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The effectiveness of intervention based on acceptance and commitment on emotions and thoughts control in patients with type II diabetes

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Abstract

Introduction: Intervention based on acceptance and commitment is one of the third waves cognitive behavioral therapies and is currently being used in the treatment of a number of psychological conditions and disorders. It also enhances psychological flexibility and subsequently improves patients' mental health. The aim of this study was to determine the effect of intervention based on acceptance and commitment on emotions and thoughts control in patients with type II diabetes in Ferdows city.

Materials and Methods: Participants of this clinical research included 34 patients with type II diabetes that were selected from those who had records in the hospital clinic in Ferdows city at 2016 year and who were randomly assigned into equal control and experimental groups. All the participants completed both Effective Control Scale (ECS) and Thought Control Questionnaire (TCQ) as the pre-test and post-test. Afterwards the experimental group participated in 8 sessions of acceptance and commitment therapy each of which lasted for one hour. Data analyzed through covariance and SPSS software.

Results: The results showed that intervention based on acceptance and commitment had significantly improved emotions and thoughts control in the experimental group compared to controls ($P < 0.05$).

Conclusion: Generally, the findings of this study show the efficacy of intervention based on acceptance and commitment to improve emotions control and thought control in patients with type II diabetes and also represents new horizons in clinical interventions which can be used as an appropriate intervention.

Keywords: Diabetes type II, Emotions, Intervention based on acceptance and commitment, Thought control

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Introduction

Diabetes is one of the most common chronic diseases that disrupt regular life, and it has important psychological consequences (1). Some studies show that the prevalence of type II

diabetes due to obesity and decreased physical activity is rapidly increasing (2,3), and now more than 311 million people worldwide have diabetes, while in 2030, it will reach 470 million (4). Diabetes also can affect physical performance,

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the development of symptoms, psychological status, personal, family, and social relationships, sexual function, and perception of health (5). Hence people with diabetes require fundamental changes in life to control their disease (6). The most important changes in the lives of people with diabetes can include changes in control of thoughts and emotions, and it seems that dialectical behavior therapy can be effective in this regard.

Extreme emotions can lead people to conflict, aggression, anger, hatred, and anxiety that threaten people's mental and emotional health seriously when they are not controlled (7). It is better to reduce their reactive consequences instead of preventing emotions so that enough opportunities are provided for better decisions, foresight, and creativity (8). The skill of emotional control means that people learn how to recognize their emotions in different situations and then express and control them (9). Emotional control skills affect various aspects of life, interpersonal interactions, as well as mental and physical health (10).

On the other hand, the meta-cognitive model, which emphasizes the role of thought control strategies, can be introduced regarding thought control. According to this model, the orientation of abuses, arousal, and attention is somehow due to subsequent symptoms of stressful events. In fact, these responses are tools for the emotional process after damage and let individuals plan for future threats (11). Wells and Davies (1994) developed thought control strategies, including worry, self-punishment, distraction, re-evaluation, and social control, in developing the meta-cognitive model of emotional disorders as one of the main components of the model. Investigation of literature indicates acceptable and distinctive extensions of these strategies (12-15). Dialectical behavior therapy is one of the third waves of cognitive-behavioral therapies, and in addition to changing behavior, acceptance and mindfulness strategies are used to increase psychological flexibility, which can be considered an advantage of this approach compared to the previous ones. Dialectical behavior therapy, which was designed by Linehan in 1993, combines the change in traditional treatments of cognitive behavioral therapy with acceptance strategies taken from

eastern teachings and practices and aims to reduce the suffering of people involved in emotional problems such as depression. In order to achieve this aim, different skills of mindfulness, distress tolerance, emotion regulation, and interpersonal relationships have been included in a standard protocol. The tolerance of people to resist negative psychological conditions and experiences is called distress tolerance (16). Low distress tolerance leads to impulsive behavior and the suppression of individual suffering, while increased emotional tolerance plays an important role in improving suicidal behavior (17). Emotional regulation means the ability of individuals to influence the type, time, and manner to experience and express emotions and also the change in duration or severity of behavioral, empirical, and physical processes of excitement and is done through the application of emotion regulation strategies consciously or unconsciously (18). Social skills are also related constantly and positively with all indicators of psychological well-being and positive relations with others (19). According to Linehan, one of the main objections of cognitive approaches is that there is no integrity between the theses of therapists and patients because, in these approaches, the main emphasis is on changes in the emotions, cognitions, and behaviors of clients. In these conditions, clients feel that treatment processes not only make their behaviors invalid but also make them realize themselves as invalid. Perceived invalidity leads to some problems in treatment sessions (20). Linehan solves the above-mentioned treatment problem through the application of the principle of Zen ethics, particularly the practice of mindfulness. The principle of Zen ethics is based on mere acceptance of reality. On the other hand, unconditional acceptance and excessive validation of clients' behaviors will have problems so that clients think their problems are not taken seriously. Without paying attention to changing and solving the problem, interfering behaviors will occur again. Therefore, according to Linehan, integration of these two methods, along with the establishment of a balance between change and acceptance of reality, will be a suitable strategy (21). This therapeutic approach is composed of four types of

intervention: Structured group therapy sessions (for training), individual meetings, telephone calls, or consultation sessions with the psychologist and an expert team of therapists to support dialectical behavior therapy (19).

Dialectical behavior therapy leads to an increased feeling of pain management, use of positive coping strategies, and reduced negative emotional states and depression in patients with chronic pain through the above-mentioned skills (22). The results of studies indicate the effectiveness of this therapeutic approach.

Soler, Pascuala, Barrachina, Alvarez, and Perez indicated in separate studies that dialectical therapy behavior is effective in reducing impulsive behaviors while it improves the quality of life (23,24).

Ben-Porath concluded in a study that the use of dialectical therapy behavior skills leads to increased negative emotions management in students with poor emotional regulation (25), and Gibson, Booth, Davenport, Keogh, and Owens indicated in their investigations that dialectical therapy behavior can lead to decreased self-harm behaviors, emotion regulation, and mood stability in patients (26).

Goodman, Carpenter, Tang, and Goldstein indicated in their study that this therapeutic method can lead to emotional regulation and mood stability in patients suffering from a borderline personality disorder (27). The study by Soler, Pascual, Tiana, Barrachina, Geach, and Alvarez indicated that individuals in the dialectical behavior therapy training group quit treatment less than the therapeutic group, while improvement of some mood and emotional issues such as depression, anxiety, anger, emotional instability, and irritability was more evident than the standard therapeutic group (28). Alavi et al. investigated the effectiveness of dialectical behavior therapy on depression symptoms in students of the university, and their results indicated the significant effectiveness of dialectical behavior therapy on decreased depression in students (29). Neacsiu et al. also reported on the effectiveness of dialectical behavior therapy on decreased depression, suicide behavior, and control of anger in patients suffering from a personality disorder (30).

Unfortunately, the prevalence of diabetes is increasing, and this disorder leads to some

problems in their daily lives; therefore, the use of therapeutic methods seems essential to help these people. Moreover, given the research literature, no studies have investigated these issues in diabetic patients, and as a result, the present study aims to fill this research gap. Therefore, the overall objective of the present study was to determine the effectiveness of dialectical behavior therapy on emotions and thoughts control in type II diabetic patients.

Materials and Methods

This clinical trial was done in 2016 in Shahid Mostafa Chamran hospital in Ferdows city. First, coordination with the manager of Ferdows health sector was done, and the required license to perform the research in a diabetic clinic in this town was obtained. The statistical population in the present study included all individuals with type II diabetes with records in Shahid Mostafa Chamran hospital in Ferdows, which included 200 records.

According to Borg and Gall's theory, the sample size can be only 15 in experimental studies. The sample of this dialectical behavior therapy research included 34 (20 women and 14 men) individuals with type II diabetes in the age range of 40-60 years and having all inclusion criteria. Participants were selected using random sampling, after which they were assigned to a control group (17 participants) and an experimental group (17 participants). It should be mentioned that exclusion criteria in the research included type I diabetes, insulin intake, and education lower than 8 years.

First, a questionnaire on emotions and thought control was distributed among patients. In order to follow research ethics, a brief explanation was provided to patients about the questionnaire, and they were assured of the confidentiality of the responses. In this research, dialectical behavior therapy (DBT) was selected as the independent variable, and thoughts and emotions control was chosen as the dependent variable. Therapeutic intervention (dialectical behavior therapy) was performed collectively for the experimental group, while the control group didn't receive these interventions.

Dialectical behavior therapy was trained for eight 60-minute weekly sessions. In the last collective session, a post-test was performed

again in order to assess the effects of an independent variable. During this period, the control group received no interventions.

Research instrument

A) *Thoughts control questionnaire (TCQ) (Wells and Davis, 1994)*: This is a 30-item questionnaire that evaluates five strategies individuals use to control unfavorable and bothering thoughts. These five strategies include re-evaluation, punishment, social control, worry, and distraction. The contents of the questionnaire are in the Lickert scale, and each question includes four items; almost never = 1, sometimes = 2, most of the time = 3, and always = 4. Each sub-scale of TCQ has 6 questions with a total number of 30 questions. Experimental studies on thought control questionnaires have indicated that thought control strategy is correlated with a range of negative psychological health indicators (32). Wells and Davis reported the reliability of TCQ through retest in a six-week interval for sub-scales in a range of 0.64-0.83. In this study, TCQ indicated a high correlation with tools that measure symptoms of anxiety, obsession, personality, and ineffective attitudes. Internal research also confirmed its validity, and the Cronbach alpha coefficient and the reliability of the two halves were, respectively, 0.84 and 0.71 (33).

B) *Emotions control scale (ECS) (Williams et al., 1997)*: This is a tool for measurement of individuals' control of their emotions and includes 42 questions with four sub-scales of anger, depressed mood, anxiety, and positive emotions. The answers to questions are in a range of 1, meaning strongly disagree, to 7, meaning strongly agree. Twelve questions are scored

inversely. Eight questions are related to anger, eight questions to depressed mood, 13 questions to anxiety, and 13 questions to positive emotions. Internal validity and retest were respectively 0.94 and 0.78 for the overall score of the scale, 0.72 and 0.73 for anger, 0.91 and 0.76 for depressed mood, 0.89 and 0.77 for anxiety, and 0.84 and 0.64 for positive emotions (34). Moreover, scale validity was investigated by Dahesh, and Cronbach's alpha was 0.84 for overall emotions control, 0.53 for anger, 0.60 for positive emotions, 0.76 for depressed mood, and 0.64 for anxiety (14). After the selection of participants and their assignment into a control group and an experimental group, the experimental group received dialectical behavior therapy. This therapeutic method was applied in eight 60-minute sessions for the experimental group, while the control group didn't receive any intervention. After treatment sessions, the experimental group received a post-test (implementation of thoughts and emotions control questionnaires). Given the structure of the research and evaluation of pretest and post-test, covariance analysis was used in this research after confirmation of covariance assumptions, and data were analyzed using SPSS16 software.

The training was done in 8 sessions, including one 60-minute session every week. In each session, the related topics were raised, and the members of the group brainstormed and discussed the issues. At the end of each session, the materials were summarized, and assignments were given for the next session. The sessions were arranged as follows:

Sessions	Topics
Sessions 1 - 2	Introduction and getting familiar with members, practicing inattention, wise mind and intuition, fundamental acceptance, judgment and labels, distraction of self-injury behaviors through pleasant activities and paying attention to other works or topics, distraction of thoughts, distraction through leaving the situation, distraction through counting, self- relaxation.
Sessions 3- 4	Imagining a safe place, discovery of values, identification of the higher power and better relationships with the higher power, use of self-coping and self-encouraging thoughts, new coping strategies, understanding emotions, overcoming barriers to healthy emotions, emotions and change into behavior, reducing physical vulnerability in the face of distressing emotions, observing one-self without judgments.
Sessions 5 - 6	Reduced cognitive vulnerability, increased positive emotions, conscious attention to emotions without judgment, facing emotions, acting against severe emotional desires, problem solving not judging, conscious communication with others, effective works, conscious attention in daily life, daily routine of conscious attention
Sessions 7 - 8	Conscious attention, key interpersonal skills, barriers to use interpersonal skills, identification of demands, moderating intensity of demands, bold listening, saying no, the manner of negotiation, the manner of analyzing interpersonal problems

Results

The descriptive components of the scores in pretest and post-test among control and experimental groups are presented in Table 2. According to the information in Table 2, emotions control and thoughts control have been improved after intervention and training acceptance and commitment approach, and there are some changes along with significant differences in this regard in pre-test and post-test

results, while these conditions are relatively the same for control group with no changes.

The results of Levene test indicated that in emotions control ($F=9.246$ and $P<0.005$) and thoughts control ($F=0.389$ and $P<0.538$) variance homogeneity is observed. Table 3 indicates the results of covariance analysis regarding the effects of intervention based on commitment and acceptance on thoughts and emotions.

Table 2. Descriptive components of the scores in pre-test and post-test

variables	Experimental group				Control group			
	Pretest		Posttest		Pretest		Posttest	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Overall score of emotions control	3.42	0.515	2.50	0.522	3.53	0.514	4.0	0.791
Anger sub-scale	3.50	0.522	2.42	0.515	3.82	0.728	4.24	0.970
Depression sub-scale	3.33	0.492	2.83	0.718	3.47	0.514	4.18	0.951
Anxiety sub-scale	3.25	0.452	2.25	0.452	3.53	0.624	3.94	0.899
Positive emotions sub-scale	3.42	0.669	2	0.000	3.24	0.752	3.35	0.702
Overall score of thoughts control	3.0	0.000	2.42	0.515	3.0	0.354	2.94	0.243
Distraction sub-scale	2.58	0.515	4.0	0.603	2.82	0.529	2.82	0.636
Self-punishment sub-scale	3.58	0.515	1.42	0.669	3.24	0.664	3.06	0.636
Evaluation sub-scale	2.50	0.522	3.75	0.965	2.65	0.606	2.82	0.636
Social control sub-scale	2.92	0.515	2.17	0.577	3.0	0.500	2.94	0.556
Worry sub-scale	3.58	0.515	1.33	0.492	3.71	0.588	3.18	0.636

Table 3. The results of covariance analysis regarding the effects of intervention based on commitment and acceptance on emotions control

Indicator/ source of changes	Sum of squares	Degree of freedom	Mean of squares	F statistics	Significance level	Eta square
Overall score of emotions control	15.468	1	15.468	31.020	0.000	0.544
Anger sub-scale	22.404	1	22.404	32.505	0.000	0.556
Depression sub-scale	10.932	1	10.932	16.228	0.000	0.384
Anxiety sub-scale	19.059	1	19.059	32.632	0.000	0.557
Positive emotions subscale	13.055	1	13.055	44.073	0.000	0.629

According to the information in Table 3 and based on the results of covariance analysis, the effects of training acceptance and commitment on improvement of controlling emotions and all sub-scales of anger, depression, anxiety, and positive emotions was significant after adjustment of pre-test scores in type II diabetic patients ($F=104.136$

and $P<0.000$). The amount of this difference which is called Eta square was 0.771; therefore, these results indicate that acceptance and commitment therapy affect improvement of emotions control in type II diabetic patients (participants in the study) which is statistically significant ($P<0.000$).

Table 4. The results of covariance analysis regarding the effects of intervention based on commitment and acceptance on thoughts control

Indicator/ source of changes	Sum of squares	Degree of freedom	Mean of squares	F statistics	Significance level	Eta square
Overall score of thoughts	1.935	1	1.935	13.043	0.001	0.334
Distraction sub-scale	10.533	1	10.533	28.395	0.000	0.522
Self-punishment sub-scale	18.112	1	18.112	39.957	0.000	0.606
Evaluation sub-scale	4.816	1	4.816	9.455	0.005	0.267
Social control subscale	3.912	1	3.912	12.829	0.001	0.330
Worry sub-scale	24.144	1	24.144	70.629	0.000	0.731

According to the information in Table 4 and based on the results of covariance analysis, the effects of training acceptance and commitment on improvement of controlling thoughts was significant after adjustment of pretest scores in type II diabetic patients ($F=52.133$ and $P<0.000$). The amount of this difference which is called Eta square was 0.635; therefore, these results indicate that acceptance and commitment therapy affect improvement of emotions control in type II diabetic patients (participants in the study) which is statistically significant ($P<0.000$).

Discussion

The present study aimed to investigate the effectiveness of an intervention based on acceptance and commitment to the improvement of thoughts and emotions control in type II diabetic patients. The results of the study indicated that intervention based on acceptance and commitment affects the improvement of thoughts and emotions control in type II diabetic patients.

These findings were consistent with the findings of Dahesh regarding improvement in control of emotions, depressed mood, anxiety, and affection. Moreover, the results of the present study are consistent with the study done by Vowels and McCracken (25) regarding the effectiveness of acceptance and commitment in the treatment of patients suffering from chronic diseases and also the study of Hor, Aghai, and Abedi regarding the role of acceptance and commitment therapy in reduction of depression in type II diabetic patients.

Eifert et al. indicated the effectiveness of this intervention on increased quality of life and a significant decrease in anxiety and depression, along with the results of the present study (35). The findings of this study are also consistent with the results of (19,35,36) studies that have

investigated the role of psychological flexibility and acceptance in the performance and psychological distress of patients suffering chronic pain. Almost all these studies have indicated that acceptance can be a suitable strategy for better coping of these patients with chronic pains and decreased psychological distress, while appropriate strategies can be provided to reduce the psychological problems of patients with chronic pain. Intervention based on acceptance and commitment aims to reduce experimental avoidance and increase psychological flexibility through acceptance of unpleasant emotions which are unavoidable and distressing such as anxiety, promoting mindfulness, and determining individual values associated with behavioral goals.

Theorists such as Eifert and Heffner believe that approaches based on acceptance promote willingness to experience anxiety instead of emphasizing its reduction, while they facilitate exposure to these unpleasant emotions through identifying values and associating them with individual values and objectives (37).

Commitment and acceptance-based intervention encourage the clients to deal with their own self-evaluations as simple thoughts while they are trained to reform their negative evaluations. Moreover, this intervention seeks to weaken experimental avoidance and encourage the clients to accept their thoughts, emotions, affections, and impulses completely and set valuable goals for themselves.

Moreover, cognitive fusion in people with depression is weakened through acceptance and cognitive disconnection while cognitive malfunctions and excuses are reduced, and following valuable goals in life along with the commitment to reach these goals can lead to performance improvement and psychological distress reduction (38).

Despite the effectiveness of this therapeutic intervention, the present research had some limitations as well. The study lacked follow-up, and it isn't clear how long the therapeutic effects would last in the long term. Moreover, some caution is needed in generalizing the findings of this study to other patients with other chronic diseases, and it is suggested that future studies investigate this therapeutic approach in other physical and psychological disorders and also on other clinical populations. Moreover, other psychological problems of people with chronic diseases can be studied, while long-term follow-up tests can be designed in order to determine how long the effects of interventions will remain. The findings of the present study indicate that in dealing with problems that have different physical, psychological, and social backgrounds, interdisciplinary and multi-dimensional approaches and solutions are required. Moreover, such therapeutic strategies can decrease the suffering and pains of people with chronic diseases and give meaning to their lives. This therapeutic approach can be used in professional clinics and medical as well as psychological centers in order to deal with the psychological

problems of patients with chronic diseases and help them to cope with pain and physical problems better.

Conclusion

The present study aimed to investigate the effects of commitment and acceptance-based intervention on thoughts and emotions control in type II diabetes patients. The results indicated that this therapeutic approach could improve thoughts and emotional control significantly in these patients, and this can lead to improvement and promotion of their lives.

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