughters' helping-related subjective well-being. *Psychology and aging*, *25*(1), 48.

Mazaheri, M., Mohammadi, N., Daghaghzadeh, H., & Afshar, H. (2014). The effectiveness of emotion regulation intervention on emotional problems and quality of life among patients with functional gastrointestinal disorders. *Govaresh*, *19*(2), 109-117.

Najimi, A., Asgari, K., & Agahheris, M. (2017). Effectiveness of medication, healthy nutrition, proper physical activity prescription combined with emotional regulation intervention on perception of anxiety control and cardiovascular responses in female patients with coronary heart disease. *Daneshvar*, *24*(2), 21-30.

Ogden, J. (2011). *The psychology of eating: From healthy to disordered behavior*. John Wiley & Sons.

Otto, B., Misra, S., Prasad, A., & McRae, K. (2014). Functional overlap of top-down emotion regulation and generation: An fMRI study identifying common neural substrates between cognitive reappraisal and cognitively generated emotions. *Cognitive, Affective, & Behavioral Neuroscience*, *14*(3), 923-938.

Rapee, R. M., Craske, M. G., Brown, T. A., & Barlow, D. H. (1996). Measurement of perceived control over anxiety-related events. *Behavior Therapy*, *27*(2), 279-293.

Roozbehani, A., Tarkhan, M., Alipour, A., & Saffarina, M. (2020). The role of social support in suppressing the effect of job stress on personality traits. *Iranian Journal of Health Psychology; Vol*, *3*(1).

Sadigh, M. R., & Montero, R. P. (2001). *Autogenic training: a mind-body approach to the treatment of fibromyalgia and chronic pain syndrome*. CRC Press.

Santos, J. A. G. (2018). Efeitos do treinamento autógeno na atividade cerebral e sobre a ansiedade em indivíduos com altos níveis ansiogênicos.

Saydah, S. H., Gregg, E. W., Kahn, H. S., & Ali, M. K. (2018). Mortality associated with less intense risk-factor control among adults with diabetes in the United States. *Primary care diabetes*, *12*(1), 3-12.

Schetter, C. D., & Dolbier, C. (2011). Resilience in the context of chronic stress and health in adults. *Social and Personality Psychology Compass*, *5*(9), 634-652.

Schultz, J.H., & Luthe, W. (1969). *Autogenic therapy: Autogenic methods* (Vol. I). New York:. Grune and Stratton.

Seo, E., Hong, E., Choi, J., Kim, Y., Brandt, C., & Im, S. (2018). Effectiveness of autogenic training on headache: A systematic review. *Complementary therapies in medicine*, *39*, 62-67.

Soheili, M., Nazari, F., Shaygannejad, V., & Valiani, M. (2017). A comparison the effects of reflexology and relaxation on the psychological symptoms in women with multiple sclerosis. *Journal of education and health promotion*, *6*.

Tamir, O., Wainstein, J., Raz, I., Shemer, J., & Heymann, A. (2012). Quality of life and patient-perceived difficulties in the treatment of type 2 diabetes. *The review of diabetic studies: RDS*, *9*(1), 46.

Troy, A. S. (2012). Cognitive reappraisal ability as a protective factor: Resilience to stress across time and context.

Vessel, E. A., & Russo, S. (2015). Effects of reduced sensory stimulation and assessment of countermeasures for sensory stimulation augmentation. *NASA/TM-2015-218576*.

Yazdi, M., Saffarnia, M., & Zare, H. (2020). Comparison of the Effectiveness of Quality of Life Based Therapy and Emotion Regulation Therapy on Biomarkers (HbA1C and Blood Glucose) in Patients with Type2 Diabetes.