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The Effectiveness of Acceptance and Commitment Therapy (ACT) in Reducing Pain Intensity and Enhancing the Sense of Coherence and Psychological Well-being among the Patients with Chronic Low Back Pain

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Chronic pain is a common, multifactorial problem that requires medical and psychological interventions to be managed. On the other hand, Acceptance and commitment therapy (ACT) is one of the third-wave cognitive-behavioral therapies, which has recently been used to treat the certain psychiatric disorders and to enhance the patients' psychological status. Therefore, the present study aimed to investigate the effectiveness of acceptance and commitment therapy on reducing pain intensity and improving the sense of coherence and psychological well-being among the patients with chronic low back pain. This quasi-experimental study was performed by a pretest-posttest design with two groups. Also, it had a statistical population including all the patients with chronic low back pain and were present at the neuropsychiatry clinic of Ali ibn Abi Talib Hospital, who were referred to Red Crescent Physiotherapy Clinic in Zahedan from March 2016 to May 2017. Moreover, its sample consisted of 30 patients with chronic low back pain who were selected from all the patients referred to Red Crescent Physiotherapy Clinic in Zahedan, using the targeted sampling method in terms of the inclusion and exclusion criteria. These patients were then assigned into two groups as experimental and control, each one included 15 patients. In addition, the McGill

Pain Questionnaire (1997), The Ryff Psychological Well-being Scale (1989), and the Sense of Coherence Scale designed by Flensburg-Madson et al. (2006) were used as data collection tools. To analyze the data, descriptive statistics such as means, standard deviations, and univariate and multivariate covariance analyses were used. The data analysis indicated that, the acceptance and commitment therapy could significantly decrease the pain intensity and its subscales among the patients in the experimental group compared to the control group ($P < .01$). Furthermore, acceptance and commitment therapy significantly increased the sense of coherence and psychological well-being as well as their subscales in the experimental group's patients compared to the control group ($P < .01$). It can be concluded that, acceptance and commitment therapy was effective on reducing the pain intensity and boosting the sense of coherence and psychological well-being among the patients with chronic low back pain. Therefore, the findings represent new horizons in clinical interventions and can be used as an effective intervention method.

Keywords: Acceptance and Commitment Therapy (ACT), Pain Intensity, sense of coherence, psychological well-being, low back pain

Pain is one of the most prevalent phenomena forcing people to seek help from care, health, and medical systems. Also, that is why relieving a patient's pain is one of the most important medical priorities after preserving his/her life (Gharaie-Ardekani, Azad-Fallah & Tavallaie, 2012). In this regard, the International Association for the Study of Pain defined pain as an unpleasant sensory or emotional experience associated with actual or potential damage, which has two sensory (pain intensity) and emotional (discomfort) dimensions (Rafiee, Sohrabi, Shams & Forough, 2012). Moreover, in the diagnostic guide, chronic pain disorder is defined as a somatic symptom disorder, which is accompanied by significant pain (previous pain disorder), and also as a disorder in which pain is its main symptom (Thorn, 2017). Chronic low back pain is one of the most common types of pains affecting millions of people

worldwide and is one of the most challenging medical issues in the industrialized and developing countries by affecting almost 60% of the population for at least once in their lives. The socioeconomic costs caused by this pain are similar to severe diseases such as coronary heart disease and diabetes. Additionally, the indirect costs of low back pain, due to decreasing a patient's efficiency, are estimated to be about 6.5 times higher than its direct costs (Perry, VanDenKerkhof, Wilson & Tripp, 2017).

A study indicated that, most of the people with low back pain are also at the risk of physical and mental problems, such as the reduced physical and mental functioning, the reduced general health and well-being, and constant or periodic pain (Sahin, Karahan, Devrimsel & Gezer, 2017). Psychological well-being is defined as the growth of each individual's true talents (Vazquez, Hervas, Rahona & Gomez, 2009). In addition, psychological well-being refers to a person's emotional and cognitive assessments of his/her life (Clarke & Goosen, 2009). A study conducted by McCracken et al. (2010) examined the adolescents with chronic low back pain and then figured out that, the less pain intensity they experienced, the more psychological well-being they had. Moreover, Beigi et al. (2008) indicated that, the general health was significantly lower in people with chronic pain (somatic symptoms, anxiety, and depression) compared to healthy people. In this regard Pourhadi, Hossein-Zadeh, Haji-Ahmadi & Taghipour-Darzi (2014), in their study showed that, there was a diverse relationship between the pain intensity and general and mental health, and there was also a direct relationship between the pain intensity and the overall score of disability.

One of the important psychological factors in the patients with chronic low back pain is a sense of psychological coherence. The sense of coherence refers to the people's enduring attitude towards and outlook on life, as well as the way that they can identify and reuse their resistance resources to maintain and improve their health when dealing with the stressful situations (Sarah & Beatriz, 2012). Also, the sense of coherence is a personal construct with three components as follows: comprehensibility, manageability, and meaningfulness (Moksnes, Espnes & Lillefjell, 2012). The current approaches for the pain management have increasingly transcended the physical approaches to pharmaceutical therapies and addressed the multidimensional and interdisciplinary approaches, including multifaceted therapies, such as a combination of analgesics, physical, behavioral, and psychological treatments with each other (Vowles, McNeil, Gross, McDaniel, Mouse & Bates, 2007). In this regard, a group of psychological interventions recently led to a growing interest to the acceptance-based therapy, which is considered as a third-wave cognitive-behavioral therapy. Acceptance and commitment therapy (hereinafter referred to as ACT) is one of the most common types of therapies aimed at helping the patients to achieve a more valuable and satisfying life by increasing their psychological flexibility. Accordingly, ACT has six core processes leading to cognitive flexibility, namely, acceptance, cognitive diffusion, and contact with the present moment, self as context, values, and committed action (Roditi & Robinson, 2011).

Veehof, Oskam, Schreurs & Bohlmeijer (2011), in a meta-analysis conducted on 1,235 patients with chronic pain, indicated that, the new approaches of the third-wave cognitive-

behavioral therapy had an acceptable effect on the psychological variables. Also, Johnston, Foster, Shennan, Starkey & Johnson (2010), in their study found that, ACT could significantly reduce the anxiety levels among the participants with chronic pain. Vowles et al. (2007), in their study conducted on the effectiveness of ACT on 171 patients with chronic pain, demonstrated that the indicators such as pain experience, depression, and anxiety, has been improved as a result of the treatment.

Ataei Moghanloo (2014), in a study entitled *The Effectiveness of Group Therapeutic Hope on Predominant Well-being, Acceptable, and Pseudostasis of HIV Patients*, concluded that, ACT increased the psychological well-being and reduced the depression level among these patients. Shokri (2001), in a study that examined the effect of ACT on the psychological well-being of people with epilepsy, found that, ACT improved the psychological well-being among the people with epilepsy. Moreover, Hauser, Springer, and Pudrovskaja (2014), attempted to investigate the role of ACT in psychological and social well-being and adjustment among the children with behavioral problems, and indicated that, ACT affected these children's psychological well-being and also improved their social relationships and adjustment. HadizadehKafash et al. (2017) conducted a study entitled *The Effectiveness of ACT in Psychological Well-being and Marital Satisfaction in Amol*, which its results showed that, ACT can be considered as an effective method on increasing the psychological well-being and reducing marital conflicts. Hoseyni et al. (2017), in their study entitled *Role of Mediating Sense of Coherence between the Duration and Number of Physical Complications of Diabetes with Mental Health in Patients with Type II Diabetes Mellitus*,

found that, the sense of coherence play a mediating role in the relationship of the disease's duration and the number of physical complications with mental health among the patients with type II diabetes. They also indicated that, it play an important role in controlling the physical and psychological effects of diabetes. Moreover, Sabri, Nazarzadeh, and Abdolkhodaei (2011), in a study entitled *The Relationship of the Sense of Coherence and Psychological Hard Work with Mental Health*, reported that, the sense of coherence was related to mental health and psychological hard work significantly and directly. Furthermore, the sense of coherence and hard work could predict the mental health condition.

As mentioned earlier, chronic low back pain causes several psychological and physical problems affecting various aspects of people's lives and reducing their psychological well-being and sense of coherence. Therefore, by considering the evidence showing the effects of acceptance on reducing the pain experience and improving the people's psychological functions, and since chronic low back pain is one of the most common type of pain and no study have specifically been performed on assessing the effect of acceptance therapy and other variables in the considered population, the present study aimed to investigate the effectiveness of ACT on reducing the pain intensity and enhancing the sense of coherence and psychological well-being among the patients with chronic low back pain.

Accordingly, the following research question was sought to answer:

- Is ACT effective on decreasing the pain intensity and increasing the sense of coherence and psychological well-being among the patients with chronic low back pain?

Method

This quasi-experimental study was performed by a pretest and posttest design with two groups as experimental and control. It also had a statistical population including all the patients present at the neuropsychiatry clinic of Ali ibn Abi Taleb Hospital, who were referred to Red Crescent Physiotherapy Clinic in Zahedan from March 2016 to May 2017. After a pain diagnosis performed by a pain specialist, 30 patients with chronic low back pain were selected using the targeted sampling method. Afterward, they were randomly assigned into two groups as experimental and control (each group consisting of 15 patients). Notably, inclusion criteria were suffering from back pain for at least 3 months, suffering from a persistent back pain a week before the study, age between 18 and 50 years old, taking no type of treatment (other than pharmaceutical treatment) during the intervention, and willingness to participate in the study. Also, exclusion criteria were being younger than 18 years old or older than 50 years old, not having at least a high school diploma, and not having comorbidity with other mental disorders. The Patients were selected and then referred with the opinion of orthopedic, spine, and pain specialists.

Ethically, the researchers, after completing the testing process and the clients' intervention, performed the interventions for the control group similar to the experimental group, and then followed and trained the sessions for them.

In order to control the placebo, the researchers tried to pay the same attention to both of the experimental and control groups, except for the subject matter of the discussions related to the intervention. Accordingly, the data collection tools were the following questionnaires:

1-The McGill Pain Questionnaire: This questionnaire consists of 20 sets of phrases and aims to measure the people's perception on pain from different dimensions, i.e., sensory pain perception (1-10), emotional pain perception (11-15), pain perception assessment (Johnston, Foster, Shennan, Starkey & Johnson, 2010), and various pains (16-20) (Dworkin et al., 2009). The minimum and maximum scores that a subject can obtain are 20 and 77, respectively. Accordingly, the validity and reliability of this questionnaire were confirmed in a study carried out by Dworkin et al. (Zaccagnino & Nedeljkovic, 2017). In this study, the Cronbach's alpha coefficients of sensory pain perception, emotional pain perception, pain perception assessment, and various pains were .87, .87, .83, and .86, respectively. This questionnaire has been studied in Iran, and its validity and reliability have been reported to be suitable. For example, Khosravi et al. (26), in their study, reported that, its Cronbach's alpha coefficient was .85, and the Cronbach's alpha coefficients of all the four dimensions were also greater than .80.

In the current study, its reliability was measured using Cronbach's alpha, which was .86 for the whole questionnaire ranged from .83 to .87 for all the dimensions.

2- The Psychological Well-being Scale: This scale was designed by Ryff (1989) and was then revised in 2002. This short-form consists of 18 items, which were derived from a 120-question form. It also assesses 6 factors, namely independence (items No. 9, 12, and 18), environmental mastery (items No. 1, 4, and 6), personal growth (items No. 7, 15, and 17), positive relationships with others and purpose in life (items No.3, 11, and 13), and self-acceptance (items No. 2, 8, and 10). Moreover, it was developed based on a 6-point Likert-type scale (ranging

from completely disagree (1) to completely agree (6)). Items No. 1, 4, 5, 8, 15, 16, 17, and 18 were diversely scored. The minimum and maximum scores that a subject can obtain are 18 and 108, respectively. Ryff and Singer (2013) reported its correlation with an 84-item form of this scale ranged from .70 to .89. In addition, its internal consistency was measured using Cronbach's alpha. The Cronbach's alpha coefficients of self-acceptance, environmental mastery, positive relationships with others, purpose in life, personal growth, and independence were .51, .76, .75, .53, .73, .72, respectively. Furthermore, the Cronbach's alpha coefficient of the whole scale was .71. According to the results of the confirmatory factor analysis, all the factors had good fits. In the current study, the reliability coefficient of the whole scale was .92, and the coefficients of its factors ranged from .83 to .91.

3-The Sense of Coherence Scale: This 35-item scale was designed by Flensburg-Madsen, Ventegodt, and Merrick (2006), which was developed based on a 3/5-point Likert-type scale. In this questioner, the minimum and maximum scores that a subject can obtain are 35 and 105, respectively. Flensburg-Madsen et al. (2006), reported in a study that, the reliability of this questionnaire was .87, and in another study, they reported its reliability as .86. In this study, the Cronbach's alpha coefficient of the scale was .85.

ACT is an 8-session group therapy program, which was held in 8 weeks based on a theory proposed by Hayes, Luoma, Bond, Masuda, and Lillis (2006). Accordingly each session lasted for 75 minutes. Also, the topics and objectives of the sessions are presented in the following table (Table 1).

Table 1
A Description of the Contents of each ACT Session

Session	The contents provided
1	Establishing a therapeutic relationship, letting the patients get familiar with the research topic, answering the questionnaires, and closing a medical contract.
2	Discovering and evaluating the patients' treatment methods, assessing their effectiveness, discussing the temporary effects and ineffectiveness of the treatments by giving examples, receiving feedback, and assigning homework.
3	Assisting the patients to identify ineffective strategies used to control the pain, understanding their ineffectiveness, accepting painful personal events without having a conflict with them by giving examples, receiving feedback, and assigning homework.
4	Explaining the methods of avoiding painful experiences, being aware of their consequences, teaching acceptance steps, changing language concepts by giving examples, teaching relaxation techniques, receiving feedback, and assigning homework.
5	Introducing a three-dimensional behavioral model to express the common relationship between behaviors/emotions, psychological functions, and observable behavior, discussing efforts that should be made to change behavior, receiving feedback, and assigning homework.
6	Explaining the concepts of role and background, observing yourself as a context, making contact with yourself by giving examples, being aware of different sensory perceptions and separation from senses that are part of mental content, receiving feedback,

	and assigning homework.
7	Explaining the concept of values, creating a motivation to change and empower the patients to have a better life, practicing concentration, receiving feedback, and assigning homework.
8	Teaching how to commit to actions, identifying behavioral plans in line with values, committing to act on them, summarizing the sessions, and conducting the posttest.

In the present study, all the relevant ethical principles, including the confidentiality of the questionnaires, the participants' informed consent, and the participants' freedom to withdraw the research, were observed. Moreover, in the current study, SPSS and univariate and multivariate covariance analyses were used for testing the hypotheses.

Results

Table 2 indicates the descriptive data of the research sample. In this study, 17 patients were male, and 13 patients were female. Also, six patients were unmarried and 24 patients were married. Moreover, most of the patients had a high school diploma, and most of them were in the age range of 42 to 50 years old.

Table 2
Descriptive Data of the Research Sample

Variables		Experimental group	Control group
N		15	15
Gender	Male	10	7
	Female	6	7
Marital status	Single	4	2
	Married	11	13
Level of education	Diploma	6	8
	B.A.	4	5
	M.A.	4	3
Age	18 to 25 y	3	5
	26 to 33 y	3	1
	34 to 41 y	2	4
	42 to 50 y	6	6

Table 3
Results of the Analysis of the Same Slope of the Regression Line as the Default Analysis of Covariance

Significance level	The value of F	Average squares	df	Total square footage	Source of changes
.897	.017	.020	1	.020	Group * Pre-test

Table 4-11 shows the results of the analysis of the same slope of the regression line as the main assumption of the analysis of covariance.

Based on the results, the significance level of the group effect and pretest ($p = .897$) is greater than .05, so the regression homogeneity hypothesis is accepted.

The descriptive results related to the research variables are presented in Table 4.

Table 4
Means and Standard Deviations of Pain Intensity, Sense of Coherence, and Psychological Well-being Scores Obtained by the Experimental and Control Groups in the Two Measurement Stages

Group	Variable	Pretest		posttest		
		Mean	Standard deviation	Mean	Standard deviation	
Experimental	Sensory pain perception	31.66	6.28	28.20	6.32	
	Emotional pain perception	12.80	4.53	9.93	4.33	
	Pain perception assessment	11.46	3.37	8.26	2.76	
Control	Sensory pain perception	31.13	6.24	30.53	6.26	
	Emotional pain perception	13.26	4.23	12.80	4.09	
	Pain perception assessment	10.60	2.92	10	3.07	
Experimental	Sense of coherence	61.46	15.67	65.53	15.38	
	Sense of coherence	57.26	15.62	57.87	15.54	
Control	Sense of coherence	57.26	15.62	57.87	15.54	
	Sense of coherence	57.26	15.62	57.87	15.54	
Experimental	Independence	9.33	2.66	12.46	2.94	
	Environmental mastery	8.40	2.22	11.60	3.22	
	Personal growth	9.46	2.26	12.26	2.89	
	Positive relationships with others	8.66	1.63	10.20	1.97	
	Purpose in life	7.60	1.64	9.86	2.61	
	Self-acceptance	10.53	2.13	12	2.80	
	Independence	10.53	2.97	11	2.87	
	Environmental mastery	9.40	2.84	9.73	2.78	
	Personal growth	9.66	2.09	10.33	2.05	
	Positive relationships with others	9	2.13	9.20	2.04	
	Purpose in life	7.80	2.73	8.40	2.41	
	Self-acceptance	8.93	2.54	9.06	2.46	
	Control	Independence	9.33	2.66	12.46	2.94
		Environmental mastery	8.40	2.22	11.60	3.22
Personal growth		9.46	2.26	12.26	2.89	
Positive relationships with others		8.66	1.63	10.20	1.97	
Purpose in life		7.60	1.64	9.86	2.61	
Self-acceptance		10.53	2.13	12	2.80	
Independence		10.53	2.97	11	2.87	
Environmental mastery		9.40	2.84	9.73	2.78	
Personal growth		9.66	2.09	10.33	2.05	
Positive relationships with others		9	2.13	9.20	2.04	
Purpose in life		7.80	2.73	8.40	2.41	
Self-acceptance		8.93	2.54	9.06	2.46	

Table 5
The Results of the Multivariate Covariance Analysis Conducted to Compare the Experimental and Control Groups in Pain Intensity, Sense of Coherence, and Psychological Well-being

Effect	Test	Value	F	df of effect	df of error	Sig.
Group	Pillai's trace	.888	17.048	10	9	.001
	Wilks' Lambda	.112	17.048	10	9	.001
	Hotelling's Trace	7.956	17.048	10	9	.001
	Roy's Largest Root	7.956	17.048	10	9	.001

As can be observed, the significance level of all four relevant multivariate statistics, i.e. Pillai's Trace, Wilk's Lambda, Hotelling's Trace, and Roy's Largest Root, were less than .01 ($P < .01$). Thus, the null hypothesis was rejected, and it was found that after the intervention, there were significant differences between the experimental and control groups in the pain intensity, sense of coherence, and psychological well-being scores. Accordingly, it can be said that ACT was effective in decreasing pain intensity and enhancing the sense of coherence and psychological well-being of patients with chronic low back pain. The between-subject effects test was used to investigate the difference between the experimental and control groups in terms of the subscales of pain intensity, sense of coherence, and psychological well-being. The results are presented in the following table (Table 6).

Table 6
The Results of the between-Subject Effects Test Carried out to Compare the Experimental and Control Groups in Terms of the Subscales of Pain Intensity, Psychological Well-being, and Sense of Coherence

Variable	Source	Sum of squares	df	Mean of squares	F-statistic	Sig.
Sensory pain perception	Between groups	34.280	1	34.280	67.147	.001
	Within-group	9.198	18	.511		
Emotional pain perception	Between groups	23.385	1	23.385	72.274	.001
	Within-group	5.832	18	.324		
Pain perception assessment	Between groups	34.434	1	16.046	34.434	.001
	Within-group	8.388	18	.466		
Sense of coherence	Between groups	91.702	1	91.702	55.07	.001
	Within-group	29.97	18	1.665		
Independence	Between groups	3.585	1	3.585	5.542	.028
	Within-group	11.646	18	.647		
Environmental mastery	Between groups	8.954	1	8.954	11.781	.002
	Within-group	13.68	18	.760		
Personal growth	Between groups	5.469	1	5.469	9.432	.006

	Within-group	10.44	18	.580		
Positive relationships with others	Between groups	2.433	1	2.433	8.362	.008
	Within-group	5.238	18	.291		
Purpose in life	Between groups	6.157	1	6.157	7.490	.012
	Within-group	14.796	18	.822		
Self-acceptance	Between groups	8.769	1	8.769	10.619	.004
	Within-group	14.867	18	.826		

According to the results presented in Table 5, the obtained F-statistics for all of the subscales were significant at the .01 significance level. Therefore, the null hypothesis was rejected, and the research hypothesis was confirmed. It can be concluded that ACT was effective, and it reduced the pain and enhanced the sense of coherence and psychological well-being in the patient with chronic low back pain.

Discussion

The present study aimed to investigate the effectiveness of ACT on reducing the pain intensity and enhancing the sense of coherence and psychological well-being among the patients with chronic low back pain. The first finding of the present study showed that, after the intervention, there was a significant difference in the pain intensity scores between the experimental and control groups. Therefore, ACT was effective on reducing the pain intensity among these patients with chronic low back pain. Accordingly, this finding is consistent with the results of

the previous similar studies. For example, Vowles (2007) found that, ACT improved the function of the patients with chronic pain. In addition, Keogh, Bond, Hanmer, and Tilston (2005) showed that, the acceptance-based interventions led to less sensitivity to pain in the patients with chronic pain. To explain the above-mentioned hypothesis, it can be said that, according to the findings, the patients with low back pain were very sensitive to cognitive errors, such as catastrophe (self-talk, thoughts or mental images that predict the negative aspects and unpleasant consequences of an event, or misinterpretations and highly negative translations of an event as well as its results). Furthermore, cognitive errors, like extreme generalization (assuming that the outcome of an event is necessarily true for similar events that will occur in the future), personalization (changing the negative events with a personal viewpoint and related responsibilities), and selective abstraction (the selective perception of negative aspects of an event) could be frequently found in the patients with low back pain (Wetherell, Afari, Rutledge, Sorrell, Stoddard & Petkus, 2011). On the other hand, ACT, as a kind of behavioral intervention, helps a person to live more in the present moments and to focus on his/her important values and goals, rather than paying attention to painful thoughts, emotions, and experiences. The patient enters a treatment phase with a belief that many of his/her problems are uncontrollable, so during the treatment, the patients create some expectations that they can effectively control their problems. Subsequently, they need to be taught some skills so that they can effectively resolve their current problems as well as new problems that arise after the end of the treatment.

Another finding of the present study showed that, after the intervention, the mean score of the sense of coherence increased

in the experimental group, which was higher compared to the control group. Therefore, it can be concluded that, ACT was effective on increasing the sense of coherence of the patients with chronic low back pain. Accordingly, this finding is consistent with the results of the previous similar studies. For example, Irandoost, Safary, Neshatdoost and Nadi (2015), in a study examined the effects of group therapy based on acceptance and commitment on anxiety associated with pain and depression in women with chronic low back pain, and as a result, indicated that group therapy based on acceptance and commitment was effective on reducing the psychological distress in the patients with chronic low back pain. To explain the above-mentioned hypothesis, it can be said that, one of the processes of ACT is the process of committed actions. Also, the patients are encouraged to clarify values, determine goals, anticipate obstacles, and ultimately commit to doing actions to achieve their objectives and move towards their values. Therefore, this increases their life satisfaction, and free themselves from getting involved in negative thoughts and feelings (anxiety, depression, and depression), which in turn, increases the pain intensity, and provides the conditions for psychological coherence, in addition to achieving the goals, and thereby happiness (McWilliams, Cox & Enns, 2003). According to what was mentioned earlier, the perceptions and beliefs of the patients with chronic low back pain are effective on reducing their pain and also on promoting their psychological well-being; especially when they want dealing with the stressful conditions created as the result of the pain and perceive the disease (the first subscale of coherence), managing it (the second subscale of coherence), and giving a meaning to it (the third subscale of coherence). In general, maintaining coherence against a

progressive disease is an important criterion in determination of a person's psychological well-being.

Also, the last finding showed that, there was a significant difference in the psychological well-being scores after the intervention between the experimental and control groups. Accordingly, it can be said that, ACT was effective on enhancing the psychological well-being of the patients with chronic low back pain. Accordingly, this finding is consistent with the results of the previously carried out studies. In a study conducted by Wicksell et al. (2010) on the patients with chronic pain, it was reported that, the patients had a better improvement in terms of the pain experience, depression, and anxiety after implementing ACT. Also, in behavioral therapies based on acceptance, the main goal is creating a psychological flexibility, i.e. to create the ability to make a practical choice that is more appropriate among all the various options rather than acting only to avoid emotions, memories, or disturbing desires. In this treatment, initially, it was tried to increase the people's psychological acceptance of mental experiences (thoughts and feelings) and mutually reducing the application of control. The patients taught that, doing any action to avoid or control these unwanted mental experiences is ineffective or has a reverse effect and exacerbates them, and these experiences should be fully accepted with no internal or external reactions to remove them. In the second step, people's psychological awareness increases in the present moment, which means that, these people become aware of all their mental states, thoughts, and behaviors at the present moment. In the third step, they taught to separate themselves from these mental experiences (cognitive separation), so that they can independently act without any of these experiences. In the fourth step, it was tried to reduce the

focus on self-actualization or personal story (such as being victims) that people made on themselves in their minds. In the fifth step, people were helped to identify their values and then to convert them into specific behavioral goals (clarifying values). Finally, people were motivated to do committed actions, i.e. goals- and values-centered activities, along with the acceptance of mental experiences. These mental experiences can be depressing and obsessive thoughts, thoughts related to trauma, panic, or social anxiety (Cardaciotto, Herbert, Forman, Moitra & Farrow, 2008). Therefore, the aforementioned set of factors led to the enhancement of psychological well-being. Generally speaking, chronic pain, especially chronic low back pain, can dramatically affect a person's health and psychological well-being, leading to a decrease in his/her quality of life.

This study has also some limitations as follows: 1- Lack of homogenization of the patients in two experimental and evidence groups due to the type of low back pain 2- No follow-up period 3- No drug group, but given the evidence, the Act-based approach appeared to be working. It is also recommended that, comparative and acceptance treatments should be compared with other treatments for other diseases, and to further decide on future research with follow-up period. Therefore, we can conclude that, the effectiveness of the act did not differ significantly between the two groups; and therefore, this method can reduce the severity of the pain and exacerbate the emotional and psychological well-being of the patients with chronic low back.

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