Received: 05/18/2024 **Accepted:** 09/17/2024

Open Access

Doi.org/10.30473/ijohp.2025.72728.1380

Vol.7, No.4, Serial Number 22, p.77-98, Autumn 2024

Iranian Journal of Health Psychology

Research Article

Comparison of the Effectiveness of Emotion-Focused Therapy and Cognitive Behavioral Therapy on Alexithymia and Difficulty in Emotion Regulation

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How to Cite

Fazeli Sani, F. , Salehi, M. , Rafiepoor, A. and Khalatbari, J. (2024). Comparison of the Effectiveness of Emotion-Focused Therapy and Cognitive Behavioral Therapy on Alexithymia and Difficulty in Emotion Regulation. *Iranian Journal of Health Psychology*, 7(4), 77-98. doi: 10.30473/ijohp.2025.72728.1380

Abstract

Objective: Psychological factors play a decisive role in the occurrence and experience of pain disorders. This study aimed to compare the effectiveness of emotion-focused therapy and cognitive behavioral therapy on alexithymia and difficulty in emotion regulation in patients with pain disorder.

Method: The method of the present study was quasi-experimental with a pretest-posttest design and control group and a two-month follow-up. The statistical population of the study included all women who were referred to Manoushan and Behsa counseling centers in Tehran with psychosomatic problems and pain. Sixty people from this population were selected and randomly divided into three groups (20 people in each group). Research instruments included the Toronto Emotional Dysfunction Scale (Bugby et al., 1994) and the Difficulty in Emotion Regulation Scale (DERS) (Gertz & Roemer, 2004). One group received 12 one-hour sessions of emotion-focused therapy, and another group received 10 one-hour sessions of cognitive behavioral therapy. However, the control group did not receive any intervention during the study. In addition to descriptive statistics, mixed variance analysis and Ben Foroni post hoc test were used to analyze the research data.

Results: The results for alexithymia showed that the emotionally focused therapy group had a significantly lower mean than the cognitive behavioral group (P= 0.02) and the control group (P 0.001), and the cognitive-behavioral group had a significantly higher mean compared to the control group (P = 0.001). Also, the results for the difficulty in emotion regulation showed that the emotionally focused group and the cognitive-behavioral group have significantly lower means compared to the control group (P = 0.001).

Conclusions: The results of the present study, in addition to confirming the effectiveness of cognitive-behavioral therapy, indicated that emotion-focused therapy is a more effective treatment for alexithymia. As a result, emotion-focused therapy can be considered an effective treatment that can be used by health professionals to treat pain disorders.

Keywords: Emotion-focused Therapy, Cognitive-Behavioral Therapy, Alexithymia, Difficulty in Emotion Regulation, Pain Disorder.

Extended Abstract

Background and Objectives

Emotion processing and functions are known to be one of the mechanisms affecting pain (Leite, Carvalho, Battistella, Caumo & Fregni, 2017). Part of the disruption of these functions and processes is known as alexithymia (da Silva, Vasco & Watson, 2017). The results indicate that the inability to recognize and describe emotions can lead to more confusion and feelings of inability in people who experience pain (Pahlavan et al., 2019). Emotion regulation is also another dimension of an individual's emotional capacity, and is considered as a process by which individuals modulate their emotions to meet conscious and unconscious environmental expectations (Roth, Vansteenkiste & Ryan, 2019). The inability to provide adaptive responses to this process is known as difficulty in regulating emotion (Aldao et al., 2010). One of the experimental therapies that focuses on emotion and correction of emotional experiences is emotion focused therapy, in a way that emotions have compatible nature and adaptive potential, and identify what is important for well-being and prepare the person to perform adaptive actions (Greenberg, 2015), so that by activating them, individuals can be helped to change their troublesome emotional states or unwanted experiences. In other words, emotion is an adaptive and innate system that helps human survival and development and guides people to take action to meet needs, so the emotions are regulated for an initial state of processing in action (Greenberg, Elliott & Pos, 2007). Research on the effectiveness of this treatment shows that emotion focused therapy is effective in reducing internalized symptoms, anxiety and emotion regulation (Bardeh Zaard, Sabet, & Amin Zaddeh, 2017; Rezaie, 2013). One of the common treatments used for pain disorders, pain management and prevention is cognitive behavioral therapy. Over the past 30 years, more than 100 therapeutic studies have been performed to prevent and treat pain using Cognitive Behavioral Therapy (CBT), and the results of meta-analysis indicate the effectiveness of this therapy for pain, disability, mood, pain catastrophe and self-efficacy (Williams, Axelston & Morley, 2012). Cognitive-behavioral therapies are based on the principle that our content and thought process can be recognized and taught and mediate between events and moods and emotional responses to thoughts; therefore, by correcting and changing thoughts, we can change people's moods and responses to environmental events (Dobson & Dobson, 2018, pp 4-5).

Therefore, the present study sought to answer the question of whether there is a difference between the effectiveness of emotion focused therapy and cognitive behavioral therapy on alexithymia and the difficulty in emotion regulation in patients with psychosomatic pain.

Materials and Methods

The method of the present study was a quasi-experimental with pretest-posttest design and control group with two-month follow-up. The statistical population of the study included all women who referred to Manoushan and Behsa counseling centers in Tehran with psychosomatic problems and pains for whom the treating psychiatrist had diagnosed pain disorder. Due to the possibility of losing participants during the study, the sample size of each group was assigned 20 people and a total of 60 subjects was selected. The method of assigning the samples to the research groups was random by drawing lots. The names of all 60 people were written on a sheet of paper and 20 people were randomly selected for each group. Research instruments included the Toronto Emotional Dysfunction Scale (Bugby et al., 1994) and the Difficulty in Emotion Regulation Scale (DERS) (Gertz & Roemer, 2004). One group received 12 one-hour sessions of emotional focused therapy and another group received 10 one-hour sessions of cognitive behavioral therapy. But the control group did not receive any intervention during the study. To analyze the research data, descriptive statistical analysis, including mean, standard deviation, as well as inferential statistical methods, such as mixed variance analysis and Ben Foroni post hoc test. SPSS version 25 was used for data analysis.

Results

The results for alexithymia showed that the emotional focused therapy group had a significantly lower mean than the cognitive behavioral group (P= 0.02) and the control group (P= 0.001), and cognitive-behavioral group has a significantly

higher mean compared to the control group (P = 0.001). Also, the results for the difficulty in emotion regulation showed that the emotional focused group and the cognitive behavioral group have significantly lower means compared to the control group (P = 0.001).

Discussion and conclusion

The present study sought to compare the effectiveness of emotion focused therapy and cognitive behavioral therapy on alexithymia and the difficulty in emotion regulation in women with pain disorders. The results showed that both therapies were significantly effective on alexithymia and difficulty in emotion regulation. The results also showed that in comparison with cognitive behavioral therapy, emotion focused therapy is more effective in improving alexithymia. Therefore, the present study, confirming the effectiveness of cognitive behavioral therapy, indicated that emotion focused therapy seems to be a more effective treatment. As a result, emotion focused therapy can be considered and used as an effective treatment for pain disorders by health professionals. However, due to some limitations such as lack of cooperation and lack of access to the required research sample, the researchers used available sampling in the initial sampling, which may limit the generalization of the results. The small sample size and the use of convenience sampling were other limitations of the present study, which reduced the generalizability of the results. Therefore, due to the limitation of this study and also the lack of research literature, conducting further studies in the field of emotion focused individual therapy are suggested by the authors. From the application aspect, considering the greater effectiveness of emotion-focused therapy for alexithymia compared to cognitive-behavioral therapy, it is recommended to use emotion-focused therapy for patients with pain disorders with symptoms of alexithymia. It is also suggested that organizations and clinics providing services to patients with pain disorders use the results and protocols of the present study to provide services to these patients. Of course, to improve difficulty in emotional regulation, mental health professionals can use both interventions, depending on the results obtained.

.Introduction

Pain of any origin and any type can affect a person's life. Accordingly, today, pain prevention, treatment, and management are an important aspect of health care (Kumar & Elavarasi, 2016). In general, pain refers to a condition in which a person reports severe discomfort through direct verbal communication or encoded descriptors (Exhibit, 2014). Pain is defined as an unpleasant sensation that is transmitted to the brain by sensory nerve cells and is described as a process of tissue destruction (e.g., beating, burning, twisting, tearing, and squeezing) and/or a skin or emotional reaction (e.g., panic and nausea) (Reed, Bayly & Sellon, 2017). Pain disorder, psychosomatic pain, is generally known as psychogenic pain or pain disorder caused by stress and psychological anxiety, which is characterized by chronic pain in more than one area that lasts for several months to several years. Its main features of pain are that pain cannot be explained by a medical condition, pain causes serious discomfort or disorder or both in different areas of the body or individual capacities, and in the beginning, the strength, aggravation, and increase of the symptoms are caused by psychological factors (Zadok, Zadok & Ruiz, 2015; translated by Rezaei, 2015). In pain disorders, pain is perceived in various anatomical areas such as the back, head, abdomen, and chest. Although evidence suggests that pain disorders are widespread in the general population, research has not yet been able to address the numerous aspects of pain diagnosis and management (Kumar & Elavarasi, 2016). However, psychological factors seem to play major roles in the progression and onset of any pain disorder (Gallagher, 2016), and abnormal processing and transmission of signals in the nervous system is the main focus of this disease (Kumar & Elavarasi, 2016).

Emotion processing and functions are known to be one of the mechanisms affecting pain (Leite, Carvalho,

Battistella, Caumo & Fregni, 2017). Part of the disruption of these functions and processes is known as alexithymia (da Silva, Vasco & Watson, 2017). Alexithymia, as a multidimensional structure, includes difficulty in recognizing emotions and distinguishing between emotions, difficulty in describing one's emotions to others, limited imaginative processes, and an intra-axis cognitive style (Di Trani, Renzi, Vari, Zavattini & Solano, 2017). The results indicate that the inability to recognize and describe emotions can lead to more confusion and feelings of inability in people who experience pain (Pahlavan et al., 2019; Besharat et al., 2011). Also, people who score high in alexithymia receive less support from their intimate relatives and expect more negative reactions and outcomes (Wells, Rehman & Sutherland, 2016). Alexithymia has also been shown to play a facilitating role in getting unpleasant life experiences as well as experiencing stressful situations (Zeng, Sun, Yang & Fu, 2016).

Emotion regulation is another dimension of an individual's emotional capacity, and is a process by which individuals modulate their emotions to meet conscious and unconscious environmental expectations (Roth, Vansteenkiste & Ryan, 2019). The inability to provide adaptive responses to this process is known as difficulty in regulating emotion (Aldao et al., 2010). These and other processes people use to manage their emotions are often referred to as emotion regulation. Emotion regulation is considered an innate characteristic of human beings related to the strategies used to reduce, increase, suppress, or maintain emotion (Gross, 2015). People can practically control any aspect of emotional processing, including how to pay attention to their emotions and have a cognitive evaluation of them (Koole & Rothermund, 2011). These emotional regulations play an important role in determining health and successful function in interactions, and defects in them increase endocrine disorders and cortisol responses that lead to stress-induced damage and have physiological consequences such as fatigue, pain, and incapacity (Porges, 2007; Sheppes, Suri & Gross, 2015). It has also been shown that difficulty in emotion regulation is associated with issues such as the inability to tolerate anxiety and the use of inefficient coping strategies (Ismaili Nasab et al., 2014).

One of the experimental therapies that focus on emotion and correction of emotional experiences is emotion-focused therapy, in a way that emotions have a compatible nature and adaptive potential, and identify what is important for well-being and prepare the person to perform adaptive actions (Greenberg, 2015), so that by activating them, individuals can be helped to change their troublesome emotional states or unwanted experiences. In other words, emotion is an adaptive and innate system that helps human survival and development and guides people to take action to meet needs, so the emotions are regulated for an initial state of processing in action (Greenberg, Elliott, & Pos, 2007). However, experiencing cases such as deprivation and removal, negative rejection and judgment, psychological or physical harm, and the experience of abuse during growth, can disrupt a person's emotional function, especially in processing and regulating emotions by spoiling the identity development and the individual's attachment (Timolak, 2017). In other words, with the formation of maladaptive emotional schemes around shame, anger, sadness, and fear, a person's capacity to act adaptively against changes and challenges is reduced, and the experience of emotional pain and feelings such as frustration and inability to experience is formed in the person (Greenberg, 2011). Research on the effectiveness of this treatment shows that emotion-focused therapy is effective in reducing internalized symptoms, anxiety, and emotion regulation (Bardeh Zaard, Sabet, & Amin Zaddeh, 2017; Rezaie, 2013). A review of the research literature shows that most studies that have examined the effectiveness of emotion-focused therapy have focused on depression, anxiety, emotion regulation, etc., in interpersonal and marital

situations (Korian, 2014; Greenberg, Warwar & Malcolm, 2008; Khojaste Mehr, Shiralinia, Rajabi, & Beshlideh, 2013), but less attention has been paid to issues such as experiencing pain as an in-person problem. One of the common treatments used for pain disorders, pain management, and prevention is cognitive behavioral therapy. Over the past 30 years, more than 100 therapeutic studies have been performed to prevent and treat pain using Cognitive Behavioral Therapy (CBT), and the results of the meta-analysis indicate the effectiveness of this therapy for pain, disability, mood, pain catastrophe and self-efficacy (DC Williams, Axelston & Morley, 2012). This bulk of studies, which indicates the effectiveness of this therapy, led to the growth of the view that the effectiveness of other therapies, especially emerging therapies, can be examined and tested in comparison with this treatment (Broderick, Keefe, Schneider, Junghaenel, Bruckenthal, et al., 2016). Cognitive-behavioral therapies are based on the principle that our content and thought process can be recognized and taught and mediate between events and moods and emotional responses to thoughts; therefore, by correcting and changing thoughts, we can change people's moods and responses to environmental events (Dobson & Dobson, 2018, pp 4-5).

In other words, when people find an event threatening, they are more likely to think about evading or preventing it in the future if possible. These thoughts, as well as the related emotional and behavioral reactions, may become automatic over time, depriving the individual of the opportunity for better adaptation and performance (Sito, Shiraishi & Yoshinaga, 2019). Therefore, cognitive-behavioral therapies attempt to change the way a person adapts and responds to surrounding events by using cognitive (such as cognitive reconstruction) and behavioral (agent or respondent learning) techniques and thus act more efficiently and consistently by understanding emotional and behavioral responses (Dobson & Dobson, 2018, pp 5-6). Research shows that CBT reduces pain-enhancing strategies such as catastrophizing and magnifying pain (Lazaridou et al., 2017; Turner et al., 2016; Pourkaveh, Pirani, Pourasghar, Sadeghi & Poustchi, 2023), and also increases patients' ability to recognize and understand the situation and improve responses and emotional settings (Aghasi Zadeh, 2013; Zare, Mohammadi, Motaghi, Afshar, & Pour Kazem, 2014; Turner et al., 2016; Bernard et al., 2018; Ketabi & Mousavi asl, 2024).

In summary, it can be said that emotion-focused therapy in Iran was more important in the context of interpersonal relationships, and examining the effectiveness of its form is a research gap. According to the available sources about research done in Iran, this research is the first study that has used the emotion-focused approach in the treatment of emotional problems of patients with pain disorders. In addition to this necessity, since psychological therapies must move towards the distinction between effective and ineffective therapies, clinicians should apply criteria that indicate whether a treatment is clinically significant. Therefore, given that the research shows the low to moderate effectiveness of cognitive-behavioral therapy for the problems of patients with pain disorders (DC Williams, Axelston & Morley, 2012; Broderick, Keefe, Schneider, Junghaenel, Bruckenthal, et al., 2016), comparing the effectiveness of emotion-focused therapy with cognitive behavioral therapy while examining the effectiveness of each, will lead to the choice of effective treatment by the therapist and reduce the number of treatment failures. Therefore, the present study sought to answer the question of whether there is a difference between the effectiveness of emotion-focused therapy and cognitive behavioral therapy on alexithymia and the difficulty in emotion regulation in patients with psychosomatic pain.

Method

The method of the present study was quasi-experimental with a pretest-posttest design and a control group with a two-month follow-up. The statistical population of the study included all women who were referred to Manoushan and Behsa counseling centers in Tehran with psychosomatic problems and pains for whom the treating psychiatrist had diagnosed pain disorder. Among the eligible individuals who volunteered to participate in the research, after providing the necessary explanations by the therapist, the sample size was selected based on the minimum sample size in the experimental studies, 15 subjects in each group (Quinn & Keough, 2002). Due to the possibility of losing participants during the study, the sample size of each group was assigned 20 people, and a total of 60 subjects were selected. The method of assigning the samples to the research groups was random by drawing lots. The names of all 60 people were written on a sheet of paper, and 20 people were randomly selected for each group.

It should be noted that all participants in the research groups were at the stage of diagnosis of the disorder, and the level of variables, such as social support, was not controlled. It was expected that their random assignment to the research groups would have controlled for the effect of these variables. Limiting participants in terms of gender, education level, and age was another method of controlling variables that could confound the results, which was addressed in the inclusion and exclusion criteria for the study. Inclusion criteria were pain disorder based on the diagnosis of the treating psychiatrist, satisfaction with participating in the research, lack of addiction to drugs and alcohol according to the comments of the research participants, female gender, age range between 23 and 48 years, average economic and social status, and having at least a bachelor's degree. Exclusion criteria included the presence of any physical disability, severe psychiatric disorders such as bipolar disorder, schizophrenia, paranoia, and significant personality disorder, and the absence of more than two sessions in therapy sessions. Finally, eligible individuals were randomly assigned to three groups (emotion-focused therapy, cognitive-behavioral therapy, and control group).

Ethical statement

Considering the research included the freedom of participation in the research, keeping the identity of the participants, and observing the principle of confidentiality about the data and members participating in the research.

Measures

Toronto Alexithymia Scale: Toronto Alexithymia Scale (Bagby, Parker, & Taylor, 1994) is a 20-item test, and three subscales of difficulty in identifying feelings, difficulty in describing feelings (DIF), and externally oriented thinking (EOT), scored based on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). A total score of alexithymia is also calculated by summing the scores of the three subscales. The psychometric properties of the Toronto-20 Alexithymia Scale have been reviewed and validated in several studies: Cronbach's alpha has been obtained as 0.71 for difficulty in identifying feelings, 0.60 for difficulty in describing feelings, and 0.43 for externally oriented thinking (Berastegui, van Leeuwen & Chabrol, 2012). In the Persian version of this scale, Cronbach's alpha coefficients for total alexithymia and three subscales of difficulty in identifying feelings, difficulty in describing feelings, and externally oriented thinking were 0.85, 0.82, 0.75, and 0.72, respectively, which implies the appropriate internal consistency.

The re-test reliability of the scale was confirmed in a sample of 67 subjects in two rounds, with an interval of four weeks, between 0.80 and 0.87 for the total alexithymia scale and its different subscales. Concurrent validity of the scale, based on the correlation between the subscales of this test and the scales of emotional intelligence (P <0.0001, r = 0.80), psychological well-being (P <0.0001, r = -0.78), and psychological helplessness (P <0.0001, r = 0.44), has been examined and confirmed (Besharat, 2012).

Difficulties In Emotion Regulation Scale (DERS): Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004) is a 36-item questionnaire that measures the levels of impairment and inadequacy of a person's emotional regulation based on a five-point Likert scale from 1 (rarely) to 5 (almost always) in six areas of non-acceptance of negative emotional responses, difficulties engaging in goal-directed behavior when distressed, difficulties in controlling impulsive behaviors when distressed, and limited access to effective ER strategies, lack of emotional clarity, and lack of emotional awareness. The whole DERS score for an individual is obtained by summing up the subscale scores. A higher score on each subscale and the total scale indicates more difficulty in emotion regulation. Evidence has supported the reliability of DERS scores. Test-retest reliability, internal consistency, and construct and predictive validity of DERS scores within both clinical and non-clinical populations have also been confirmed in research done in other countries (Gratz & Tool; Gratz & Roemer, 2004). Psychometric properties of the Persian version of the Emotion Regulation Difficulty Scale in clinical and non-clinical samples have been investigated and confirmed. The result of calculating Cronbach alpha coefficients for subscales are reported as 0.73 to 0.88 for non-acceptance of negative emotional responses, 0.72 to 0.89 for difficulties engaging in goal-directed behavior, 0.75 to 0.90 for difficulties controlling impulsive behaviors, 0.76 to 0.85 for limited access to effective ER strategies, 0.72 to 0.86 for lack of emotional awareness, 0.77 to 0.90 for lack of emotional clarity, and 0.79 to 0.92 for the whole scale. These coefficients confirm the internal consistency of the Persian version of the scale. DERS scores were 0.71 to 0.87 in test-retest reliability throughout 4 to 8 weeks for clinical and non-clinical samples in two rounds, which confirms the reliability of the scale at the significance level of 0.001. Convergent and diagnostic validity of the scale have also been calculated and confirmed through the simultaneous implementation of the Mental Health Scale, the Cognitive Emotion Regulation Questionnaire, and the inventory of positive and negative emotions (Besharat & Bazazian, 2014).

Emotion-Focused Therapy Protocol

For one of the experimental groups, 12 one-hour sessions of emotion-focused therapy were conducted based on the instructions on emotion-focused therapy written by Elliott et al. (2003, translated by Ramezani & Tinanejad, 2018). A summary of intervention sessions is reported in the following section.

Session 1: 1) Familiarity and creating a therapy unity and a safe environment, 2) Collaborating and explaining therapy goals and how to achieve them, and talking about concerns and expectations.

Session 2: 1) Talking about what they have done so far to improve their condition after being informed about their illness and their current mental state, 2) Implementing the concepts of emotion-focused therapy including: forms of emotional responses, identifying emotions and their function, explaining the emotional cycle, emotional scheme, and focus on the body. Techniques used in this step are: empathetic understanding, empathetic exploration, and empathetic coordination.

Sessions 3, 4, and 5: 1) Telling their own narratives of pain disorder by each client, 2) Depth to experience and expressing excitement, 3) Eliciting the clients' emotional plans, painful nuclear emotions, incompatible emotions, self-restraint, self-criticism, and unfinished works. Techniques used in this stage are: empathetic exploration, focus on the body and face and experience, empathy, and process guidance.

Sessions 6, 7, and 8: 1) explaining the two-chair technique to repair self-restraint and self-criticism in clients, using the two-chair technique for each client, and also facilitating self-compassion, self-healing, and self-organization are facilitated.

Sessions 9, 10, and 11: 1) Introducing the empty seat technique for "unfinished work" and performing it for each client, and also self-compassion and self-healing were facilitated.

Session 12: 1) Re-performing the questionnaires, 2) Finalizing and consolidating, talking about the emotional experience of the sessions and comparing current and past experiences, talking about self-healing, self-compassion, and self-organization created in clients, 3) Talking about the new meaning made by new emotions and narratives and the consolidation of healing, and 4) Saying goodbye and requesting to attend a meeting after two months of treatment to follow up the constancy of the therapeutic effect.

Cognitive Behavioral Therapy Protocol

For another experimental group, 10 sessions of cognitive behavioral therapy were conducted. Each session was performed for approximately 1 hour based on the practical cognitive-behavioral therapy instruction for chronic pain Otis, 2007, translated by Ali Beigi & Mohammadi, 2010). The summary of the intervention sessions is reported in the following part.

Session 1: Welcoming, brief introduction, declaration of the rules, explanation of the relationship between mind and body, and the effectiveness of psychological, thinking, emotion, physiology, behavior (cognitive triangle), ABC, holy example, example, suitcase. Exercise: directed imagination relaxation, behavioral function analysis, logic, psychological training, exposure (therapy room, therapy chair), muscle relaxation exercise (biofeedback), as well as training for exercise at home. During the first session, the psychologist introduces and explains behavioral performance analysis based on anamnestic interviews and questionnaire data to the client, the nature of anxiety reactions, and the rationale for treatment presented and discussed (in the case of request, this would continue throughout treatment). This early stage includes psychological training on anxiety reactions and unavoidable behavior. During the first session, the patient practices muscle relaxation using a 20-minute program. Biofeedback techniques are used to show differences in stress/relaxation levels. The patient receives a relaxation CD and is trained to practice at home during the first few weeks of treatment, and scheduling assignments for the next session.

Session 2: Reviewing the assignments of the previous session, negative thoughts, and other possible facts. Exercise: Identifying negative thoughts and cognitive distortions. Exercise: Identifying distortions of logical errors. Exercise: Identifying logical errors, practicing applied stress and assertiveness training, continuous exposure using the room, tools, DVD scenes, logic and reason for deep breathing, deep breathing techniques, basic cognitive therapy methods, logic and reason for cognitive therapy, and identifying anxiety thoughts, and assigning homework for the next session.

Session 3: Reviewing the assignments of the previous session and explaining the advantage of stopping negative thoughts. Exercise 1: Focusing on an object and explaining the details. Exercise 2: Mental exercises

(counting down). Exercise 3: Reviewing happy memories and pleasant fantasies. Exercise 4: Interesting and fascinating activities, assigning homework for the next session, cognitive techniques for challenging anxious thoughts, making alternative interpretations or predictions, examining evidence and possibilities, and detoxification.

Session 4: Checking the assignments of the previous session, cognitive reconstruction, identifying worrying behaviors, identifying passive avoidance behaviors, mental relaxation training, and assigning homework for the next session.

Session 5: Reviewing the assignments of the previous session, the logic of muscle relaxation. Exercise: Muscular relaxation, assigning homework for the next session.

Session 6: Reviewing the assignments, identifying and examining central beliefs, and training progressive relaxation. Exercise: muscle relaxation, giving an assignment for the next session.

Session 7: Reviewing the assignments, continuing to identify and examine main beliefs, mental exposure, and coping practice, and regular desensitization. Exercise: Regular visual desensitization, immersion. Exercise: Regular visual immersion, behavioral experiments, and giving assignments.

Session 8: Reviewing the assignments, continuing to identify and examine main beliefs, identifying and examining disturbing metacognitive beliefs, continuing mental exposure and coping practice, and inefficient assumptions and rules. Exercise: Identifying inefficient assumptions and rules, allegory of lake monsters, and logical analysis. Logical analysis practice, assigning homework for the next session.

Session 9: Reviewing the assignments of the previous session, identifying incompatible schemas and their relation to inefficient assumptions and negative thoughts. Exercise: Identifying inefficient schemas using the down arrow, thought injection. Exercise: Injecting thoughts, giving an assignment for the next session.

Session 10: Reviewing the assignments of the previous session, perceptual change.

Exercise: Filling up the sheets of perceptual change, optional cortical inhibition. Exercise: Optional cortical inhibition, prevention program, and how to maintain new behaviors, and how to control the provoking conditions for dental anxiety in the future.

To analyze the research data, descriptive statistical analysis, including mean and standard deviation, as well as inferential statistical methods, such as mixed variance analysis (this test was used because there were three groups and three test stages. Given that the number of factors and the time of measurement of the variables were more than two, this test was used. This test is used to determine the difference in the mean of the variables between the groups and test stages.) and Ben Foroni's post hoc test (it was used to compare the differences between groups and between test stages. Given that mixed variance analysis alone does not determine the difference in means at the level of two test stages or two groups, this test was used to examine the exact points of difference between groups and test times.), were used. To use mixed variance analysis, the assumptions of independent observation, normality distribution of data (K-S test), and homogeneity of variances (Levene's test) were used. SPSS version 25 was used for data analysis.

Results

In this section, descriptive indices of demographic variables and their homogeneity in research groups are presented in Table 1.

Table 1. Descriptive indices of demographic variables and their homogeneity in research groups

variable		Emotion-focused therapy group	Cognitive-behavioral therapy group	Control group	P Value
Education	BA frequency (percentage)	(70) 14	(65) 13	(80) 16	
	MA Frequency (percentage)	(30) 6	(35) 7	(20) 4	*56/0
employment status	Housewife Frequency (percentage)	(60) 12	(65) 13	(50) 10	
	Employed Frequency (percentage)	(40) 8	(35) 7	(50) 10	*62/0
Age	Mean (SD)	(58/4) 35	(91/5) 7/35	(48/4)9/34	**86/0

Chi-square *
ANOVA **

Table 1 shows the descriptive statistics of frequency and percentage of the variables of education and employment status, as well as descriptive indices of mean and standard deviation for the age of the research groups. Also, the results obtained from Chi-square and ANOVA tests show that demographic variables are homogenous in research groups ($p < 0.05$). In Table 2, descriptive indicators of research variables are presented.

Table 2. Descriptive indicators of research variables

variable	Test stage	Emotion-focused therapy group		Cognitive-behavioral therapy group		Control group	
		mean	SD	mean	SD	mean	SD
Alexithymia	Pre-test	35/52	5	25/52	06/6	1/53	24/5
	Post-test	4/39	36/3	3/43	16/5	2/53	71/4
	Follow up	65/38	85/2	25/44	65/5	45/53	28/4
Difficulty in emotion regulation	Pre-test	65/116	59/14	117	59/15	3/116	12/9
	Post-test	05/99	57/6	15/99	34/8	9/115	76/7
	Follow up	6/98	29/6	55/100	42/11	9/16	82/8

Table 2 presents the descriptive indices of mean and standard deviation for the two dependent variables of the research groups in three stages: pre-test, post-test, and follow-up. Before analyzing the data, the normality of the data distribution was checked using the Kolmogorov-Smirnov test, and the homogeneity of the variances was checked using the Levene test. Because the level of significance obtained for these tests was not significant ($P < 0.05$), these assumptions were almost observed.

A mixed variance analysis was used to compare the effectiveness of emotion-focused therapy and cognitive behavioral therapy on alexithymia. The results are presented in Table 3.

Table 3. Results of mixed variance analysis to compare the effectiveness of emotion-focused therapy and cognitive behavioral therapy on Alexithymia

Variance source	Sum squares	Df	Mean squares	F value	P value	Effect size	Test power
Test stages	48/2069	2	74/1034	61/91	61/91	83/0	1
Group membership	08/2995	2	54/1497	27/37	27/37	66/0	1
Interaction of stages and groups	56/1271	4	89/317	66/32	66/32	63/0	1
Error	79/739	76	73/9				

The results of Table 3 indicate that there is a significant difference between test stages (P=0.001, F=91.61), group membership (P=0.001, F=0.3727), and interaction of stages and groups (P=0.001, F=32.66). To investigate the difference point, the Ben Foroni pairwise comparison test was used. The results are presented in Table 4.

Table 4. Pair comparison of within-group differences and test stages based on the modified mean of Alexithymia

Variability source	Base group	Secondary group	Mean differences	ESD (Error standard deviation)	P value
group	Emotion focused	Cognitive behavior	13/3-	01/1	02/0
		Control	78/9-	23/1	001/0
	Cognitive behavior	Control	65/6-	22/1	001/0
Test stage	Pre-test	Post-test	27/7	59/0	001/0
		Follow-up	12/7	71/0	001/0
	Post-test	Follow up	15/0-	52/0	1

The results presented in Table 4 demonstrate that the emotion-focused therapy group has a significantly lower mean than the cognitive behavioral therapy (P = 0.02) and the control groups (P = 0.001), and the cognitive behavioral therapy group has a significantly lower mean in alexithymia than the control group (001 / 0 = P). The results also show that the alexithymia pre-test is significantly higher than the post-test and follow-up (P = 0.001) scores. In addition, the comparison of the post-test and follow-up stages is not significantly different, which indicates the stability of the results obtained. Table 5 presents the modified mean.

Table 5. Modified means of alexithymia for research groups and test stages

variable	Secondary group	Mean	SD
Group	Emotion focused	47/43	78/0
	Cognitive behavioral	6/46	04/1
	Control	25/53	87/0
Test	Pre-test	57/52	78/0
	Post-test	3/45	71/0
	Follow up	45/45	61/0

Figure 1 shows the trend of changes in alexithymia for research groups in the pre-test, post-test, and follow-up stages.

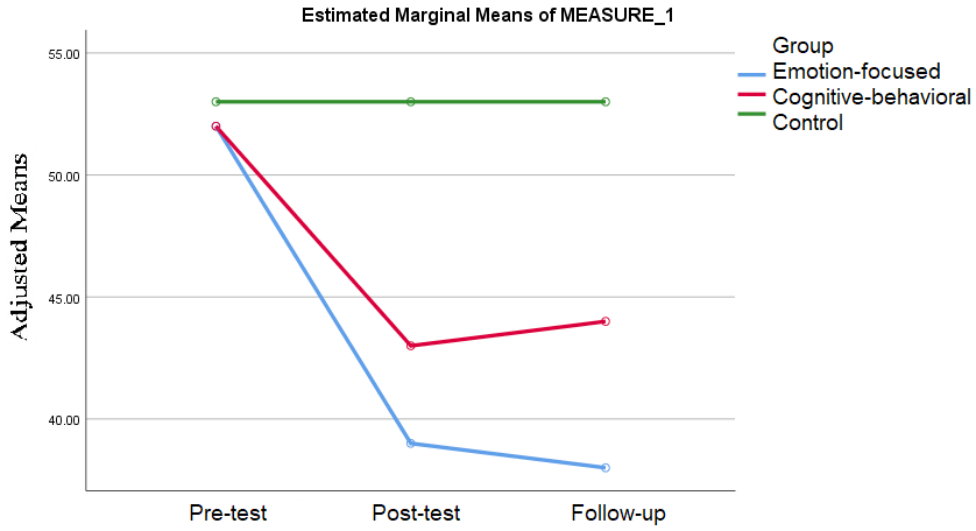

Figure 1: Profile of the trend of changes in alexithymia scores of research groups in the test stages

Mixed variance analysis was used to compare the effectiveness of emotion-focused therapy and cognitive behavioral therapy on the difficulty in emotion-regulation, the results of which are shown in Table 6.

Table 6. Results of mixed variance analysis to compare the effectiveness of emotion-focused therapy and cognitive behavioral therapy on difficulty in emotion regulation

Variability sources	Sum squares	df	Mean squares	F value	P Value	Effect size	Test power
Test stages	70/5511	2	85/2755	46/27	001/0	59/0	1
Group membership	60/4987	2	80/2493	59/17	001/0	48/0	1
Interaction of stages and groups	90/2821	4	47/705	45/9	001/0	33/0	999/0
Error	10/5674	76	66/74				

The results shown in Table 6 show that the difference between the test stages (F= 27.46, P = 0.001), group membership (F= 17.59, P= 0.001), and the interaction of stages and group (F=9.45, P=0.001) is significant. To investigate the differences, the Benfroni pair comparison was used; the results are presented in Table 7.

Table 7. Pair comparison of between-group differences and test stages based on modified means of difficulty in emotion regulation

Variability source	Base group	Secondary group	Mean difference	ESD (Error Standard Deviation)	P value

Group	Emotion-focused	Cognitive behavior	70/0-	06/2	1
		Control	50/11-	67/1	001/0
	Cognitive behavior	Control	80/10-	67/2	002/0
Test stage	Pre-test	Post-test	05/12	05/2	001/0
		Follow up	40/11	29/2	001/0
	Post-test	Follow up	65/0-	76/0	1

The results presented in Table 7 show that the emotion-focused therapy group has a significantly lower mean than the control group (P = 0.03), and the cognitive behavioral therapy group obtained a lower mean score in difficulty in emotion regulation compared to the control group (P = 0.002). However, no significant difference was observed between the mean of the emotion-focused therapy group and the behavioral cognitive therapy group (P = 1). The results also show that the pretest score of difficulty in emotion regulation was significantly higher than the post-test and follow-up stages (P=0.001), and no significant difference was observed between post-test and follow-up scores, which indicates the stability of the results obtained. The modified means are presented in Table 8.

Table 8. Modified means of difficulty in emotion regulation for research groups and test stages

Variable	Secondary group	Mean	SD
Group	Emotion focused	87/104	28/1
	Cognitive behavior	57/105	14/1
	Control	37/116	17/1
Test	Pre-test	75/116	70/1
	Post-test	70/104	18/1
	Follow up	35/105	38/1

Figure 2 shows the trend of changes obtained for research groups in the pre-test, post-test, and follow-up stages.

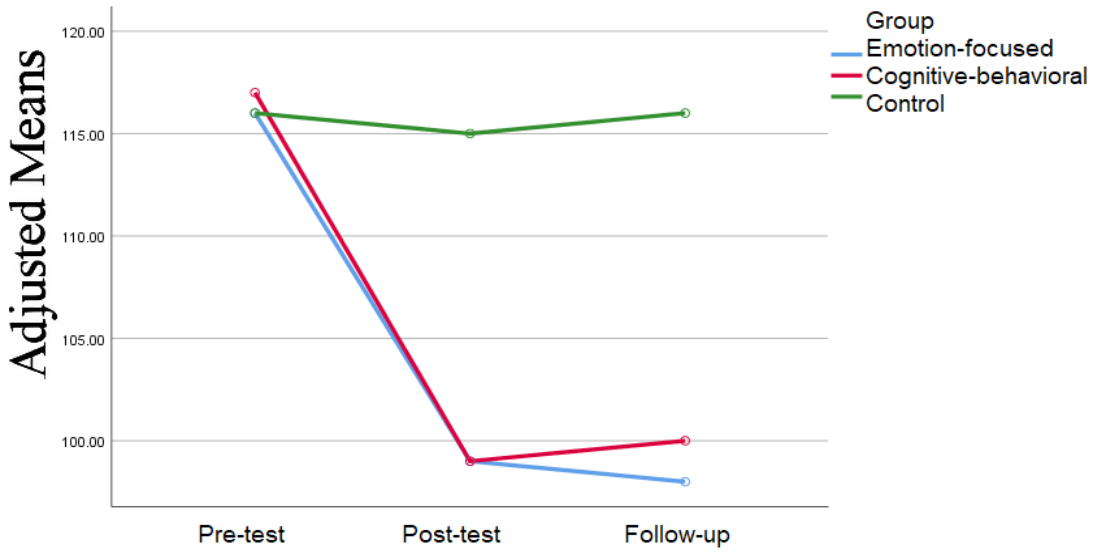

Figure 2. Profile of changes in scores in the difficulty of emotion regulation of research groups in the test stages

Discussion and conclusion

Pain disorder is a major problem in the public health system due to the lack of clear causes and the severity of its unpleasant consequences. However, what is important is that the psychological nature of this disease is largely conceivable, and part of it goes back to the function and emotional processing of these patients. So, the present study compared the effectiveness of emotion-focused therapy and cognitive behavioral therapy on alexithymia and difficulty in emotion regulation in patients with pain disorder. In terms of alexithymia, the results obtained from mixed variance analysis and pairwise comparison showed that both treatments are significantly effective in reducing alexithymia, with significantly more effectiveness of emotion-focused therapy compared to cognitive behavior therapy. The results of this study are similar to the results of studies of Broderick, Keefe, Schneider, Junghaenel, Bruckenthal, et al. (2016), Turner et al. (2016), Lazaridou et al. (2017), Aghasi Zadeh (2013), and Zare, Mohammadi, Motaghi, Afshar, and Pour Kazem (2014).

The reason for these consistent findings is that cognitive behavioral therapy is effective in improving the emotional well-being of patients with pain and other physical and mental disorders. To explain this research finding, we can point to the relationship between the beliefs and inefficient thoughts and the emotional aspects of patients with pain disorder. Thus, in these patients, distorted thoughts and dysfunctional beliefs, which include a great deal of pain catastrophe, intense and unrealistic fear of pain, and understanding the possible unpleasant consequences of pain, lead to adapting avoidance approach and emotional avoidance (van der Horst et al., 2019; Chen & Jackson, 2018). In addition, in alexithymia, the person exaggerates normal physical arousal, misinterprets the physical signs of alexithymia, and shows emotional distress through physical complaints (Aaron, Fisher, de la Vega, Lumley & Palermo, 2019). Therefore, the effectiveness of cognitive behavioral therapy can be explained in two parts. First, the use of behavioral techniques, such as muscle relaxation presented, was able to reduce the amount of stress and physical tension and led to a reduction in the incidence of alexithymia, like physical tension and physical symptoms, are affected by the sympathetic cortex, and as a result, reduces the difficulty in identifying and describing emotions.

In this regard, it has been shown that when people are in a stressful situation and the body's sympathetic system is more active, people's ability and capacity to correctly understand and describe emotional information decreases and the efficiency and sense of empowerment that can lead to a better understanding of emotions is reduced (Peasley-Miklus, Panayiotou & Vrana, 2016). Second, it can be argued that the correction of defective beliefs and cognitions and the cognitive reconstruction that is intended in facial intervention have helped to reduce the strategies that lead to alexithymia. In other words, the results showed that dysfunctional thoughts and beliefs, which imply the possibility of unbearable pain, catastrophe, and fear of experiencing pain, practically lead to the prevention of the emotion avoidance approach (Kishon et al., 2019; Welding & Samur, 2018). This emotion avoidance approach practically leads to the development of limiting and distorted cognitive processing that prevents the individual from properly understanding and describing emotions. However, cognitive self-processing self-limiting, and intrinsic thoughts are essential components of alexithymia (Brewer, Cook & Bird, 2016). Therefore, it can be said that in general, cognitive-behavioral therapy, using behavioral techniques, has been able to reduce the prerequisites that facilitate alexithymia and by using cognitive tech-

niques, modify the processes and thoughts that lead to avoidance and clear understanding of emotions.

Another finding of the study was that emotion-focused therapy has a significant effect on reducing alexithymia. This finding is in line with the findings of Chiling et al. (2013) and Shomali, Mehrabizadeh Honarmand, Naami, and Davoodi (2019), indicating the effectiveness of emotion-focused therapy in the treatment of emotional abnormalities. The reason for the consistency of these findings is that they have shown that emotion-focused therapy is effective in improving the emotional well-being of patients with pain and other physical and mental disorders. Although no research is directly related to this research finding, the results of Greenberg (2017), Timolak et al. (2017), Shahar, B., Bar-Kalifa, E., and Alon (2017), Adler, Shahar, Dolev and Zilcha-Mano (2018) indicate the effectiveness of emotion-focused therapy in various areas and mental health. In explaining this finding, it can be said that emotion-focused therapy considers emotions as the main input of experience and as a provider of information, desires, and motivation for action that brings physical symptoms (Greenberg, 2019). In this treatment, emotion is considered an adaptive and intrinsic system that helps a person survive and progress, and take action to meet his needs (Greenberg, 2011). However, traumatic experiences such as deprivation and denial, rejection and negative judgment, and damage during growth can destroy emotional processing (Timolak et al. (2017). In other words, these traumatic experiences in the form of emotional schemes have a comprehensive effect (Greenberg, 2011). , the formation of these maladaptive emotional experiences leads to dysfunctional coping such as running away, fear, and aggression in different situations and in response to stimuli that have the slightest sign of danger and threat (Murphy, Elliott & Carrick, 2019). In other words, under the influence of maladaptive emotional schemes that are based on primary injuries, the person does not process and correctly describe the situation and the emotions associated with it and in many cases, uses avoidance strategies to inefficiently protect his identity and attachment. Therefore, maladaptive emotional schemes are to some extent responsible for alexithymia that is targeted in emotion-focused therapy with an empiricist and humanistic approach. In this regard, techniques such as empathy and accreditation to an individual's emotional experience facilitate the acceptance of experience, which is the first step for emotional processing and meaning (Greenberg & Elliott, 2017). In other words, given that the person has experienced a traumatic situation that deprives him of security and peace of mind, this humanistic approach modifies the experience and re-assumes the provision for emotional perception and experience (Murphy et al., 2019).

Also, because based on the empirical approach, techniques such as empty seats and two-seat dialogue are used to experience and reprocess one's experiences (Greenberg & Elliott, 2017), in practice, a person's awareness and capacity are provided in a safe therapeutic environment to identify and describe emotions and the meaning giving is facilitated by the emotional correction experience. Therefore, it can be said that the combination of empiricist and humanistic approaches in the context of a dynamic look at emotional experiences in emotion-focused therapy could lead to the effectiveness of this therapy on alexithymia, with more significant effectiveness compared to cognitive behavioral therapy. Also, in explaining this effectiveness, in addition to this empirical and humanistic capacity, it can be said that people who do not have the required self-awareness of their emotions face difficulties in expressing and identifying their feelings. Therefore, when emotional information cannot be entered into the cognitive process, one becomes confused and depressed. In this regard, emotion-focused therapy helps people facilitate emotional skills, which is known as the ability to identify

and express emotions, in a safe therapeutic environment with emotional coaching and training to clients (Greenberg, 2015).

Another finding of the present study was that cognitive behavioral therapy and emotion-focused therapy have a significant effect on reducing the difficulty of emotion regulation. Findings of Shoushtari, Rezaei, and Taheri (2016), Wesner et al. (2014), Moscovitch et al. (2012), Keef et al. (2016), Turner et al. (2016), Zare et al. (2014) and Bernard et al. 2018) are consistent regarding the effectiveness of cognitive behavioral therapy on the difficulty of emotion regulation. The reason for these consistent findings is that cognitive behavioral therapy is effective in improving the emotional well-being of patients with pain and other physical and mental disorders. The use of negative thinking and inefficient strategies, such as pain catastrophe, are among the cases of patients with pain disorders expression (Glager, 2016; Kummer & Alurasi, 2016). In other words, if we look at these conditions through a behavioral cognitive lens, pain disorder is considered an event in which dysfunctional thoughts and beliefs are mediated by distressing experiences and emotion regulation (Saito et al., 2019). Accordingly, cognition is an essential part of emotion regulation. If it tends to inefficient strategies such as catastrophe, self-blame, others' blame, and constant rumination, it can lead to disorder and anxiety (Balzarotti et al., 2016). Given that these strategies and cognitions are flawed for the individual with a sense of inefficiency and distortion of reality, it can lead to difficulty in controlling emotion, impulse, and behavior as well as the lack of clarity of the situation (Loeffler et al., 2019). With this description, it seems that cognitive behavioral therapy can reduce difficulty in emotional regulation. These cognitions and maladaptive strategies and replaced with corrective and efficient thoughts. In other words, substituting strategies such as acceptance, realism, non-self-blaming, and others-blaming, given that the consequences are not disruptive and lead to the development of adaptive and fact-based behaviors, can reduce difficulty in emotional processing and regulation. In this regard, it has been shown that cognitive change in poor estimation of current and possible future conditions, as well as the acquisition of cognitive assessment skills can improve a person's mental condition, especially reduce anxiety (Moscovitch, 2012).

Another finding was that emotion-focused therapy had a significant effect on improving difficulty in emotion regulation. This finding is somewhat in line with the findings of Chiling et al. (2013), Shomali, Mehrabizadeh Honarmand, Naami and Davoodi (2019), Greenberg (2017), Timolak et al. (2017), Shahar, Bar-Kalifa and Alon. (2017), and Adler, Shahar, Dolev, and Zilcha-Mano (2018). The reason for the consistency of these findings is that they have shown that emotion-focused therapy is effective in improving the emotional well-being of patients with pain and other physical and mental disorders. Emotion regulation in emotion-focused theory is the ability of an individual to act, be aware of, express, and use emotions adaptively to regulate confusion and advance needs and goals (Greenberg, 2002). Emotional regulation is essential for adaptive performance. There is an optimal level of emotional arousal for a given situation (Greenberg, 2002). An individual's ability to regulate emotion comes from early experiences of attachment to responsive and available parents or caregivers. Difficulties in emotional regulation include problems with both low-arousal and over-arousal and are an important form of emotional dysfunction (Kennedy-Moore & Watson, 2001; Greenberg & Payweu, 2007).

Accordingly, emotion-focused therapy tries to correct this dysfunction and difficulty in regulating emotion by focusing on maladaptive emotional schemes caused by early childhood injuries and attachment organization. In other words, the experience of emotional correction in a safe therapeutic environment practically modifies

and corrects that part of the difficulty in emotional regulation that includes things like lack of clarity and emotional awareness (low-arousal) and that part of the difficulty in emotional regulation that includes difficulty in controlling impulse and purposeful behavior and maladaptive strategies (over-arousal). This process is facilitated in a safe therapeutic environment that is achieved through empathy and accreditation, as well as emotional reprocessing and re-meaning of emotion acquired through empirical techniques (chair techniques). In addition, the results of a neurological study have shown that emotion-focused therapy, with immunization and emotional reprocessing, helps patients regulate their stressful neuropsychological response (Coan, 2013). This finding can be justified based on developmental interactionist theory (Buck, 2019) which states that emotions are the product of evolution and enable human beings to respond to the fundamental challenges of adaptation to live, and the inner experience of emotion guides one's behavior. Therefore, it can be said that emotion-focused intervention increases emotion management and behavior, which ultimately helps the person adapt to life situations and be more flexible, and facilitates a desirable level of emotional stability, calmness, and realism in life.

The results also showed no significant difference between the effectiveness of the two treatments on difficulty in emotional regulation. In explaining this finding, it can also be said that both treatments focus on improving emotion regulation skills. Thus, cognitive behavioral therapy helps reduce emotional regulation difficulties by reducing negative strategies, such as rumination and blaming oneself and others, and improving adaptive strategies, such as cognitive reappraisal (Saito et al., 2019). In contrast, emotion-focused therapy also provides the basis for improving emotional regulation by increasing emotional awareness and clarity, as well as deepening the meaning of emotions (Greenberg, 2002). Accordingly, although the two treatments show differences in therapeutic techniques and strategies for improving emotional regulation, both interventions focus on reducing emotional regulation difficulties and have a similar emphasis on emotional regulation skills as part of their therapeutic goals, which probably led to almost the same effectiveness.

Pain disorder is one of the diseases that, due to the uncertainty of specific biological roots and the role of specific psychological variables, has long absorbed the attention of psychologists and health professionals. In this regard, the present study sought to compare the effectiveness of emotion-focused therapy and cognitive behavioral therapy on alexithymia and the difficulty in emotion regulation in women with pain disorders. The results showed that both therapies were significantly effective on alexithymia and difficulty in emotion regulation. The results also showed that in comparison with cognitive behavioral therapy, emotion-focused therapy is more effective in improving alexithymia. Therefore, the present study, confirming the effectiveness of cognitive behavioral therapy, indicated that emotion-focused therapy seems to be a more effective treatment. As a result, emotion-focused therapy can be considered and used as an effective treatment for pain disorders by health professionals. However, due to limitations such as lack of cooperation and access to the required research sample, the researchers used available sampling in the initial sampling, which may limit the generalization of the results. The small sample size and convenience sampling were other limitations of the present study, which reduced the generalizability of the results. Therefore, due to the limitation of this study and the lack of research literature, conducting further studies in the field of emotion-focused individual therapy is suggested by the authors. From the application aspect, considering the greater effectiveness of emotion-focused therapy for alexithymia compared to cognitive-behavioral therapy, it is recommended to use emotion-focused therapy for patients with pain disorders with symptoms of alexithymia. It is also suggested

that organizations and clinics providing services to patients with pain disorders use the results and protocols of the present study to provide services to these patients. Of course, to improve difficulty in emotional regulation, mental health professionals can use both interventions, depending on the results obtained.

Acknowledgment

Hereby, we appreciate all those who cooperated and answered the questionnaires, and participated in the treatment sessions.

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