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The Effect of Acceptance and Commitment Therapy on Social Anxiety and Perceived Stress in Patients with Epilepsy

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Abstract

Background: Epilepsy is one of the most common neurological disorders that can cause social anxiety and perceived stress in individuals. This study aimed to investigate the effects of acceptance and commitment therapy (ACT) on social anxiety and perceived stress in patients with epilepsy.

Methods: It was a quasi-experimental study with pre-test and post-test design and equal control group performed on people with epilepsy under the auspices of the Khorasan Razavi epilepsy support association in 2019. Thirty patients were selected by purposive sampling method and randomly assigned to two groups (15 patients in the experimental group and 15 patients in the control group). Research tools including Conver's social anxiety questionnaire (2000) and Cohen et al.'s (1983) perceived stress questionnaire were used. Multivariate analysis of MANCOVA and ANCOVA multivariate analysis of covariance was used for data analysis.

Results: The results showed that the mean of social anxiety and perceived stress in the experimental group decreased significantly compared to the control group in the post-test (Pvalue<0.05). The results of one-way analysis of covariance with pre-test control showed that there was a significant difference between the two groups in terms of social anxiety (F=65.75 and Pvalue<0.001). Moreover, there was a significant difference between patients with epilepsy in the experimental group and the control group in terms of perceived stress (F=138.56 and Pvalue<0.001).

Conclusions: It can be said that the ACT can reduce social anxiety and perceived stress in patients with epilepsy.

Keywords: Epilepsy, Patient, Acceptance and commitment therapy, Social anxiety, Perceived stress.

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Introduction

Epilepsy is one of the most common neurological disorders that can severely affect cognitive-emotional and behavioral functions. Epilepsy causes low self-esteem, low levels of life satisfaction, psychological distress, anxiety, and interpersonal problems such as isolation and low social functioning of patients.[1,2]

One of the problems of epilepsy patients is social anxiety, which can threaten the independence and ability of patients to participate effectively in society.[3] According to cognitive theories, people with adapted cognitive patterns are more vulnerable to social anxiety because they process information negatively.[4]

In patients with epilepsy, social anxiety is a component in the rate of disorders in these patients, because the presence of social anxiety in patients causes discomfort and anxiety in social relationships, and this type of anxiety disrupts cognitive, emotional, and physical-behavioral symptoms in people.[5] Social anxiety causes anxiety, worry, and tension in people's social relationships. It should be said that social anxiety in these patients leads to behaviors that threaten their mental health. In addition, social anxiety causes irritability and anxiety and is an important factor in the occurrence of maladaptive behavior in society.[6,7] Social anxiety causes fear of negative social evaluation leading to sweating, tremors, nausea, and speech disorders, and can also have a significant effect on psychological disorders. Moreover, it causes people to be constantly affected by their social functioning by being judged by others and being humiliated and ashamed of their behavior.[8]

On the other hand, the clinical symptoms of epilepsy increase patients' perceived stress. Perceived stress disrupts individual-social relationships and individual-social adjustment in patients. In these people, perceived stress causes boredom, sadness, hopelessness, discouragement, loneliness, and dissatisfaction. The adverse effects of high perceived stress on these individuals shake the mental state.[9,10] Research shows that stress involves physical, mental, and emotional reactions that are experienced as a result of changes and needs in a person's life. These changes can be large or small and can affect people. Perceived stress disrupts a person's perceived confidence in the face of stress and leads to mood problems.[8,10,11]

Various theories have been raised to promote mental health in the community. Acceptance and commitment therapy (ACT) is one of these theories that is thought to affect the adaptation to the disease.[12] This therapeutic intervention is a third-wave treatment that explicitly accepts thoughts instead of changing their content or frequency.[13] The ACT approach has six central processes that lead to psychological flexibility. These six processes are acceptance, failure, self as context, communication with the present, values, and committed action.[13,14]

ACT derived from cognitive-behavioral therapy includes accepting suffering without trying to control it, action based on value or commitment with desire for action.[15] This treatment tries to increase the person's psychological acceptance of mental experiences and to reduce ineffective control in return because any action to control and avoid these unwanted mental experiences is ineffective or has the opposite effect. In the

second step, the person's psychological awareness is increased in the present moment, and in the third step, the person is taught to separate himself from these mental experiences. The fourth step is to help the person avoid focusing too much on disturbing events. In the fifth step, the individual is helped to recognize his values and turn them into behavioral goals, and finally to achieve sufficient motivation for committed action and activity focused on the goals derived from his values.[15,16]

ACT states that it is only through conscious action that people can build a punctual life and learn the effective mindfulness skills to manage their inner experiences.[17] Additionally, ACT is one of the attention-based behavioral therapies that is effective in treating a wide range of clinical conditions.[16]

People with epilepsy have high levels of social anxiety and stress due to emotional and cognitive problems, and these problems can interfere with a person's recovery process and have a negative impact.[18,19] Due to the problems of epilepsy, there is a concern about what treatment has a significant effect on improving social anxiety and perceived stress in these patients, which disturbs the quality of life of patients. On the other hand, medication is one of the most common methods in the treatment of epilepsy, but it has not had a favorable effect on the cognitive-social dimension of patients[1,20] and studies on follow-up of the drug treatment process showed a high rate of cognitive-social disorders in epilepsy patients. Due to the increasing prevalence of anxiety disorders and their sensitivity among patients with epilepsy, the present study was conducted to investigate the effect of the ACT on social anxiety and perceived stress in patients with epilepsy.

Materials and Methods

It was a quasi-experimental study with a pre-test-post-test design and equal control group. The statistical population included all male and female patients with epilepsy referred to the Khorasan Razavi epilepsy support association in 2019. In this study, based on previous research[21] and according to Cochran's formula with an error value of 0.05, 30 people were considered as the sample size. They were selected by convenience sampling and then randomly assigned to two groups (15 epilepsy patients in the experimental group and 15 epilepsy patients in the control group).

Inclusion criteria were a minimum duration of 6 months of disease, no severe neuropsychiatric disorders such as vision problems, severe hearing, personality disorders, age range between 20 and 40 years (reason for choosing this age group was homogeneity of groups according to the therapeutic protocol, and that in group therapy, homogeneity of groups should be considered a facilitating factor for treatment, and the prevalence of this disorder is not high in people under 20, and people over 40 may have high physical and psychological problems), living in the city of Mashhad, being able to attend treatment sessions and the level of education of higher than high school. Exclusion criteria included cognitive-personality disorders, having psychotic disorders, starting another psychotherapy at the same time, as well as absence in more than two treatment sessions in the treatment process.

In this study, the necessary permission was obtained from the Islamic Azad university of Torbat-e-Jam to conduct research and it was presented to the epilepsy support association. Then, the researcher prepared a list of men and women with epilepsy registered in the epilepsy association by referring to the association and the subjects were selected according to the study criteria. Then, the objectives of the study and the steps of the work were explained to the participants, and written informed consent was obtained from them. Before performing any intervention, participants in both experimental and control groups were measured by social anxiety, emotional regulation, and perceived stress. The role of the pre-test in this project was to apply control and comparison of social anxiety, emotional regulation, and perceived stress of experimental and control groups in the pre-test and post-test. Then, after ACT sessions, social anxiety, emotional regulation, and perceived stress scales (PSSs) were performed on the two experimental and post-test groups. As a result, it was determined whether in patients with epilepsy the changes in social anxiety, emotional regulation, and perceived stress were due to ACT sessions or not.

Social anxiety questionnaire (SAQ): The SAQ was developed by Connor (2000) to assess social anxiety. This questionnaire is a 17-item self-assessment scale that has three sub-scales of fear (6 items), avoidance (7 items), and physiological distress (4 items). Each item is graded on a five-point Likert scale from (0) in no way to (4) infinity.[22] The validity of the questionnaire was explained by factor analysis which was a total of 62% of the test variance by Hassanvand Amouzadeh and the reliability of the questionnaire by Cronbach's alpha methods for this questionnaire was reported to be 0.97.[23] In the present study, the reliability of the questionnaire was 0.78 by Cronbach's alpha method.

Perceived stress questionnaire (PSQ): The PSQ was developed by Cohen et al. (1983) and its purpose is to assess stressful situations.[24] Using it, respondents express their views on the uncontrollability, unpredictability, and difficulty of their lives. This questionnaire consists of 14 items. It scores in a range from 1 (none) to 5 (very high). Items 4-5-6-7-9-10-13 are scored in reverse. The minimum score of the perceived stress is 14 and the maximum is 70.[24] The validity of the questionnaire in Safaei and Shokri study[25] was explained by factor analysis to be 69% of the total variance of the test and the reliability of the questionnaire was obtained by Cronbach's alpha method to be 0.76. Maroufizadeh et al, also reported the reliability of the questionnaire by Cronbach's alpha method of 0.90.[26] In the present study, the reliability of the questionnaire was 0.88 by Cronbach's alpha method.

Acceptance and commitment therapy sessions: ACT intervention sessions based on the practical guide of ACT Patretisa and Moran (2010), translated by Kamali and Kianorad, (2016) were held in 8 sessions of 90 minutes on the experimental group.[15] A summary of the implementation of ACT treatment techniques is described in table 1.

The study was analyzed using SPSS software version 21 and MANCOVA and ANCOVA analysis of covariance was applied.

Table 1. The summary of ACT treatment techniques in the study

Session	Purpose	Content	Expected change of behavior	Homework
First	Pre-test, familiarity with group rules and generalities of ACT method	Familiarization of members with each other and the therapist, description of rules, goals, group structure, therapeutic commitments, introductory talks about ACT, the beginning of creative helplessness, a metaphor of human in the well	Learning about ACT	--------
Second	Familiarity with some of the concepts of ACT therapy, including experiential avoidance, fusion, and psychological acceptance	Assessing the problems of patients from the perspective of ACT, extracting experiential avoidance, fusion, and individual values, bus metaphor, nettle plant metaphor	Do not trying to avoid negative emotions	Identifying avoidance situations and allowing negative thoughts to flow without being fought or deliberately prevented.
Third	Performing ACT treatment techniques such as defusing, psychological awareness	Assessing homework, specifying inefficiency, leaf on water stream technique, cognitive defusion training, a metaphor of taking the book with two hands in front of the face	Accepting negative behaviors and emotions	Awareness of the here and now and interest instead of running away from what is going on right now.
Fourth	Teaching healing techniques, mindfulness, wise awareness	Examining homework, separating assessments from personal experiences, and taking a position of observing thoughts without judgment in a way that leads to psychological flexibility and positive emotions. One minute focusing technique	Paying attention to current and moment by moment experiences	Focusing on all mental states, thoughts, and behaviors at the moment without any judgment
Fifth	Teaching self-healing techniques as a background and practice mindfulness techniques	Examining homework, relation to the present and considering oneself, and teaching mindfulness techniques, chessboard metaphor, body scanning technique	Accepting negative emotions and thoughts without prejudice and judgment	Trying to gain a sense of excellence using trained techniques
Sixth	Teaching techniques for personal values and clarifying values and teaching emotion regulation	Examining homework, relating to the present and considering oneself, and teaching mindfulness techniques, chessboard metaphor	Strive for psychological flexibility	Identifying core personal values, planning goals based on values
Seventh	Teaching therapeutic techniques of personal values and committed action and increasing interpersonal efficiency	Body scanning technique	Acquisition of psychological flexibility	Committed effort to achieve planned goals based on trained techniques
Eighth	Review and practice the taught therapy techniques with an emphasis on regulating emotions and sense of meaning in real life - Post-test	Assessing homework, identifying the values of clients' lives, and measuring values based on their importance. Making a list of obstacles in the realization of values, life compass technique, 70th birthday celebration metaphor	Getting rid of emotions, negative thoughts, gaining psychological flexibility	---------

Results

The mean and standard deviation of social anxiety and perceived stress variables in the experimental and control groups by pre-test and post-test are shown in table 2. The mean of social anxiety in the experimental group decreased in the post-test, and the mean of perceived stress in the experimental group in the post-test decreased significantly (Pvalue<0.05).

To normalize the distribution of scores in the experimental group and the control group in the variables of social anxiety and perceived stress, the null hypothesis was confirmed. That is, the assumption of normal distribution of scores in the pretest and both experimental and control groups was confirmed.

The results of the test for the assumption of homogeneity of regression patterns of research variables are presented in table 3. The value of F interaction is not significant for the variables of social anxiety and perceived stress of the research. Therefore, the assumption of regression homogeneity was confirmed. According to table 4, the Levene test is not significant in the variables of social anxiety and perceived stress. Thus, the variance of the experimental group and the control group in the variables of perceived stress and social anxiety is not significant. As a result, the hypothesis of homogeneity of variances was confirmed and the null hypothesis to equal the variances of the scores of the two groups in the research variables in the post-test stage was confirmed. That is, the

assumption of the equality of variances of scores is established in the experimental groups and the control group.

The results of multivariate analysis of covariance in table 5, with control of pre-test of significant levels of all tests, indicated that there was a significant difference between patients with epilepsy in the experimental and control groups in terms of social anxiety and perceived stress variables (F=126.89 and Pvalue<0.001). The effect or difference equal to 0.90 indicated that 90% of the individual differences in the post-test scores of social anxiety and perceived stress in patients with epilepsy were related to the effect of ACT. Statistical power was equal to 1, in other words, the second type of error was not possible. To investigate the differences between the variables of the experimental and control groups, a one-way analysis of covariance was performed, which is presented in table 6.

As shown in table 6, there was a significant difference between patients in the experimental group and the control group in terms of social anxiety (Pvalue<0.001 and F=65.75) with pre-test control. The effect size for the social anxiety variable equal to 0.73 indicated that 73% of the individual differences in the post-test scores of social anxiety in patients with epilepsy were related to the effect of ACT. Moreover, with pretest control, there was a significant difference between patients with epilepsy in the experimental group and the control group in terms of perceived stress (Pvalue<0.001 and F=138.56). In other words, ACT due to the mean of perceived stress in patients with epilepsy in the

experimental group compared to the mean of the control group, reduced the perceived stress in patients with epilepsy in the experimental group. The effect size for the perceived stress variable of 0.85 indicated that 85% of individual differences in the perceived stress scores of patients with epilepsy were related to the effect of ACT.

Table 2. Mean and standard deviation of social anxiety and perceived stress variables in the experimental and control groups in pre-test and post-test stages

Variable	Group	Mean±SD		Pvalue
		Pretest	Posttest	
Social anxiety	Experimental	54.13±5.02	28.73±0007.24	0.019
	Control	52.13±5.48	58.40±4.85	0.85
Perceived stress	Experimental	53.20±3.89	29.86±8.77	0.023
	Control	52.73±4.13	52.60±1.80	0.19

Table 3. Test results of the homogeneity of regression slopes of research variables

Variable	Source of variance	F	Pvalue
Social anxiety	Group interaction * Pre-test	2.97	0.19
Positive emotion regulation	Group interaction * Pre-test	1.57	0.54
Negative emotion regulation	Group interaction * Pre-test	1.12	0.61
Perceived stress	Group interaction * Pre-test	3.87	0.11

Table 4. Levene test results on the assumption of equality of variances of research variables scores

Variable	F	First order df	Second order df	Pvalue
Social anxiety	2.49	1	28	0.11
Perceived stress	0.84	1	28	0.36

Table 5. Results of multivariate analysis of covariance on the mean scores of post-test social anxiety and perceived stress of experimental and control groups with pre-test control

Test	Value	df	Error df	F	Pvalue	Effect size	Power test
Pillai trace	0.96	2	25	126.89	0.001	0.90	1
Wilks Lambda	0.04	2	25	126.89	0.001	0.90	1
Hotelling trace	24.17	2	25	126.89	0.001	0.90	1
Roy's largest root	24.17	2	25	126.89	0.001	0.90	1

Table 6. Results of one-way analysis of covariance on the mean scores of post-test social anxiety and perceived stress of experimental and control groups with pre-test control

Variables	Source of variance	Sum of squares	df	Sum of squares	Power test	Effect size	Pvalue	F
	Pretest	97.27	1	97.27	0.35	0.10	0.11	2.74
Social anxiety	Group	2871.02	1	2871.02	1	0.73	0.001	65.75
	Error	1047.94	26	43.66				
	Pretest	56.16	1	56.16	0.22	0.06	0.22	1.52
Perceived stress	Group	4913.33	1	4913.33	1	0.85	0.001	138.56
	Error	851.09	26	35.45				

Discussion

This study aimed at evaluating the effect of ACT on social anxiety and perceived stress in patients with epilepsy. According to the results, there was a significant difference between patients in the experimental group and the control group in terms of social anxiety with pre-test control. In other words, ACT reduced the rate of social anxiety in patients with epilepsy in the experimental group according to the mean social anxiety of patients with epilepsy in the experimental group compared to the mean of the control group. This result is consistent with the study of Ghadampour et al.,[27] Molavi et al.,[28] and Einberg et al.[29] In explaining the result of the present study, it should be noted that anxiety is the result of a misunderstanding of symptoms and bodily changes and is derived from a person's beliefs about his or her illness. In addition to worrying about the disease, people with the disorder also worry about their inability to control the disease, and one of the most important steps in the ACT approach is emphasizing people's desire for inner experiences to help them express their disturbing thoughts only as a thought and become aware of the dysfunctional nature of their current situation and instead of responding to it, do what is important to them in life and is in line with their values.[27]

ACT treatment reduced stress in social relationships by increasing cognitive-social awareness and identified values along with acceptance of experiences in social relationships by creating goal-oriented activities, self-assessment at the community level, selecting appropriate responses, and

integrating emotion which led to recognizing the relationship between the actions and social anxiety consequences and stress control. Therapeutic sessions focused on building a meaningful life, reducing anxiety and stress in patients, and alleviating concerns about evaluating and judging others by promoting core competencies such as compassion and acceptance.[30] ACT therapy promotes psychological resilience through cognitive failure, acceptance, contact with the present moment, self-observation, values, and committed action which in turn reduces social anxiety in sufferers.[31,32] The technique of achieving a transcendent sense of self, clarifying important value priorities, meaningfulness, and setting goals based on values are among the techniques that lead to reducing feelings of disapproval by others and anxiety related to interacting with others by clarifying one's values. This method has led epilepsy patients to the insight that the more they try to control their suffering, the more they are in the vicious circle of increasing suffering, and by increasing patients' conscious attention to their unpleasant thoughts and feelings and confronting them, it reduced suffering and stress in patients.[33]

In this study, the results showed that with pretest control, there was a significant difference between patients with epilepsy in the experimental group and the control group in terms of perceived stress. In other words, ACT reduced the perceived stress due to the mean of perceived stress in patients with epilepsy in the experimental group compared to the mean of the control group. The results were consistent with the study of Faryabi et al,[34] and Lundgren et al.[35] They showed that ACT has a significant effect on reducing stress in epilepsy patients. Furthermore, Barzegari et al,[36] and Eilenberg et al.[29] reported that perceived stress was reduced due to ACT. Explaining this result, it can be said that patients with epilepsy perceive stress due to the type of mental occupation about the disease, and perceived stress negatively affects the mental health of these patients. Because it increases awareness of mental-cognitive states by providing a technique of reducing self-visualization, acceptance and commitment-based intervention makes epilepsy patients more flexible in the mental dimensions in the face of difficulties and stressful and challenging conditions.[37] In this intervention, because their cognitions were recognized for their ability to adapt and cope with stress, the dimensions of stress perception in the face of unforeseen conditions were adjusted and the perceived stress of patients was reduced.

ACT can lead to learning the effect and influence of thoughts, undesirable feelings by increasing conscious attention, and by fighting internal experiences, leads to the formation of flexibility in the face of the challenge of disease and stressors, and reduces disturbing thoughts, visualizations, and impulses that are related to stress-related perceptions.[38]

ACT treatment promotes emotion control, proper communication, and increased adaptation to the specific conditions of epilepsy patients by teaching them to accept unwanted inner experiences and commit to living and acting in a worthwhile way. This intervention helped reduce patients' stress by teaching them coping strategies, increasing the power of realistic attitudes, motivating them to act responsibly, and targeting their lives.

In this study, due to the prevalence of coronary heart disease, it was not possible to conduct a follow-up study. In this regard, treatment sessions were performed online (using Skype), which caused restrictions in the implementation due to hardware problems. The results of the study cannot be generalized to all patients with epilepsy and caution should be exercised in generalizing the results.

It can be concluded that ACT has a significant effect on reducing social anxiety in patients with epilepsy. ACT also reduce perceived stress in patients with epilepsy. It is suggested that in future studies, the effectiveness of ACT with placebo on social anxiety and perceived stress in epilepsy patients should be evaluated to determine the exact effect of this intervention. Moreover, patient support associations and treatment centers should pay special attention to the effectiveness of treatment methods, particularly ACT.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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