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Comparing the Effectiveness of Cognitive-Behavioral Therapy and Acceptance and Commitment Therapy on Pain Complaint Behavior and Pain Self-efficacy in Patients with Chronic Back Pain in Tehran

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Abstract: Chronic back pain is among the most common types of chronic pains. This research was conducted to compare the effectiveness of Cognitive Behavioral Therapy (CBT) and Acceptance and Commitment Therapy (ACT) on pain complaint behavior and pain self-efficacy in patients with chronic back pain. The current research is a pretest-posttest follow-up experimental design with a control group that lasted from February 2019 to March 2020. The statistical population consisted of patients with chronic back pain referring to the specialty department of Al-Zahra Hakimieh Clinic in Tehran (Iran). The participants included 45 people selected by purposive and accessible sampling method and randomly assigned to three groups (15 people in each group). The first experimental group received CBT, the second experimental group received ACT, and the control group did not receive any intervention. Required data were collected using demographic information, pain complaint behavior, and pain self-efficacy questionnaires. Research hypotheses were examined using univariate covariance analysis. According to the results, 45 patients (33 men and 12 women) with an average age of 41.18 participated in this research. The F statistic obtained from univariate covariance analysis was significant for all dependent variables ($P < 0.001$). The effectiveness of CBT and ACT interventions on pain complaint behavior and pain self-efficacy was compared using Bonferroni's post hoc test. The results indicated no significant difference between the effectiveness of CBT and ACT on pain complaint behavior and pain self-efficacy in both post-test and follow-up phases ($P > 0.05$). Therefore, the effectiveness of both interventions on the pain complaint behavior and pain self-efficacy was the same. Overall, although the findings support the effectiveness of CBT and ACT in reducing the pain complaint behavior and increasing pain self-sufficiency in patients with chronic back pain, there was no significant difference between them in the post-test and the follow-up. Accordingly, this study recommends using CBT and ACT to reduce pain complaint behavior and increase pain self-sufficiency among chronic patients.

Keywords: Cognitive behavioral therapy; Acceptance and commitment therapy; Pain complaint behavior; Pain self-efficacy; Chronic back pain

Introduction

Chronic pain has been and will be one of the most important medical problems in the around of the world. Every year, millions of people are affected by it, but unfortunately, they do not receive proper treatment (Ajimsha, Majeed, Chinnavan, & Thulasyammal, 2014). The term chronic pain is used to describe non-cancerous and treatment-resistant pain that has lasted beyond the expected period of improvement (Cohen, Quintner, & van Rysewyk, 2018). In addition to physical problems, patients

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with chronic pain usually experience depression, disturbance in interpersonal relationships, especially in the family, disturbance in sleep, fatigue and reduced physical and psychological functions. Gamsa (1994) reports that a significant part of the population patients with chronic pain suffers from depression and social maladjustment and declining in quality of life.

Among the chronic pains, back pain is one of the most common types of pain, and there are few people who have not experienced some symptoms of this pain in their lifetime. Back pain is the second reason why patients see a doctor, and was estimated to be a common global problem after a cold. Based on this, research indicates that 12 to 45 percent of the adult population and 70 to 85 percent of the entire society have suffered from chronic back pain once in their lifetime (Angst et al., 2020). According to researches, although most patients with back pain recover temporarily within one or two months, a significant part of these patients suffer from its chronic type.

This part of the population with chronic back pain is increasing in recent years. Unfortunately, currently, the treatment of these patients is not very successful and satisfactory because our understanding of the effective factors in the etiology and continuation of this chronic disorder is significantly limited. Therefore, knowing the mechanism of pain and the effective factors in adapting to it can play an important role in reducing many unnecessary pains (Hartvigsen, Christensen, & Frederiksen, 2003). Linton (2001) in a review summarized the information concerning the role of psychological workplace variables in back pain and concluded that psychological work factors play a significant role in future back pain problems. He found that psychological variables are usually more effective than biomedical or biochemical factors in the disability caused by back pain and change the acute pain to a chronic one. Also, the role of psychological factors in the formation and continuation of chronic back pain and its resulting disabilities has been widely supported. Therefore, it can be said that back pain is a symptom and not a disease; and it can be caused by various known or unknown diseases or abnormalities (Asghari Moqaddam, Rahmati, & Sho'eyri, 2012).

Despite the fact that the diagnostic criteria for types of back pain have been clarified and new drugs have been developed for these patients, yet some patients complain of pain. In this regard, the research conducted in the field of investigating the effects of chronic back pain on the mental status of affected patients indicates a higher prevalence of mental disorders among them compared to the normal population (Bento et al., 2020). Among the general population, there is a high prevalence of back pain among military personnel. Research shows that back pain among military personnel causes disability, reduced productivity, increased health care costs, and imposes costs due to absenteeism and receiving compensation. Also, back pain problems in military personnel have a major impact on the readiness of these services. There are predisposing factors in the military environment that can trigger and

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perpetuate back pain. These factors included work experience, age over 40 years, excessive mobility, continuous standing, work-related traumas, and work-related stress that can be considered as potential and actual risk factors for back pain (Shojaedin & Ghasemi, 2014).

Obviously, patients who suffer from chronic back pain for a long time are prone to physical disability and a range of psychological and social problems. Therefore, most back pains are called unspecific or non-specific pains. Based on this, back pain is characterized by a range of physical, biological, psychological and social dimensions and has a negative effects on performance, social participation and personal financial well-being (Rahimian Boogar, 2011).

The treatment of back pain is very complex and depending on the various risk factors, and the relationship between them. Psychological problems may be related to a person's behavior and lifestyle, which is the cause or aggravation of physical illness. Therefore, determining the relative importance of physical, psychological and social factors that are effective in the occurrence of back pain is considered as an important step in explaining preventive measures (Pincus & McCracken, 2013). In addition, paying attention to the fact that psychological disorders may be associated with back pain and may even be the cause of it, will lead to the adoption of appropriate treatment methods and more deliberate follow-ups (Negahban Sivaki, Ebrahimi, & Shaterzadeh, 2001).

Cognitive therapies are among the interventions that have been widely accepted for patients suffering from chronic pain (Asghari Moghaddam, 2020). There are numerous psychological approaches to treat chronic back pain (Rahimian Boogar, 2011). According to the earlier studies, it seems that psychological treatments have many effects in the field of chronic diseases. Psychological interventions can help relieve the pain of patients suffering from chronic pain, including back pain, along with medical treatment and drug therapy, and also reduce the psychological symptoms that predispose to these pains (Asghari Moghadam & Golak, 2008).

Some studies have investigated the effectiveness of psychological interventions on chronic pain and chronic back pain. For instance, Kiani, Sabahi, Makvand Hosaini, Rafienia, and Alebouyeh (2020) compared the effectiveness of acceptance and commitment-based therapy and positive cognitive-behavioral therapy on the pain self-efficacy in patients with chronic pain and the results indicated that both treatments are effective on pain self-efficacy.

In the research of Razavi, Abolghasemi, Akbari, and Naderinabi (2019), the effectiveness of ACT on the hope and pain management of women with chronic pain was confirmed. (Oraki, Mahdizadeh, & Dortaj, 2018) compared the effectiveness of emotion regulation- focused cognitive-behavior therapy and ACT on backache symptoms, depression and life satisfaction in women suffering from chronic backache with comorbid major depressive disorder (MDD). The results indicated both interventions

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reduced pain and depression symptoms and increased life satisfaction among patients with chronic back pain. Rezaeian, Ebrahimi, and Zargham (2015) investigated the effectiveness of ACT on catastrophizing and disabling pain in women with back pain. The results revealed that intervention was effective in reducing dependent variables and remained stable in the 2-month follow-up period.

Considering that back pain among the military forces causes disability, reduced productivity, increased health care costs and absenteeism among the military forces more than the general population, and also has a negative impact on the readiness of these services, it is necessary to address this issue. From the cognitive aspect, it is a crucial issue and needs to be taken into account. Accordingly, nowadays, cognitive therapies are used independently and together with medical methods in the treatment of chronic pain patients, and research supports the high efficiency of psychological treatments in the treatment of them (Csaszar, Bagdi, Stoll, & Szoke, 2014; Eccleston, Morley, Williams, Yorke, & Mastroyannopoulou, 2002). Among the effective psychological treatments for this group of patients, the cognitive behavioral therapy and acceptance and commitment therapy are the effective interventions. Based on this and in order to provide a better explanation of cognitive therapies, the aim of this study was to investigate and compare the effectiveness of CBT and ACT on the pain complaint behavior and pain self-efficacy in patients with chronic back pain.

Material and Methods

The current study is a pretest-posttest follow-up experimental design with a control group. The statistical population consisted of all patients with chronic back pain who referred to the specialty department of Al-Zahra Hakimieh Clinic in Tehran (Iran). This study lasted from February 2019 to March 2020 due to the corona pandemic and related restrictions. The sample included 45 people (33 male and 12 female) with an average age of 41.18. Also, 8 of the participants were retired, 29 were employees, and 8 were students. In terms of marital status, 39 people were married and 6 people were single. Inclusion criteria were having chronic back pain for at least 6 months as diagnosed by a specialist doctor and age range 18 to 70. The exclusion criteria were absence of more than two sessions (unwillingness to continue attending), suffering from other physical diseases such as diabetes, cardiovascular diseases, irritable bowel and other physical diseases other than back pain and substance abuse. According to Cohen's table for sample size, the sample size was determined as 45 people who were selected by purposive and accessible sampling method and randomly assigned to experimental groups and control group.

In order to collect demographic data, the demographic information questionnaire was used. In this questionnaire, there are questions about the subjects' personal information, such as gender, age, marital

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status, occupation, and also questions about the current state of pain, surgery, use of medicine, the amount of referrals to medical centers and health care services. Before beginning the intervention sessions, the participants completed the informed consent form and research questionnaires in pretest phase.

Instruments

Questionnaire of pain complaint behavior: This questionnaire was developed by (Zarkowska, 1981) and it presents the activities that people when suffer from pain often do. This scale contains 49 items, of which 10 questions measure the severity of pain complaints. Also, this questionnaire has three sub-tests: pain avoidance behavior, pain complaints and help seeking. The responding scale is Yes (1) and No (0). A higher score indicates more pain-complaining behavior. The reliability of this scale in patients with chronic pain has been reported as 0.70 (Philips & Jahanshahi, 1986). In the present study, using Cronbach's alpha, the coefficients obtained for the total scale was 0.88, for the pain avoidance subscale was 0.87, for the pain complaint subscale was 0.71, and for the help seeking subscale was 0.53.

Pain self-efficacy questionnaire: The pain self-efficacy questionnaire was developed by Nicholas in 1989 in order to evaluate the pain self-efficacy of patients with chronic pain. This questionnaire is based on Bandura's concept of self-efficacy. The pain self-efficacy questionnaire is a self-report tool and has 10 statements, and each statement is the patient's assessment of his ability to perform a group of activities despite having pain based on a 7-point Likert scale (I can't at all = 0 to I can completely = 6). The patient's score varies between zero and six, and a higher score indicates a higher sense of self-efficacy in dealing with chronic pain. Cronbach's alpha coefficient of this scale was reported by Asghari and Nicholas (2001) as 0.92. Also, the reliability by test- retest method in a 3-month interval has been satisfactory.

The significant correlation of the pain self-efficacy questionnaire scores with the scores of the pain-related disabilities scale and coping strategies of the self-efficacy scale indicate the convergent validity of this scale. This questionnaire has been standardized in Iran by Asghari Moghadam and Golak (2008). These researchers have reported the Cronbach's alpha coefficient of the pain self-efficacy questionnaire as 0.81 and the reliability coefficient obtained from the test-retest method in a 9-day interval as 0.77. Also, the results of confirmatory factor analysis in a sample of 384 patients with chronic pain showed that the structure of the Persian version of the pain self-efficacy questionnaire has a one factor solution. The correlation of the scores of this questionnaire with the scores of depression and physical disability was negative and significant, and the correlation of its scores with the scores of

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psychological health, general health, head of life and social functioning was positive and significant. Therefore, its validity was confirmed ((Asghari Moghadam & Golak, 2008).

Intervention: In the present study, the effectiveness of CBT and ACT on pain complaint behavior and pain self-efficacy was investigated during a period of two months in nine 90-minutes sessions. The first experimental group received CBT and the second experimental group received ACT, while the control group did not receive any intervention. The implementation process was such that before the beginning of the sessions and after obtaining informed consent, the participants completed the questionnaires. Then, the first experimental group (CBT) and the second experimental group (ACT) were given weekly group training according to Tables 1 and 2.

Table 1. Summary of cognitive-behavioral therapy sessions

Session	Aim	Content	Homework assignments
1	Establishing a therapeutic relationship Introducing the research topic to the participants Conducting the pre-test	Introduction and familiarization, statement of research goals and the research process, the number of meetings and the rules and regulations of the educational group. determine your goals from the pre-test	Determining the purpose of participating in the research project by the participants
2	Self-awareness	Review the assignments of the previous session and discussing the goals of the participants Empowering participants in the field of self-awareness	Identifying and writing down positive and negative characteristics, values and needs
3	Identifying and changing cognitive distortions	Reviewing the previous session, challenging cognitive distortions	Daily notes of events, thoughts and feelings following them, recognition of cognitive distortions
4	Introducing the concept of attribution	Reviewing the previous session, getting familiar with the concept of attribution, investigating the causes of misunderstandings and how to change attribution	Identifying attributions about problematic life events (back pain) and trying to change incorrect attributions
5	Introducing the problem solving skills	Review of the previous session, introduction of problem solving skills, problem definition, presentation of alternative solutions, evaluation of solutions, selection and implementation of the solution, evaluation of the implemented solution	Examining one of the problems that a client is facing and implementing problem solving skills about it
6	Introduction of communication and negotiation skills	Review of the previous session, introduction of effective communication skills and its features, and training of effective problem control (pain) objects.	Practicing effective communication during the week and examining its consequences
7	Introducing assertive behavior	Reviewing the previous session, introducing assertive behavior to the participants and practicing it with the role playing method	Practicing assertive behavior during the week and examining its consequences
8	Examining changes and consolidating and strengthening	Reviewing the previous session, examining the constructive changes that occurred during the therapy sessions, highlighting	Note the positive and negative points of the taught methods and content
9	Summary of meetings and posttest implementation	providing a summary of therapy sessions and an overview of the skills taught, Discuss positive points and treatment plan and get feedback from participants Implementation of post-test and completion of treatment sessions	

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Table 2. Summary of acceptance and commitment therapy sessions

Session	**Aim**	**Content**	**Homework assignments**
1	Establishing a therapeutic relationship Introducing the research topic to the participants Conducting the pre-test	Introduction and familiarization, statement of research goals and the research process, the number of meetings and the rules and regulations of the educational group. determine your goals from the pre-test	Determining the purpose of participating in the research project by the participants
2	Introduction of chronic pain to the participants	Reviewing the previous session, discussing the goals of the participants, providing explanations about chronic pain, its causes and consequences	Determining the effects of back pain in the personal and social life of the participants
3	Examining ways to control inefficiency and helplessness	Reviewing the previous session, Examining the control strategies used by the participants to deal with back pain	Determining control strategies and the effects of them in the personal and social life of the participants
4	Mindfulness training and acceptance	Reviewing the previous session, Discussing the futility of past strategies, introducing the mind of awareness and acceptance, teaching the steps of acceptance and practicing accepting thoughts and feelings.	Performing mindfulness training during the week and examining its effects on personal and social life
5	Cognitive defusion training	Explaining cognitive fusion and expressing the common connection between emotions, cognitive functions and observable behavior cognitive defusion and distancing from thoughts without judgment and independent action from mental experiences using the metaphor of a train	Practicing cognitive defusion during the week and investigating its effects on personal and social life
6	Introduction of Self as Context	Review of the previous session, Concepts of role, context and types of self and moving towards a valuable life with a receptive and observer-self, using the chess metaphor.	Practicing effective communication during the week and examining its consequences
7	Clarifying the Values	Reviewing the previous session, explaining the concept of values, creating motivation for change and empowering clients for a better life	Determining the values and prioritizing them in ten areas of family, marriage, job and profession, education and personal development, recreation and entertainment, spirituality, social life, environment and nature and health.
8	Introducing the Committed Action	Reviewing the previous session, creating different behavior patterns in accordance with values and creating a commitment to act in line with goals and values and overcoming obstacles using the metaphor of passengers on the bus	Identifying and implementing behavioral plans in accordance with values and examining them in personal and social life
9	Summary of meetings and posttest implementation	providing a summary of therapy sessions and an overview of the content taught, Discuss positive points and treatment plan and get feedback from participants Implementation of post-test and completion of treatment sessions	

After the intervention, the post-test was administered. Finally, after two months, the follow-up phase was performed and the participants answered the research questionnaires again. In order to comply

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with the ethical principles, after the end of the study, intensive cognitive behavioral therapy sessions were held for the members of the control group who were on the wait list of the intervention.

To compare the effectiveness of CBT and ACT on pain complaint behavior and pain self-efficacy in patients with chronic back pain, after checking the normality of the distribution of scores using the Shapiro-Wilk test, univariate analysis of variance and Bonferroni's post hoc test were used to test the hypotheses. Levine's test was also used to check the homogeneity of variances of the dependent variables in the groups. Considering that Bartlett's test was significant, multivariate covariance analysis was not used and the hypotheses were examined separately using univariate covariance analysis.

Results

Descriptive findings (mean and standard deviation) of variables in three groups (two experimental groups and one control group) and in three phases of pre-test, post-test and follow-up are presented in Table 3.

Table 3. Mean and standard deviation of pain complaint behavior and pain self-efficacy in experimental and control groups in pre-test, post-test and follow-up

Variable	Groups	Pretest		Posttest		Follow up	
		Mean	SD	Mean	SD	Mean	SD
Pain complaint behavior	CBT	8.26	1.33	2.93	1.57	3.06	1.03
	ACT	7.86	1.35	2.60	1.12	3.20	1.26
	Control	7.72	1.40	7.53	1.59	7.33	1.11
Pain self-efficacy	CBT	20.53	3.75	29.66	3.49	28.73	3.34
	ACT	21.13	3.97	29.06	3.55	28.80	2.93
	Control	21.06	6.25	22.06	5.49	22.40	5.67

Also, the normality of the distribution of pre-test scores in all three groups was confirmed ($p>0.05$). Levine's test was used before data analysis to check the homogeneity of variances. According to the results, the homogeneity of variances was confirmed as well ($p>0.05$). Due to the non-significance of Levin's test, the covariance analysis test can be used. This means that the experimental and control groups were homogeneous in terms of variances before the experimental intervention (in the pre-test phase).

In this research, the pre-tests of pain complaint behavior variables and pain self-efficacy were considered as covariate variables and their post-tests were considered as dependent variables. However, due to Bartlett's Test for Equality of Variance being significant, univariate covariance analysis was used. The results indicated that the F statistic for dependent variables was significant

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($p<0.001$). In other words, one of the treatments was effective on each of the dependent variables separately (Table 4).

Table 4. The results of univariate covariance analysis on dependent variables

Phase	Dependent Variable	SS	DF	MS	F	p	Eta	Power
Posttest	Pain complaint behavior	235.23	2	117.61	71.78	0.001	0.79	1
	Pain self-efficacy	501.50	2	250.75	37.82	0.001	0.66	1
Follow up	Pain self-efficacy	176.78	2	88.39	70.26	0.001	0.78	1
	Pain self-efficacy	377.48	2	188.74	26.60	0.001	0.58	1

Therefore, in order to compare the effectiveness of CBT and ACT on pain complaint behavior and pain self-efficacy, Bonferroni's post hoc test was used (Tables 5 and 6).

Table 5. The results of Bonferroni's post hoc test to compare the difference between pain complaint behavior means in post-test and follow-up

Phase	Variable	Compared groups	Mean difference	Standard error	p
Posttest	Pain complaint behavior	Control- CBT	4.68	0.57	0.001
		Control- ACT	3.62	0.56	0.001
		ACT-CBT	1.06	0.57	0.20
Follow up		Control-CBT	4.15	0.49	0.001
		Control-ACT	3.24	0.48	0.001
		ACT-CBT	0.90	0.49	0.22

Table 6. The results of Bonferroni's post hoc test to compare the difference between pain self-efficacy means in post-test and follow-up

Phase	Variable	Compared groups	Mean difference	Standard error	p
Posttest	Pain self-efficacy	Control- CBT	7.71	1.11	0.001
		Control- ACT	5.57	1.09	0.001
		ACT-CBT	2.14	1.10	0.17
Follow up		Control-CBT	6.44	1.09	0.001
		Control-ACT	5.01	1.07	0.001
		ACT-CBT	1.42	1.08	0.58

The results of the Bonferroni test revealed that there is no significant difference between the effectiveness of CBT and ACT on pain complaint behavior and pain self-efficacy in the post-test and follow-up phases ($p>0.05$). Therefore, both of interventions have been equally effective on the dependent variables (pain complaint behavior and pain self-efficacy).

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Discussion

The aim of current study was to compare the effectiveness of CBT and ACT interventions on pain complaint behavior and pain self-efficacy in patients with chronic back pain. Our findings indicated that both interventions were effective on pain complaint behavior and pain self-efficacy. The findings of this research are in line with the research that was conducted with the aim of pain management in inflammatory bowel disease (IBD). In this research, it has been shown that after the CBT intervention, pain complaint behavior scores decreased and pain self-efficacy scores improved. Also, the intervention has been able to reduce catastrophic depression and anxiety related to back pain (Razavi et al., 2019). In the research of Rezaeian et al. (2015), it was shown that ACT had a significant effect on pain intensity, anxiety and quality of life of chronic back pain patients. Also, Rahimian Boogar (2011) has confirmed the effectiveness of CBT on reducing multifaceted pain symptoms among chronic back pain patients.

With the reviews related to pain treatment, including the present study, it can be concluded that the best outcome of pain treatment occurs when multiple factors involved in pain processing are considered in the evaluation and treatment of pain. For example, treating chronic low back pain does not mean trying to identify which structures in the back may be contributing to the pain; Rather, a successful treatment must include all the psychological factors that may play a role in the response to the nervous system and strengthening the signs and symptoms of the nervous system (Feros, Lane, Ciarrochi, & Blackledge, 2013). Therefore, the findings of the current research showed that both CBT and ACT interventions have been able to influence cognitions, emotions, behaviors and coping skills, as well as by increasing flexibility, the ability to return to the present moment, being aware and observing that help the healing process. Also, these interventions using cognitive reconstruction strategies have been effective in improving physical health outcomes (chronic back pain) and have changed the efficacy of chronic back pain patients to have an enhanced efficacy in adapting to pain (Hung, Liu, & Fu, 2015).

In general, the findings of the present study exhibited that daily life with pain can cause excessive fatigue and thus reduce the self-efficacy of the affected person. Based on the findings, the current research shows special points at the theoretical and clinical level, which are briefly mentioned. According to the theoretical foundations, the scholars' views and the present research findings, it was observed that pain is more than a mere physical phenomenon, it is a multi-dimensional issue and sometimes even its psychological dimensions are superior to the physical aspects. Cognitive factors play an important role in the expression of pain, in the way of coping, and in believing that the patient has the ability to manage his pain (Kolivand, Nazari Mahin, & Jafari, 2015). Considering the role of

psychological factors on pain complaint behavior and pain self-efficacy in dealing with chronic back pain, it can be concluded that factors and variables related to pain have an interactive and reciprocal role on each other (Corren et al., 2019). In the treatment of chronic pain or its reduction, only paying attention to physical treatment methods such as drug therapy, surgery, etc., and neglecting the role of psychological treatment methods, is not very useful. Therefore, programs that focus on the use of multimodal treatments are more effective in controlling and treating pain (Colle et al., 2010). Based on this, we conclude that chronic pain is more than a physical symptom and it should be considered as a phenomenon consisting of biological-psychological and social factors. In the treatment, it is necessary to pay attention to all dimensions related to pain, especially its cognitive dimension, and to use the best and most effective treatment methods.

Considering the importance of cognitive factors and structures in the phenomenon of pain, especially chronic pain, it is suggested to carry out wider studies in this field. It is also suggested to conduct studies related to chronic pain with emphasis on gender differences in different groups of patients. Comparing the effectiveness of CBT and ACT on other pain-related symptoms such as anxiety, depression and catastrophizing are new research topics that can be done by interested researchers. Counselors and therapists active in the field of disorders related to pain and psychosomatic problems are suggested to use CBT, ACT or a combination of these interventions as well.

In addition to the obtained findings, the present research has been associated with limitations that should be considered in the generalization of the findings. Using self-report questionnaires to measure dependent variables is one of these limitations. Since the answers of the participants to these questionnaires can be associated with possible bias, it is suggested to use other data collection methods such as interview and observation in future studies. The present study was conducted on a sample of patients suffering from chronic back pain; therefore, generalizing the findings to other groups of patients with different pain levels should be done with caution. Based on this, it will be beneficial to repeat this study in other chronic pain patients.

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