

The Effectiveness of ACT Treatment in Reducing the Symptoms of Depression in Patients with Epilepsy

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Abstract

The aim of this research was to determine the effect of Acceptance and Commitment Therapy (ACT) on reducing depression symptoms in people with epilepsy. This research was semi-experimental and it contained a pre-test-post-test and a control group at convenience which was based on the results of Beck Depression Inventory (BDI). To investigate the research, 30 patients with epilepsy and depression symptoms were selected from among the people having epilepsy and referring to the Epilepsy Association in Tehran (2013). They were randomly divided into two groups of experimental (15 persons) and control (15 persons). Acceptance and Commitment Therapy was done in 8 sessions of 60-90 minutes in the experimental group and the control group did not receive any interventions. Pre-test and post-test scores were analyzed by one-way covariance (ANCOVA) for both groups. The results of this research showed that the difference between the experimental and control groups in the depression variable was significant with the confidence interval of $F = 87.433$. Moreover, the anxiety scores of the experimental group were significantly decreased ($P = 0.000$) compared to the control group. This suggests that Acceptance and Commitment Therapy (ACT) is effective in reducing the symptoms of depression in people with epilepsy.

Key words: Epilepsy, Depression Symptoms, Anxiety, Acceptance and Commitment Therapy

Introduction

Epilepsy is not a mental disorder. People of all ages can be affected by epilepsy; it is a brain chronic disorder (Khalil, et al. 2018). It is a neurological disorder that has not yet been cured (Crotzer, translated by Soltani translation, 2009). Therefore, epilepsy is a brain disorder that occurs with frequent seizures caused by electrical disorders in the brain's neurons; a physiological disorder of the cerebral cortex. In this kind of disorder, the electrical drainage is abnormal and simultaneously the brain cells are temporarily and transiently created. Epilepsy is the most common chronic neurological disease in the world and affects around 45 million people worldwide (Bahrpeyma, 2009). The causes of epilepsy include: problems with the completion of the prenatal brain, lack of oxygen at or after birth, severe brain injury, unusual brain shape, tumour, subsequent effects of brain infection such as meningitis or brain tumors and genetic factors (Crotzer, 2004). Epilepsy is associated with a range of biological aspects and psychopathology, among which depression disorder is the most common psychiatric disorder (Zahiruddin and Qureyshi, 2006).

Mood disorders encompass a large group of psychiatric disorders (Vidya, et al., 2015). Among the most prevalent psychiatric turmoils and problems of human life, is depression (Osman & Bahri, 2019). Depression is known as a single disorder (excitement and temper), though, there are practically four sets of signs and symptoms (Rita et al., 2007). Depression disorder as temper disorder is one of the most common psychiatric diseases. It is a mental disorder that commonly presents with depressed mood, decreased energy, emotions of guilt or low self-confidence, loss of interest or pleasure, poor concentration, and disturbed sleep or appetite (AL-Asiri & Alotaibi, 2018). Its prevalence is about 15% for whole life. For women, there may be up to 25%. The incidence of depression among the patients of general practitioners is about 10% and among the hospitalized patients it amounts to 15% (Saduk and Saduk, 2007, quoted by Razaei, 2005). Anxiety is another disorder which is an unpleasant emotion that we all have experienced to some extent in form of words such as worry, anxiety, tension and fear (Sanei & Nabavi Chasmi, 2018).

Acceptance and commitment therapy (ACT) therapy creates therapeutic changes through "creation and development of mental admission and increasing the practice of values" in patients. The obvious advantage of this psychotherapy is to give the individual a kind of opportunity to learn new and specific skills, such as increased psychological admission and contact with the present, and this also makes it difficult for the individual not only to avoid it, but to face it flexibly (Mohammadi, et al., 2018). Acceptance and Commitment Therapy (ACT) is a behavioral therapy that uses mindfulness, acceptance, and cognitive dissociation to enhance psychological flexibility (Herbert, Forman, 2011, quoted by Izadi and Abedi, 2013). In acceptance and commitment therapy, the psychological flexibility is to increase the ability of clients to communicate with their experiences in the present; so they act based on what is possible at that moment for them, and in a manner that their action is consistent

with their chosen values (Hayes et al., 2010, quoted by Izadi, Abedi, 2013). The goal of intervention of acceptance and commitment therapy is to change the processes that contribute to the psychopathology of these disorders. In fact, this kind of treatment empowers the individuals to change the hard thoughts and feelings and the ways to cope with problems through the specific techniques. ACT is a contextual approach that challenges the clients to accept their thoughts and feelings and commit themselves to the necessary changes. The core of the change in ACT is the change in internal and external verbal behavior. ACT believes that engaging with emotions will make them feel worse (Brykan, 2006).

In 2013, Narimani et al. conducted research comparing the effectiveness of Acceptance and Commitment Education (ACT) with training excitement regulation in the adaptation of students with math disorders. The results showed the effectiveness of Acceptance and Commitment Training (ACT) with emotional regulations in improving social, emotional and educational adaptations of students with maths disorders. Gharayi Ardakani et al. (2012) conducted research on the effectiveness of the Acceptance and Commitment approach in reducing pain intensity in women with chronic headache disorder. The results of this research indicated that ACT was effective in reducing pain experience in women with chronic headaches. In the research of Salehzadeh et al. (2011), on the effect of cognitive-behavioral therapy on the ineffective attitudes in patients with epilepsy, the effectiveness of this treatment was confirmed. Research was conducted by Salehzadeh et al. (2010), on the effect of cognitive-behavioral group therapy on depression in patients with epilepsy resistant to drugs. The findings of their study confirmed the efficacy of this type of treatment. Other research by Hashemi (2010) on the effectiveness of cognitive-behavioral intervention in reducing the level of depression, anxiety and stress in patients with epilepsy the effectiveness of the above components was shown. Najafi et al. (2010) conducted a study investigating the pattern of personality characteristics and psychopathology of patients with complex and grand mal epilepsy and comparing it with the control group. They concluded that the psychological interventions in the treatment of this disease were necessary and useful.

Pereira and De Valent, (2013), studied the severity of symptoms of depression and performance dysfunction in children and adolescents with epilepsy. The results indicated that children with epilepsy at the early stages of their disease faced a general, moderate to severe performance disorder, and this situation also occurred in adolescents which could lead to depression. Gaudio et al. (2013) treated 14 people with depression and concluded that not only was this therapy useful for the treatment of people with major depression but it also increased their psychosocial performance. Moto (2012) conducted research for measuring the effectiveness of acceptance and commitment therapy for the treatment of people with chronic depression in an individual 58 years old; in a follow-up period of 5 months, he concluded that this therapy for the treatment of chronic depression was recommendable.

Because acceptance and commitment therapy is a part of the third wave treatments of behavioral therapy, and given that new therapies cover the weaknesses of previous treatments, this therapy can reduce the symptoms of depression in people with Epilepsy. Since the acceptance and commitment therapy try is almost unknown in our country, its introduction would be very helpful. Therefore, considering the success of the acceptance and commitment therapy in recent years, the effectiveness of ACT in reducing the symptoms of depression in patients with epilepsy has been addressed in the present study.

Research Method

This research was semi-experimental with pre test, post test design and using a control group. The statistical population of this research included all people having Epilepsy with the symptoms of depression who had referred to Iranian Epilepsy Society in 2013. Sampling method in this research was convenience with the randomization of the control and experimental groups. The sample size was estimated to be 15 individuals, based on a Cohen table with the effect size of 0.5 and test power of 0.75 for each group. The treatment protocol has been presented in the table below.

In this research, the BDI-II Beck Depression Inventory (BDI-II), a self-report questionnaire of 21 items, was used. It was applied for measuring the severity of depression and determining the symptoms of depression in the population of psychiatric patients and to determine depression in the normal population. The scores of this questionnaire were based on four options (0-3) for the absence of a specific symptom to the highest degree of its existence in the range of 0 to 3. The psychometric studies performed on this questionnaire indicated that it enjoyed a good validity. Beck, Stear and Brown (2000) reported the internal consistency of the instrument as 73% to 92% with an average of 86%, and the alpha coefficient for the patient group was 86% and for the non-patient was 81%. The alpha coefficient of this questionnaire was 0.92 for ambulatory patients and 0.93 for students. In a meta-analysis that was performed on 9 psychiatric samples, this questionnaire showed more internal consistency than the first version of the questionnaire. The test-retest reliability coefficient in a subgroup of outpatients was 0.93 for a week (Beck, Stear and Brown, 1996, quoted by Zemestani Bamchi, 2008). Fati (2003) performed this questionnaire on an Iranian sample of 94 people, and reported an alpha coefficient of 0.91, a coefficient of correlation of 0.89 and a retest coefficient of one-week interval of 0.94. Ghasemzadeh et

Table of Treatment protocol

Sessions of treatment	Objectives
Session 1	Introducing treatment Discussion on the limits of confidentiality Client's informed consent to complete the treatment process General assessment Familiarity with the concept of creative hopelessness
Session 2	Evaluating Performance Investigating the reflection of previous session in the person's life Checking homework and discussing creative hopelessness
Session 3 & 4	Evaluating Performance Investigating the reflection of previous session in the person's life Examining homework and introducing control as a problem not a solution Familiarity with the concept of willingness-acceptance Behavioral commitment
Session 5 & 6	Evaluating Performance Investigating the individual's experiences of previous sessions until now Examining homework and Behavioral commitments Familiarity with the concept of self as the context and the concept of cognitive dissociation Familiarity with the concept of cognitive dissociation Exercise of behavioral commitments and homework
Session 7 & 8	Evaluating Performance Investigating the reflection of previous sessions in the person's life Reviewing home exercises Familiarity with the concept of values Increasing concentration on the Behavioral commitments

al. (2005) examined the psychometric properties of the Persian version of the Beck depression inventory on 125 Iranian students from among Tehran University of Medical Sciences and Allameh Tabataba'i University; they reported the alpha coefficient of 0.87 and the coefficient of re-test of 0.74 (Quoted by Issazadegan in 2006). In addition, Bakhshai (2002) reported the correlation between Beck questionnaire and Hamilton depression scale to be 0.93.

Data collection was done using the questionnaire for a group in the Treatment Center for the Iranian Epilepsy Association. Beck Depression Inventory was performed on patients with depression symptoms. After that, 30 people who received the required score in the test were selected and randomly assigned to the control and experimental groups. The identified subjects, had a high degree of depression symptoms and they were randomly assigned to experimental (15 subjects) and control (15 subjects) groups. After the pretest, the experimental group received the acceptance and commitment therapy for 8 sessions and

each session for 60-90 minutes. At the end of the sessions, a post-test was performed on them. The control group was under no intervention and only the pre-test and post-test were performed on the experimental group. In observing the ethical requirements of the research, these individuals benefited from a free session in communication skills. The inclusion criteria for participating in the research included: individuals with Epilepsy referring to Iranian Epilepsy Association, receiving the score 20 and above in the BDI-II test, lack of history of drug use and psychotropic drug use, lack of psychological treatment history, lack of use of psychiatric drugs, lack of history of psychiatric disorders, and their acceptance to participate in the research project. However, the exclusion criteria included: reluctance to continue working with the researcher, not attending and delaying 3 treatment sessions.

Descriptive indicators such as frequency, standard deviations of variance, etc. were used to describe the data. One-way covariance (ANCOVA) was used for the statistical analysis.

Research Findings

According to Table 1, there were 15 people in each of the control and experimental groups; the same number of participants were also involved in the post-test without downsizing.

Table 1: Frequency distribution of participants in the experimental and control groups

Groups		Valid		Lost		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
Pretest	Experiment	15	100	0	0	15	100
	Control	15	100	0	0	15	100
Post-test	Experiment	15	100	0	0	15	100
	Control	15	100	0	0	15	100

In this study, 16 participants were male (53.3%) and 14 were female (46.7%). Table 2 shows the frequency of gender by the experiment and control groups. Among the participants in the experimental group, there were 8 women (26.67%) and 7 men (23.33%), and the control group consisted of 6 women (20%) and 9 men (30%).

Table 2: Frequency of Gender of Participants in Experimental and Control Groups

Gender	Groups	Frequency	Percentage	Valid percentage	Total	Total percentage
Women	Experiment	8	26.67	26.67	14	46.7
	Control	6	20	20		
Men	Experiment	7	23.33	23.33	16	53.3
	Control	9	30	30		
Total		30	100	100	30	100

Table 3 shows the descriptive indicators of the age of all participants in this study. According to the information given in this table, the age of the participants ranged between 20 and 35, with an average age of 28 years. The amount of kurtosis of the age between +1 and -1 indicates the normal distribution of the age of the participants.

Table 3: Descriptive indicators related to age of participants

Number	Minimum	Maximum	Mean	Standard deviation	Kurtosis	Standard error of kurtosis	Skewness	Standard error of skewness
30	20	35	27.8667	4.50083	0.013	0.427	-.792	.833

Table 4 shows the descriptive indicators of the age of the participants in the experimental and control groups separately. Accordingly, the age of the participants in the experimental group was between 20 and 35, with an average age of 27.8 years. The age of the control group ranged between the ages of 21 and 35, with an average of 27.93 years. The kurtosis of the individuals' age between +1 and -1 indicates the normal distribution of the age of the participants in the two groups.

Table 4: Descriptive indices of age of participants in experimental and control groups

Groups	Number	Min.	Max.	Mean		Standard deviation		Kurtosis		Skewness	
				Statistic	Standard error	Statistic	Standard error	Statistic	Standard error	Statistic	Standard error
Experiment	15	20	35	27.8	1.37	5.32	-0.019	0.580	-1.25	1.121	
Control	15	21	35	27.93	0.95	3.69	0.179	0.580	-0.111	1.121	

Diagrams 1 and 2 show the frequency distribution of the participants in the experimental and control groups. The curve of the diagrams also indicates the normal distribution of the frequency of the age of the individuals.

Diagram 1: Frequency Distribution of the age of the participants in the experimental group

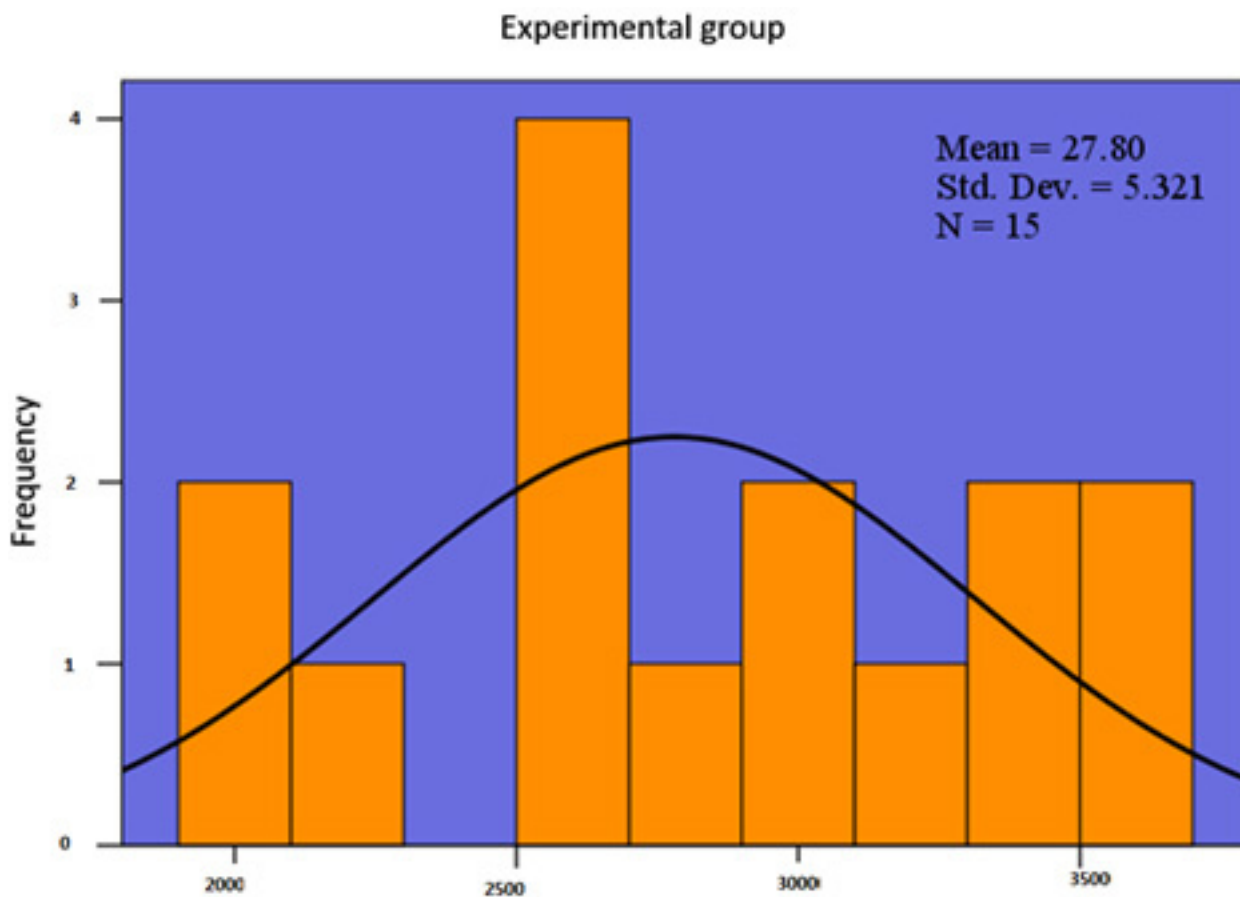


Diagram 2: Frequency Distribution of the age of control group participants
Control Group

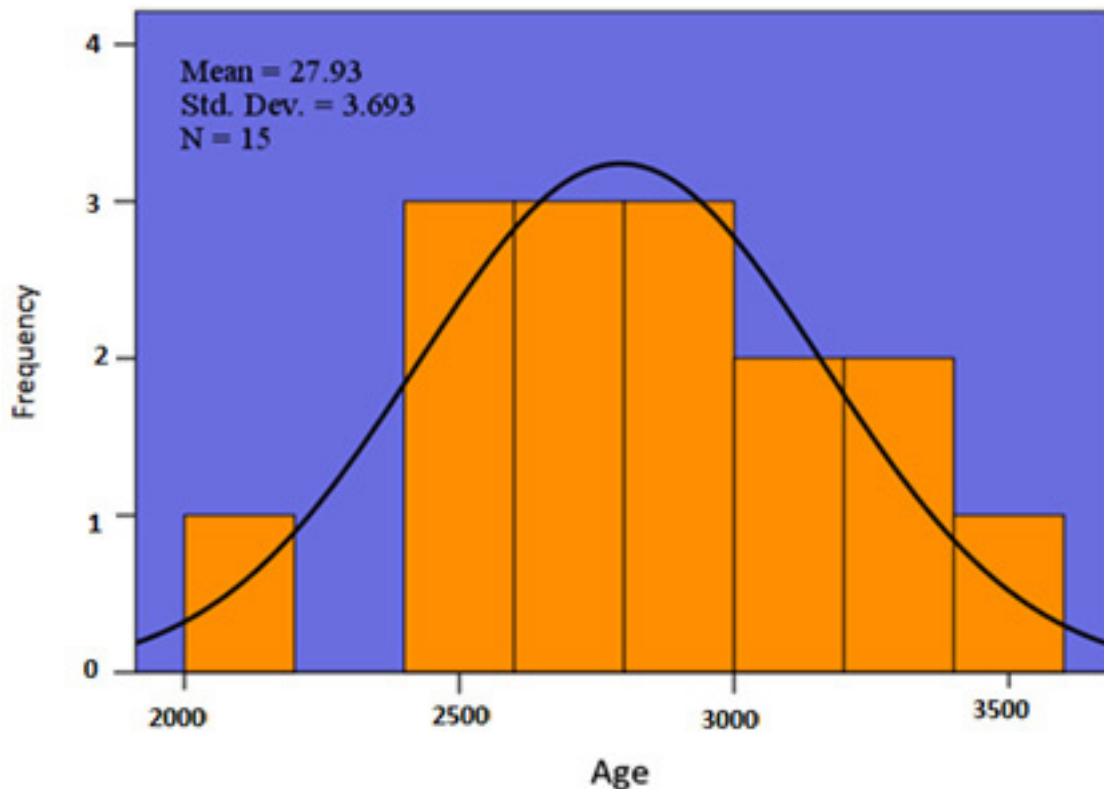


Table 5 shows the descriptive indices of central tendency and the dispersion of depression scores in the pretest and posttest groups. According to the data, the mean scores of depression in the pre-test of the two groups did not differ significantly. In the post-test, the depression scores of the experimental group decreased significantly. This can indicate the effect of the acceptance and commitment therapy on the depression scores in people with epilepsy. Negative values of the kurtosis of depression scores in all conditions implied a lack of distribution of people's scores around the mean that led to the expansion and lowering of the height of the normal distribution diagram.

Table 5: Descriptive indices of depression scores of control and experimental groups in pre-test and post-test

Groups	Scale	Number	Min.	Max.	Mean	Standard	Kurtosis	Skewness			
					Statistic	Standard error	Statistic	Standard error	Statistic	Standard error	
Pretest	Experiment	15	28	43	36.67	1.23	4.76	-0.384	0.580	-1.061	1.121
	Control	15	31	43	37.73	1.08	4.18	-0.128	0.580	-1.371	1.121
Post-test	Experiment	15	19	32	25.47	1.05	4.09	-0.039	0.580	-1.147	1.121
	Control	15	28	40	33.93	1.03	3.99	-0.021	0.580	-1.42	1.121

Rectangular diagrams 3 to 6 show the distribution of depression scores in the pre-test and post-test of the experimental and control groups. Based on the curve of the diagrams, the normal distribution of depression scores can be evaluated in different situations.

Diagram 3: Distribution of depression scores of subjects of the experimental group in the pre-test

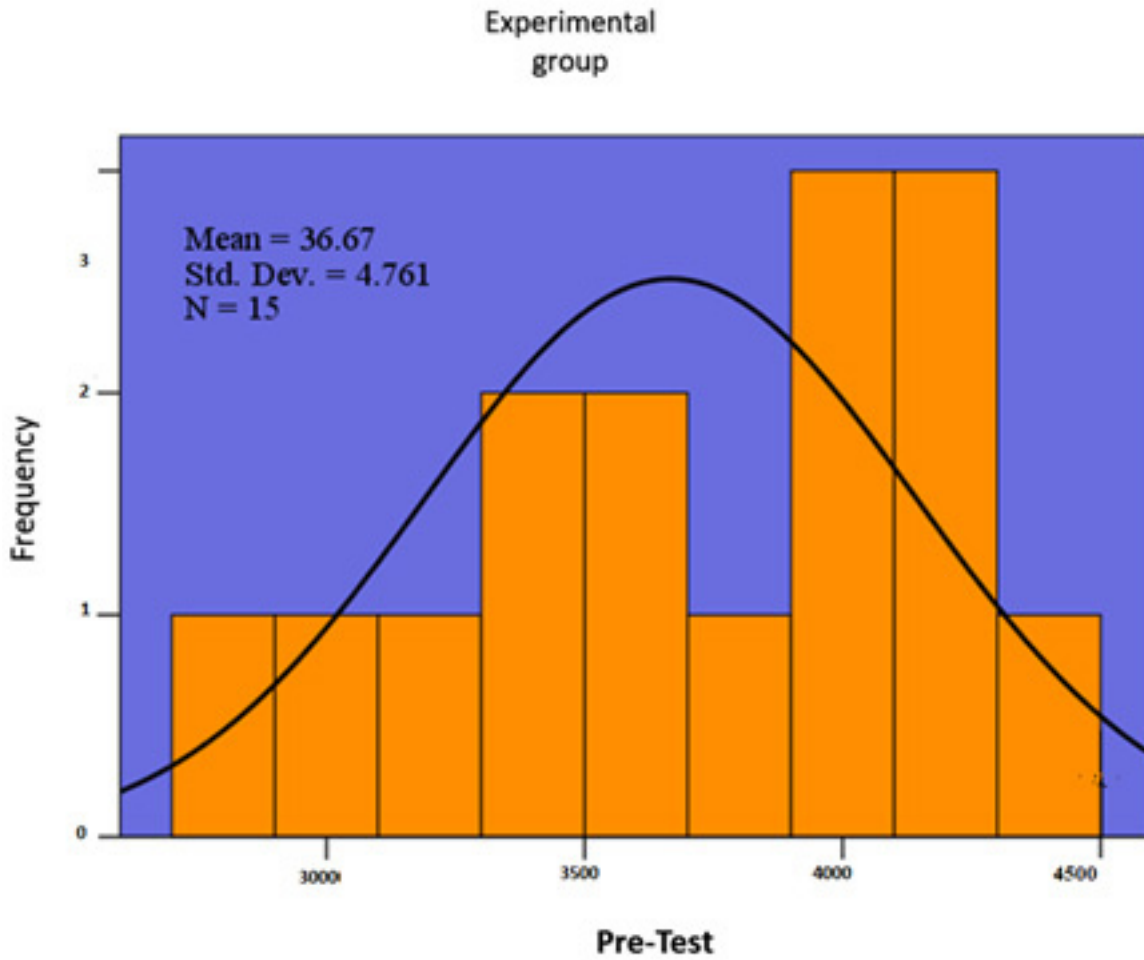


Diagram 4: Distribution of depression scores in the control group in the pretest

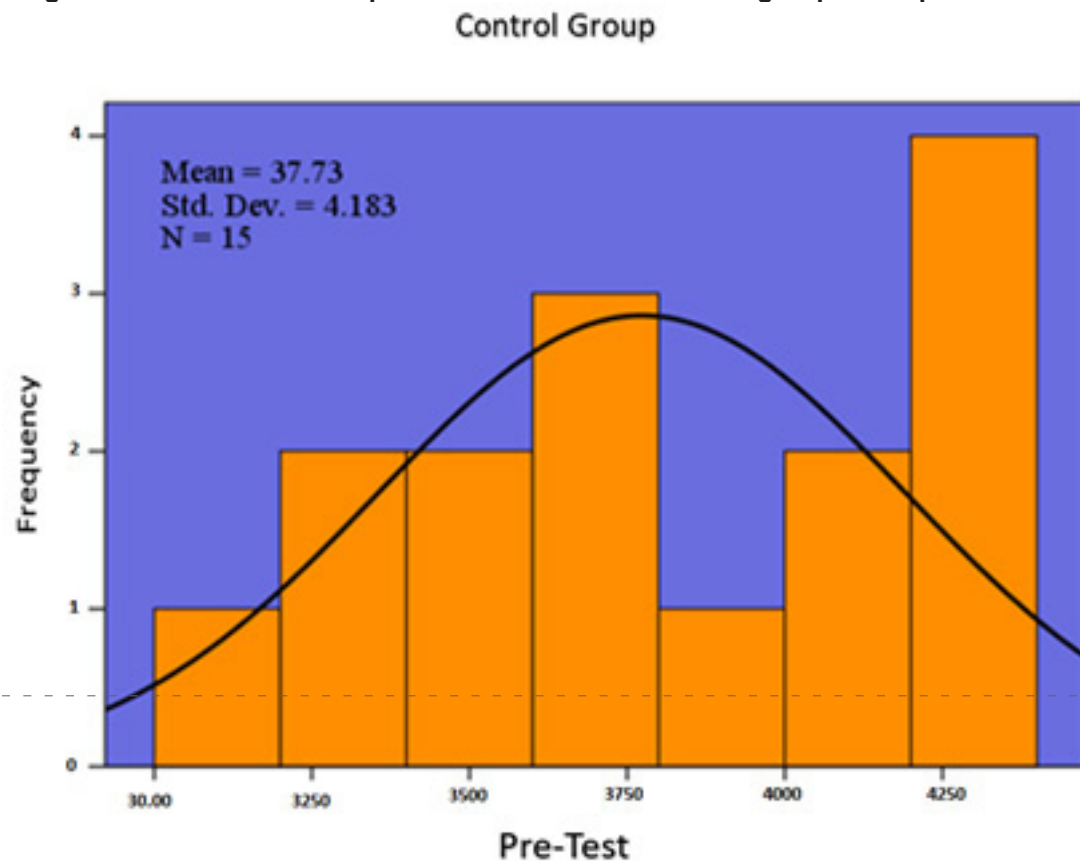


Diagram 5: Distribution of depression scores in the experimental group in the post-test

Experimental group, frequency, post-test

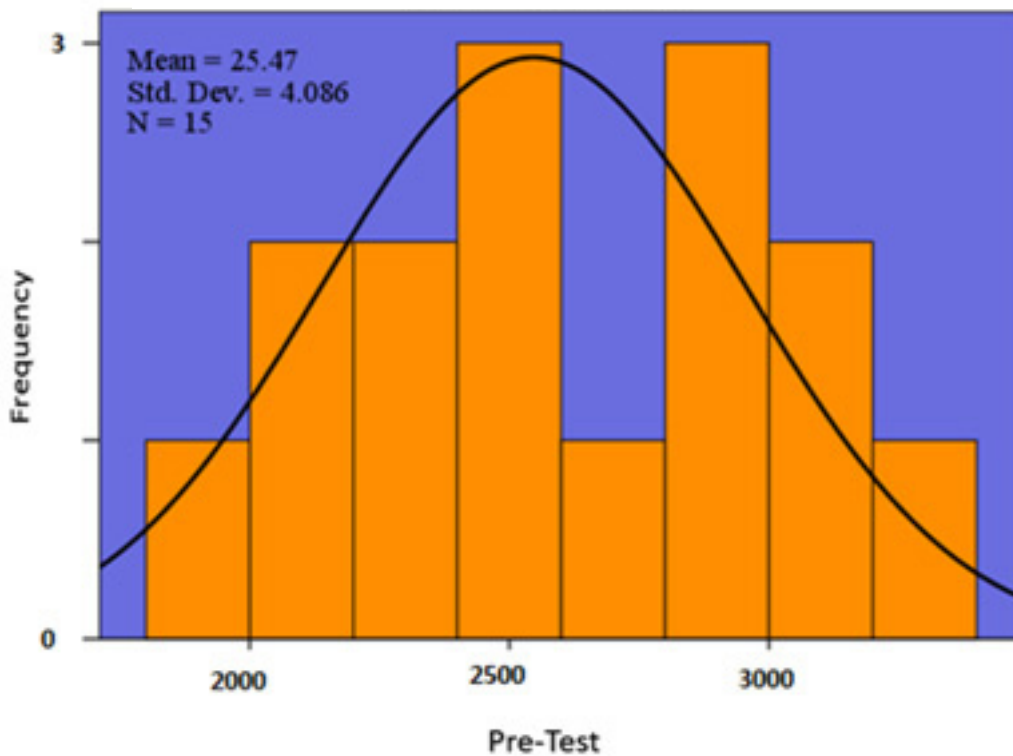


Diagram 6: Distribution of depression scores in the control group in the post-test

Control group, frequency, post-test

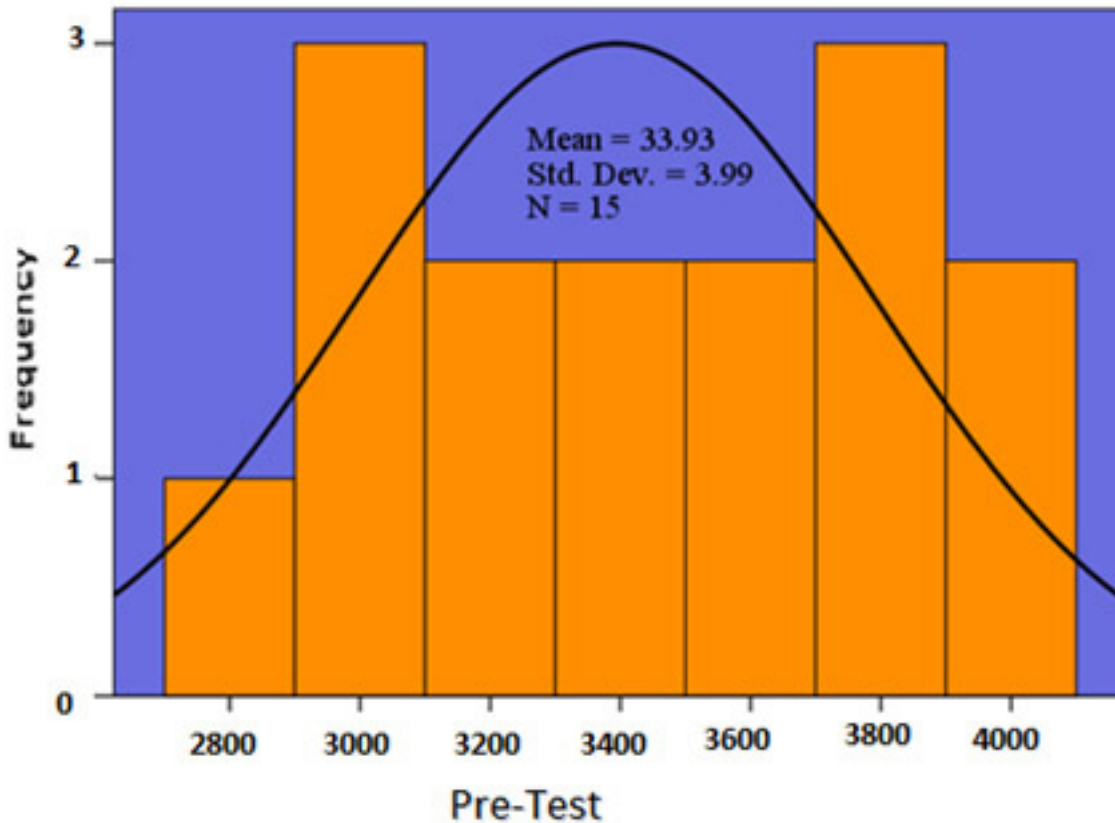


Table 6 shows the results of statistical analysis of interactions between the groups and pre-test. As shown in this table, given that the significance level of the interaction was greater than 0.05, it can be safely stated that the assumption of the homogeneity of the regression slopes has not been violated.

Table 6: Statistical Results of Interaction between the Groups and the Pre-Test

Sources	Total squares	Degree of freedom	Mean squares	F	Significance level	Parabola eta square
Groups	0.426	1	0.426	0.089	0.768	0.003
Pretest	331.764	1	331.764	69.360	0.000	0.727
Groups interaction* of pretest	9.444	1	9.444	1.974	0.172	0.071
Error	124.364	26	4.783			
Total	27457.000	30				

Table 7 shows the results of the main test of covariance analysis, the test of the effects between the subjects. After adjusting the pre-test scores, there was a significant effect of the factor between the subjects of group ($p=0.000$, $F_{1,27}=87.433$). The adjusted means of depression suggested that the experimental group that was being treated with acceptance and commitment therapy was significantly less depressed compared to the control group. Also, the eta square (0.764) indicates that there was a strong correlation between the independent variable (therapeutic intervention) and the dependent variable (depression of individuals). In other words, about 76.4% of depression variance was explained by the therapeutic intervention. Also, this table shows that there was a significant relationship between pre-test and post-test scores ($p = 0.001$, $ETA = 0.707$); in other words, the pre-test has played a role in explaining post-test scores of about 70.7%.

Table 7: Results of the tests of the effects between the subjects (dependent variable: depression)

Sources	Total squares	Degree of freedom	Mean squares	F	Significance level	Parabola eta square
Depression of pretest	322.859	1	322.859	65.147	.0000	.7070
Groups	433.305	1	433.305	87.433	.0000	.7640
Error	133.808	27	4.956			
Total	27457.000	30				

Table 8 shows the adjusted means of depression scores in post-test (dependent variable) for control and experimental groups.

Table 8: Adjusted means of post-test depression for control and experimental groups

Groups	Mean	Standard error	Limits of 95%	
			Lower limit	Upper limit
Experiment	25.871	.5770	24.687	27.055
Control	33.529	.5770	32.345	34.713

Discussion and Conclusion

The results of the covariance test of the present research showed that the difference between the experimental and control groups in the depression variable was statistically significant with $p = 0.000$, $F = 87.433$. Moreover, the Eta square of 0.764 means that about 76.4% of the variance of depression was explained by the Therapeutic intervention. The above findings were consistent with the results of Ton and Broni (1986), Goldstein et al. (2003), Bloom et al. (2004), Bainberg et al. (2005), Martinewick et al. (2006), Eckinsi et al. (2009) Praira and Valent (2013), Seghatoleslam et al. (2002), Najafi et al. (2010), Salehzadeh (2010), Hashemi et al. (2010), Salehzadeh et al. (2011) in the psychological interventions in epilepsy and Foreman et al (2007), Gaudiano et al (2007), Patterson and Zettel (2009), Hayes et al. (2010), Hayes et al. (2011), Moto (2012), Gaudiano et al. (2013) in the acceptance and commitment therapy in reducing the symptoms of mood disorders.

ACT is a therapeutic approach that uses acceptance processes, and focus of the consciousness and behavioral change processes to create flexibility (Hayes & Masuda, 2006). ACT is not a treatment method of abnormality, but rather it is a general approach that can accelerate the development of many protocols and focuses on specific problems of patient populations. ACT is scientific knowledge on the formulation of behavior and linguistic relations by a more effective therapeutic method (Hayes et al., 2007). The core of the change in ACT is the change in the internal (soliloquies) and external (performances) verbal behaviors. In the ACT method, it can be said that fighting with the emotions worsens them (Saudra, 2007).

Acceptance and commitment therapy is a therapeutic approach that uses acceptance processes to focus on instantaneous awareness, commitment, and behavioral change processes to create psychological flexibility (Hayes, 2012). The acceptance and commitment therapy is based on the increasing acceptance of awareness and communication with the present moment and participation in the activities that are in line with personal values. Acceptance, the key process involved in the therapeutic outcomes seems to reduce the effect of painful experiences on emotional functions, as well as predicts the individual's future functions. The main structure of acceptance and commitment therapy is psychological flexibility, which means, despite the presence of problems and suffering, it is the ability to perform effective actions in line with individual values (Hays et al., 2012). The results of the research indicated the importance of mental acceptance, regarding psychological performance. Those clients who report that they tend to experience less negative psychological experiences, the unpleasant emotional experiences, thoughts and memories, showed a better social, physical and emotional performance (Zetttl, 2007). Many researchers have shown that avoiding experiences was associated with a wide range of psychological and behavioral problems. People who are more inclined to suppress such experiences, when stresses and worries

occur in school, the workplace, conflicts in relationships with the spouse, etc., their endeavor to control their distress makes them more severe. Hayes (2006) also believed that the acceptance and commitment therapy, instead of focusing on eliminating harmful factors, helped clients to accept their controlled emotions and emancipate themselves from controlling language rules that caused them problems and allowed them to stop the conflict within them. ACT is essentially process-oriented and clearly emphasizes the promotion of acceptance of psychological experiences and commitment to increasing valuable, flexible, adaptive activities without considering the content of psychological experiences, a feature that is not present in most psychological therapies, including Behavioral cognitive therapy. Secondly, the purpose of therapeutic techniques used in the acceptance and commitment therapy is not to increase the effective and logical thinking or to encourage emotions, rather the purpose of these therapies is to reduce the avoidance of psychological experiences and to increase their awareness, especially the conscious relationship at the moment, through taking a non-conflictual and non-evaluative way.

The goal of this treatment is to improve function by increasing the level of psychological flexibility. Studies have shown that the group that experienced treatment with this approach had higher function and better quality of life than the control group. One result of the studies on the effectiveness of acceptance and commitment therapy was to improve the physical, psychological, social, and emotional functions (Hayes et al., 2012). In explaining these results, it can be concluded that although the medication and therapeutic interventions or even other psychotherapeutic methods may have a significant effect on the reduction of physical discomfort and signs and complaints, acceptance and commitment therapy has also been able to show this effect well. It seems that according to the results, for the treatment protocol and the condition of the patients in the treatment sessions, each of the therapeutic concepts has been effective in reducing the symptoms of depression in people with epilepsy. For example, in the process of creative hopelessness, the client must realize that he has so far made a lot of effort to solve the problem, but the problem still remains unsolved (Izadi and Abedi, 2013) and the control as the problem itself, not a solution to the problem, has been able to reduce the disturbing thoughts by converting empirical avoidance into empirical acceptance and cognitive fusion to cognitive dissociation. Also, attention in the present time and the clarification of the values and realizing them have led to a reduction in their focus on their past, and as a result reducing the symptoms of depression.

Generally, in acceptance and commitment therapy (ACT), psychological flexibility replaces various other clinical methods for mood, anxiety, physical disorders and so on. In addition, the client recognizes the change in the targeted treatment process, including the reduction of empirical avoidance and dissociation of thoughts and beliefs related to the problem. Therefore, although the purpose of ACT is not to directly reduce the symptoms of the problem,

including depression, obsession, anxiety, communication problems, etc., the patients experience less distress at the end of treatment. They also experience significant changes in depression and the scales of distress. Additionally ACT is to live worthily and address those barriers that make it difficult to reach this kind of life. Perhaps the reason that this treatment has been effective in a wide range of psychological disturbances and disorders can be related to the aforementioned points.

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