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# Comparison of the Effectiveness of Emotion-Focused Therapy and Cognitive-Behavioral Therapy on Coping Strategies and Pain Catastrophizing in Patients with Pain Disorder

Fatemeh fazeli Sani[1] , Mahdieh Salehi[2*], Amin Rafiepoor[3] , Javad Khalatbari[4]

**Abstract**

**Objective:** The aim of this study was to compare the effectiveness of emotion-focused therapy and cognitive-behavioral therapy on pain coping strategies and pain catastrophizing in patients with pain disorder.

**Method:** The research method was a quasi-experimental with pretest-posttest design and a control group and a two-month follow-up. The statistical population of the study included all women with psychosomatic problems and pain who referred to Manoushan and Behsa counseling centers in Tehran. The sample size included 60 patients (three groups of 20). The research instruments included the Rosenstileand Keefe (1983) Pain Coping Strategies Questionnaire and the Bishop and Pivik (1995) Pain CatastropheScale. The emotion-focused experimental group received 12 training sessions and the cognitive-behavioral experimental group received 10 sessions training, but the control group did not receive any intervention during the study.

**Results:** The results of mixed variance analysis and Benferroni pairwise comparison test showed that both emotion-focused therapy and cognitive-behavioral therapy have significant impact on the components of pain reinterpretation, pain catastrophizing, behavioral activity, and coping efficiency ($P < 0.05$), but they do not have significant effect on the components of return attention, ignoring pain, prayer and hope, and self-talking ($P < 0.05$). The results also showed that both treatments have significant effect on pain catastrophizing ($P<0.05$). Also, no significant difference was observed between the two experimental groups ($P < 0.05$).

**Conclusion:** Therefore, the results of the present study show that emotion-focused therapy, like cognitive-behavioral therapy, can be used for patients with pain disorders and improve their cognitive factors.

**Keywords**: Emotion-Focused Therapy, Cognitive-Behavioral Therapy, Pain Coping Strategies, Pain Catastrophizing, Pain Disorder.

## Introduction

In general, it can be said that people's health and well-being are affected by physical and mental factors. In recent decades, a new type of disease has been identified as psychosomatic disorders in which emotional and psychological factors play an important role in creating it (Shabbeh, Feizi, Afshar, Hassanzadeh, & Adibi, 2016). The most common psychosomatic disorders are related to pain disorders such as knee and elbow joint pain, shoulder and back pain, and nerve headaches (Riahi, 2009). Psychological factors play a decisive role in the occurrence and experience of this type of disorders (Fink, Toft, Hansen, Ørnbøl, & Olesen, 2007; Creed, Henningsen, & Fink, 2011).

11. PhD Student, Department of Health Psychology, Central Tehran Branch, Islamic Azad University, Tehran, Iran
2. Assistant Professor, Department of Psychology, Central Tehran Branch, Islamic Azad University, Tehran, Iran.
3.Assistant Professor, Department of Psychology, Payame Noor University, Tehran, Iran
4. Associate Professor, Department of Psychology, Tonekabon Branch, Islamic Azad University, Rasht, Iran
*Corresponding Author: Mahdieh Salehi, Email: Iranpour1000@yahoo.com

Coping is an effort made by a person for a situation that requires adjustment to eliminate, reduce, or minimize stressful stimuli (Allen, Somers, Campbell, Arbeeva, & Coffman, 2019). Patients with pain often appear to have maladaptive and negative assessments of their condition and ability to control pain, in such a way that suffering is a major threat to them (Riddle, Jensen, Ang, Slover, Perera, et al., 2019). Studies on patients with pain show that while the use of active coping strategies (such as trying to perform tasks despite pain, not paying attention to pain, using muscle relaxation) has adaptive results, and in contrast, the use of inactive coping strategies (such as catastrophic dependence and limitation of activity) is associated with more pain, more severe physical disability, excessive fear, anxiety, worry and the possibility of depression (Sharma, Sandhu & Shenoy, 2011; Everhart, Chafitz, Harris, Schiele, Emery, et al., 2020).

Another major challenge for people with pain disorders is pain catastrophic beliefs that cause the person to pay too much attention to physical symptoms and thus ignore daily activities. This avoidance is associated with subsequent pain consequences such as disability and physical and emotional dysfunction (Linton, Flink, & Vlaeyen, 2018). Pain catastrophizing is a maladaptive response to pain that includes a tendency to increase focus on pain-related thoughts and threatening pain interpretation (Van Damme, Becker, & Van der Linden, 2018). In general, a person's attitudes and beliefs, as well as sources and methods of coping with pain, affect how they report pain (Evers. Kraaimaat. Geenen, Jacobs, & Bijlsma, 2003). Passive coping strategies, such as self-criticism, extreme generalization, and catastrophizing are associated with greater pain (Sanderson, 2012). It has also been shown that early levels of pain catastrophizing are associated with intolerance to subsequent activities and challenges, and in addition to being associated with physical disability, it can also be associated with more severe pain and pain-related problems (Sullivan, Rodgers, Wilson, Bell, et al., 2002; Adams, Thibault, Ellis, Moore & Sullivan, 2017).

In this regard, various psychotherapies have been used and developed to improve the condition of patients with pain disorders. One of these approaches is cognitive-behavioral therapy, in which over the past 30 years, more than 100 therapeutic studies have been performed to prevent and treat pain using cognitive-behavioral therapy (CBT) (D C Williams, Axelston, & Morley, 2002, quoted by Broderick, Keefe, Schneider, Junghaenel, Bruckenthal, et al., 2016). Cognitive-behavioral therapies are based on the principle that the content and thought process are recognizable and instructive, mediating between events and moods and emotional responses to thoughts; therefore, by correcting and changing thoughts, people's moods and responses to environmental events can be changed (Dobson & Dobson, 2018, pp. 4-5). Research shows that CBT reduces pain enhancement strategies such as catastrophizing and magnifying pain (Lazaridou et al., 2017; Turner et al., 2016). It also increases patients' ability to recognize and understand the situation and improves responses and emotional settings (Aghasizadeh, 2013; Zare, Mohammadi, Mottaqi, Afshar&Pourkazem, 2014; Turner, et al., 2016; Bernard, et al., 2018). This bulk of studies, which indicates the effectiveness of this therapy, has led to the growth of the view that the effectiveness of other therapies, especially emerging ones, can be examined and tested in comparison with this treatment (Broderick, et al., 2016). One of these emerging therapies compared to cognitive-behavioral therapy is emotion-focused therapy, which is based on the assumption that emotions are adaptive in nature and have adaptive potential, identify what is important for well-being, and prepare the individual for adaptive actions, so that activating them can help clients to change their

troublesome emotional states or unwanted experiences (Greenberg, 2015). However, experiencing problems, such as deprivation and denial, negative rejection and judgment, mental or physical damage, and the experience of abuse during growth can affect the person's emotional function by harming the development of identity and attachment, especially in emotional processing and regulation (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 (Smari Bardeh Zard, Sabet, & Aminzadeh, 2017; Rezaei, 2013). Studies also show 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 (e.g. Kurian, 2014; Greenberg, Warwar, & Malcolm, 2008; KhojastehMehr, Shiralinia, Rajabi & Bashlideh, 2013), and less on issues such as experiencing pain as a within-person affair.

In summary, it can be said that emotion-focused therapy in Iran was more important in the context of interpersonal relationships, and the study of the individual effectiveness is a research gap. According to the available sources about studies done in Iran, this study is the first research that has used the emotion-focused therapy in the treatment of emotional problems of patients with pain disorders. In addition to this necessity, since psychological therapies must move towards the separation of effective and ineffective therapies, clinicians should meet criteria that indicate whether a treatment is clinically significant or not. Therefore, considering that research indicates low to moderate effectiveness of cognitive-behavioral therapy for patients with pain disorders, comparison of the effectiveness of emotion-focused therapy with cognitive-behavioral therapy may lead to the correct choice of effective therapy by the therapist and reduction of treatment failures. Thus, the present study sought to answer the question of whether there is any difference between the effectiveness of emotion-focused therapy and cognitive-behavioral therapy on coping strategies and pain catastrophizing in patients with pain disorder.

## Method

The research method was quasi-experimental with a pretest-posttest design with control group and two-month follow-up. The statistical population of the study included all women with psychosomatic problems and pains who referred to Manoushan and Behsa counseling centers in Tehran and the treating psychiatrist diagnosed them with pain disorder. Among the eligible individuals who, after providing the necessary explanations by the therapist, volunteered to participate in the study, the sample size was selected based on the minimum sample size in the experimental studies - at least 15 people in each research group (Quinn & Keough, 2002). Due to the possibility of missing participants until the end of the study, the sample size of each group was determined 20 and a total of 60 were selected. Inclusion criteria were pain disorder based on the diagnosis of the treating psychiatrist, female gender, age range between 23 and 48 years, average economic and social status, and having at least bachelor's degree. Exclusion criteria included having any physical disability, severe psychiatric disorders such as bipolar disorder, schizophrenia, paranoia, significant personality disorder, and more than two absences in treatment sessions. Finally, qualified individuals were randomly assigned to three groups (emotion-focused therapy, cognitive-behavior therapy, and control group). The research tool consisted of two questionnaires.

*Pain Coping Strategies Questionnaire:* The Pain Coping Strategies Questionnaire was designed by Rosenstile and Keefe in 1983, which consists of 42 questions to measure pain coping strategy. The

scoring of this questionnaire is based on a 7-point Likert scale (0 = never, 6= always). Higher scores on each scale indicate greater use of the strategy in coping with chronic pain. Items 5, 11, 13, 25, 33, and 37 are used to measure the subscale of return attention; items 1, 4, 10, 16, 29, and 41 for pain reinterpretation; items 6, 8, 19, 20, 23, and 31 for the subscale of self-talking; items 17, 21, 24, 30, 32, and 35 for the subscale of ignoring pain; items 5, 11, 13, 25, 33, and 37 for catastrophizing pain; items 14, 15, 18, 22, 28, and 36 for prayer and hope; and items 2, 7, 34, 39, 40, and 42 to measure the behavioral action. The questionnaire also includes two scales called behavioral strategy (increasing behavioral activity) and coping efficiency. This questionnaire was standardized for the first time among a group of patients with chronic back pain and its internal consistency coefficients of seven subscales were reported between 0.70 and 0.83 (Rosenstile & Keefe, 1983). In Iran, Asghari Moghadam and Golk (2005) have standardized this questionnaire and the reliability coefficient of its seven scales has been reported between 74% to 83% and the criterion and predictor validity have also been confirmed.

**Table 1.** Summary emotion-focused intervention

| session | | Techniques and assignments |
|---|---|---|
| One | Introducing and creating a therapy unity and a safe environment,<br>Collaborating and explaining therapy goals and how to achieve them and talking about concerns and expectations | Empathy<br>Reflection of emotion<br>Summary |
| Two | 1) Talking about what they have done so far to improve their condition after being informed about their illness and their current mental state,<br>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. | Empathetic understanding, empathetic exploration, and empathetic coordination |
| Three, Four, and Five | 1) Each client told their own narratives of pain disorder,<br>2) Depth to experience and expressing excitement,<br>3) Bringing in clients' emotional plans, painful nuclear emotions, incompatible emotions, self-restraint, self-criticism, and unfinished works. | empathetic exploration, focus on body and face and experience, empathy, ad process guidance |
| Six, Seven, and Eight | 1) explaining two-chair technique to repair self-restraint and self-criticism in clients, using the two-chair technique for each client, and self-compassion, self-healing, and self-organization were facilitated. | two-chair technique, self-compassion, self-healing, and self-organization |
| Nine, Ten, and Eleven | 1) Introducing the empty seat technique for "unfinished work" and performing it for each client, and self-compassion and self-healing were facilitated. | empty seat technique, self-compassion and self-healing |
| Twelve | 1) Re-running the questionnaires,<br>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,<br>3) Conversation about the new meaning made by new emotions and narratives and the consolidation of healing,<br>4) Saying goodbye and requesting to attend a meeting after two months of treatment to follow up the continuation of the therapeutic effect. | Empathy<br>Feedback<br>Summary and review |

**Table 2.** Summary cognitive-behavioral intervention

| session | | Techniques and assignments |
|---|---|---|
| One | Welcoming, brief introduction, statement of rules, explanation of the relationship between mind and body and how psychological factors affect, thinking, emotion, physiology, behavior (cognitive triangle), ABC, holy example, example, suitcase. | guided imagination relaxation, behavioral function analysis, logic, psychological training, exposure (therapy room, therapy chair), muscle relaxation exercise (biofeedback) and relaxation CD |
| Two | Reviewing the assignments of the previous session, negative thoughts, and other possible facts, basic cognitive therapy methods, logic and reason for cognitive therapy, and identifying anxiety thoughts, and assigning homework for the next session. | Exercise: identifying negative thoughts and cognitive distortions.<br>Exercise: identifying distortions of logical errors.<br>Exercise: identifying logical errors, practice of applied stress and assertiveness training, continuous exposure using the room, tools, DVD scenes. |
| Three | Reviewing the assignments of the previous session and explaining the advantage of stopping negative thoughts, assigning homework for the next session, cognitive techniques for challenging anxious thoughts, making alternative interpretations or predictions, examining evidence and possibilities, detoxification. | Exercise 1: Focusing on an object and explaining the details.<br>Exercise 2: Mental exercises (counting down).<br>Exercise 3: Reviewing happy memories and pleasant fantasies.<br>Exercise 4: Interesting and fascinating activities |
| Four | Checking the assignments of the previous session, cognitive reconstruction, identifying worrying behaviors, identifying passive avoidance behaviors, mental relaxation training, assigning homework for the next session. | cognitive reconstruction<br>mental relaxation training<br>assigning homework |
| Five | Reviewing the assignments of the previous session, the logic of muscle relaxation. | Exercise: Muscular relaxation, assigning homework for the next session |
| Six | Reviewing the assignments of the previous session, identifying and examining core beliefs, training progressive relaxation. | muscle relaxation<br>assigning homework |
| Seven | Reviewing the assignments of the previous session, continuing identifying and examining core beliefs, mental exposure and coping practice, and regular desensitization. | Exercise: regular visual desensitization, immersion.<br>Exercise: regular visual immersion, behavioral experiments, and giving assignments. |
| Eight | Reviewing the assignments of the previous session, continuing identifying and examining core beliefs, identifying and examining disturbing metacognitive beliefs, continuing mental exposure and coping practice, inefficient assumptions and rules. | Exercise: Identifying inefficient assumptions and rules, allegory of lake monsters, logical analysis. logical analysis practice ,assigning homework for the next session. |
| Nine | 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 assignment for the next session. |
| ten | Reviewing the assignments of the previous session, perceptual change. | Exercise: Completing the sheets of perceptual change, optional cortical inhibition.<br>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. |

*Pain catastrophe scale:* The Pain Catastrophe Scale was developed by Sullivan, Bishop, and Pivik (1995) to evaluate the various dimensions of pain catastrophe and the mechanism of action of this catastrophe. This is a scale of 13 questions with three dimensions of rumination, magnification and helplessness. This questionnaire is scored based on a 5-point Likert scale (0 for never, 4 for always). Lower scores indicate less catastrophizing. The total score is obtained by summing up the responses given to each of the 13 items, ranging from 0 to 52. Sullivan et al. (1995) confirmed the construct validity of the three-factor model of the questionnaire and reported Cronbach's alpha for rumination, magnification, helplessness, and total score 0.87, 0.66, 0.78, and 0.87, respectively. In the study of Mohammadi et al. (2013), Cronbach's alpha was calculated and reported 0.65, 0.53, 0.81, and 0.84 for rumination, magnification, helplessness, and total score, respectively. Also Rahmati, Asghari Moghadam, Sha'iri, Paknejad, Rahmati, Ghasami, Maroofi, and NayebAghaei (2017) in their research on the evaluation of the psychometric features of this questionnaire, reported the Pearson correlation of the questionnaire and the scale of pain intensity, dysfunction, recurrence, depression, anxiety, negative emotions, pain self-efficacy, and positive emotions meaningful which indicated convergent and divergent validity (P <0.010).

**Ethical statement**

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

**Procedure**

For one of the experimental groups, 12 sessions of approximately one-hour emotion focused therapy

**Table 3.** Descriptive indices of demographic variables and their homogeneity in research groups

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

Chi-square *
ANOVA **

were performed based on the instruction of emotion-focused therapy written by Elliott et al. (2003, translated by Ramezani & Tinanejad, 2018). A summary of this intervention is provided in Table 1. For the other experimental group 10 ,sessions of cognitive-behavioral therapy were performed. Each session was performed for approximately one hour based on the practical therapeutic-cognitive-behavioral guide for chronic pain of otitis,2007) translated by Ali Beigi & Mohammadi2010 ,). A summary of this intervention is provided in Table 2. To analyze the research data ,descriptive statistical methods ,including mean ,standard deviation ,as well as inferential statistical methods of mixed variance analysis and Ben Foroni post hoc test were used. To do mixed variance analysis ,the assumptions of observation independence ,normality of data )Kalmogorov-Smirnov test ,(and homogeneity of variances) Leven test (were examined .SPSS version 25was used for data analysis.

## Results

In this section, first, descriptive indices of demographic variables and their homogeneity

**Table 4.** Descriptive indicators of research variables

| variable | Test stage | Emotion-focused therapy group | | Cognitive-behavior therapy group | | Control group | |
|---|---|---|---|---|---|---|---|
| | | mean | SD | mean | SD | mean | SD |
| pain Catastrophizing | Pre-test | 23/4 | 6/15 | 23/95 | 6/18 | 22/58 | 5/21 |
| | Post-test | 17/1 | 3/52 | 17/2 | 3/80 | 22/2 | 4/67 |
| | Follow up | 18/65 | 4/28 | 17/85 | 4/21 | 23/55 | 3/69 |
| pain Reinterpretation | Pre-test | 14 | 3/68 | 13/85 | 3/38 | 14/3 | 3/51 |
| | Post-test | 21/05 | 3/76 | 22/5 | 3/9 | 13/5 | 1/93 |
| | Follow up | 20/75 | 3/04 | 22/3 | 3/57 | 14/2 | 1/76 |
| Return attention | Pre-test | 14/1 | 1/48 | 13/25 | 2/1 | 13/85 | 1/52 |
| | Post-test | 14/5 | 1/64 | 14/05 | 1/5 | 13/6 | 1/09 |
| | Follow up | 14/15 | 1/18 | 13/55 | 1/32 | 14 | 1/17 |
| Catastrophic pain | Pre-test | 15/3 | 1/49 | 15 | 1/55 | 14/8 | 1/32 |
| | Post-test | 11/85 | 1/53 | 12/5 | 1/43 | 14/85 | 1/42 |
| | Follow up | 12/15 | 1/42 | 13 | 1/49 | 14/5 | 1/93 |
| Ignoring pain | Pre-test | 13/7 | 1/71 | 14/3 | 1/62 | 14/8 | 1/58 |
| | Post-test | 14/2 | 1/64 | 15/2 | 1/64 | 14/25 | 1/74 |
| | Follow up | 14/5 | 1/73 | 14/9 | 1/68 | 14/55 | 1/67 |
| Prayer and hope | Pre-test | 15/45 | 1/32 | 16/4 | 1/63 | 16/3 | 1/27 |
| | Post-test | 15/95 | 1/76 | 16/65 | 1/93 | 16/6 | 1/60 |
| | Follow up | 15/55 | 1/28 | 16/2 | 1/51 | 16/5 | 1/62 |
| Self-talking | Pre-test | 13/8 | 1/61 | 14/3 | 1/3 | 14/65 | 1/31 |
| | Post-test | 14/25 | 1/68 | 14/1 | 1/11 | 15/2 | 1/28 |
| | Follow up | 13/95 | 1/47 | 14 | 1/86 | 14/1 | 1/34 |
| Behavioral activity | Pre-test | 14/35 | 2/68 | 15/2 | 2/06 | 13/75 | 2/40 |
| | Post-test | 20/1 | 2/64 | 21/25 | 2/98 | 14/8 | 1/70 |
| | Follow up | 19/7 | 2/47 | 20/75 | 2/93 | 15 | 1/73 |
| Coping efficiency | Pre-test | 5/15 | 1/43 | 5/50 | 1/53 | 4/65 | 1/69 |
| | Post-test | 7/45 | 1/61 | 8 | 1/34 | 5/10 | 1/41 |
| | Follow up | 7/10 | 1/41 | 8/35 | 1/22 | 4/70 | 1/22 |

**Table 5.** Results of mixed variance analysis to compare the effectiveness of emotion-focused therapy and cognitive-behavioral therapy on the difficulty of coping pain strategies

| variable | Variance source | Total squares | Df | Mean squares | F value | P value | Effect size | Test power |
|---|---|---|---|---|---|---|---|---|
| pain | **Test stages** | 1000/13 | 2 | 500/07 | 149/13 | 0/001 | 0/72 | 1 |
| Reinterpretation | Group membership | 1057/3 | 2 | 528/65 | 21/03 | 0/001 | 0/42 | 1 |
| | Interaction of stages and groups | 618/27 | 4 | 154/57 | 46/09 | 0/001 | 0/62 | 1 |
| Return attention | Test stages | 3/01 | 2 | 1/51 | 1/06 | 0/35 | 0/02 | 0/23 |
| | Group membership | 15/58 | 2 | 6/29 | 1/75 | 0/18 | 0/06 | 0/35 |
| | Interaction of stages and groups | 7/06 | 4 | 1/76 | 1/24 | 0/30 | 0/04 | 0/38 |
| pain | Test stages | 143/18 | 2 | 71/91 | 45/25 | 0/001 | 0/44 | 1 |
| Catastrophizing | Group membership | 85/08 | 2 | 42/54 | 11/33 | 0/001 | 0/28 | 0/99 |
| | Interaction of stages and groups | 73/72 | 4 | 18/43 | 11/6 | 0/001 | 0/29 | 1 |
| Ignoring pain | Test stages | 4/74 | 2 | 2/37 | 1/52 | 0/22 | 0/03 | 0/32 |
| | Group membership | 13/51 | 2 | 6/76 | 1/28 | 0/28 | 0/04 | 0/27 |
| | Interaction of stages and groups | 13/22 | 4 | 3/31 | 2/12 | 0/09 | 0/07 | 0/61 |
| Prayer and hope | Test stages | 4/48 | 2 | 2/24 | 1/85 | 16 | 0/03 | 0/38 |
| | Group membership | 25/14 | 2 | 12/57 | 0/07 | 0/13 | 0/07 | 0/41 |
| | Interaction of stages and groups | 1/29 | 4 | 0/32 | 0/27 | 0/89 | 0/009 | 0/11 |
| Self-talking | Test stages | 7/51 | 2 | 3/76 | 3/44 | 0/03 | 0/06 | 0/63 |
| | Group membership | 14/14 | 2 | 7/07 | 2/15 | 0/13 | 0/07 | 0/42 |
| | Interaction of stages and groups | 7/62 | 4 | 1/91 | 1/75 | 0/14 | 0/06 | 0/52 |
| Behavioral activity | Test stages | 696/08 | 2 | 348/04 | 134/97 | 0/001 | 0/70 | 1 |
| | Group membership | 684/41 | 2 | 342/21 | 26/86 | 0/001 | 0/48 | 1 |
| | Interaction of stages and groups | 185/29 | 4 | 46/32 | 17/96 | 0/001 | 0/39 | 1 |
| Coping efficiency | Test stages | 113/89 | 2 | 56/94 | 75/33 | 0/001 | 0/57 | 1 |
| | Group membership | 193/21 | 2 | 96/61 | 19/86 | 0/001 | 0/41 | 1 |
| | Interaction of stages and groups | 46/62 | 4 | 11/65 | 15/42 | 0/001 | 0/35 | 1 |

in research groups are examined. The results are presented in Table 3.

Table 3 presents the descriptive indices 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 not significantly heterogeneous in research groups ($p < 0.05$). In Table 4, descriptive indicators of research variables are presented.

Table 4 presents the descriptive indices of mean and

**Table 6.** Pair comparison of within group differences and test stages based on modified means

| Variable | Variability source | Base group | Secondary group | Mean differences | ESD (Error standard deviation) | P value |
|---|---|---|---|---|---|---|
| pain Reinterpretation | group | Emotion-focused | Cognitive-behavior | -0/95 | 0/91 | 0/91 |
| | | | control | 4/6 | 0/91 | 0/001 |
| | | Cognitive-behavior | Control | 5/55 | 0/91 | 0/001 |
| | Test stage | Pre-test | Post-test | -4/97 | 0/36 | 0/001 |
| | | | Follow-up | -5/055 | 0/41 | 0/001 |
| | | Post-test | Follow up | -0/07 | 0/19 | 1 |
| pain Catastrophizing | group | Emotion-focused | Cognitive behavior | -0/40 | 0/35 | 0/79 |
| | | | Control | -1/62 | 0/35 | 0/001 |
| | | Cognitive behavior | Control | -1/22 | 0/35 | 0/003 |
| | Test stage | Pre-test | Post-test | 1/97 | 0/25 | 0/001 |
| | | | Follow-up | -/82 | 0/27 | 0/001 |
| | | Post-test | Follow-up | -0/15 | 0/15 | 0/99 |
| Behavioral activity | group | Emotion-focused | Cognitive behavior | -1/02 | 0/65 | 0/37 |
| | | | Control | 3/53 | 0/65 | 0/001 |
| | | Cognitive behavior | Control | 4/55 | 0/65 | 0/001 |
| | Test stage | Pre-test | Post-test | -4/28 | 0/32 | 0/001 |
| | | | Follow-up | -4/05 | 0/35 | 0/001 |
| | | Post-test | Follow-up | 0/23 | 0/16 | 0/47 |
| Coping efficiency | group | Emotion-focused | Cognitive behavior | -0/71 | 0/40 | 0/24 |
| | | | Control | 1/75 | 0/40 | 0/001 |
| | | Cognitive behavior | Control | 2/47 | 0/40 | 0/001 |
| | Test stage | Pre-test | Post-test | -1/75 | 0/17 | 0/001 |
| | | | Follow-up | -1/62 | 0/19 | 0/001 |
| | | Post-test | Follow-up | 0/13 | 0/17 | 0/59 |

**Table 7.** Modified means of significant components of pain coping strategies for groups and test stages.

| variable | | Secondary group | Mean | SD |
|---|---|---|---|---|
| **Pain reinterpretation** | **Group** | Emotion-focused | 18/6 | 0/65 |
| | | Cognitive behavior | 19/55 | 0/65 |
| | | control | 14 | 0/65 |
| | **Test** | Pre-test | 14/05 | 0/45 |
| | | Post-test | 19/02 | 0/43 |
| | | Follow up | 19/08 | 0/37 |
| **Pain catastrophe** | **Group** | Emotion-focused | 13/1 | 0/25 |
| | | Cognitive behavior | 13/5 | 0/25 |
| | | control | 14/71 | 0/25 |
| | **Test** | Pre-test | 15/03 | 0/19 |
| | | Post-test | 13/07 | 0/19 |
| | | Follow up | 13/22 | 0/21 |
| **Behavioral activity** | **Group** | Emotion-focused | 18/05 | 0/46 |
| | | Cognitive behavior | 19/07 | 0/46 |
| | | control | 14/52 | 0/46 |
| | **Test** | Pre-test | 14/43 | 0/31 |
| | | Post-test | 18/72 | 0/32 |
| | | Follow up | 18/48 | 0/31 |
| **Cope efficacy** | **Group** | Emotion-focused | 6/57 | 0/28 |
| | | Cognitive behavior | 7/28 | 0/28 |
| | | control | 4/82 | 0/28 |
| | **Test** | Pre-test | 5/1 | 0/21 |
| | | Post-test | 6/85 | 0/19 |
| | | Follow up | 6/72 | 0/17 |

standard deviation for the two dependent variables of the research in three stages of pre-test, post-test and follow-up of research groups. Before analyzing the data, the normality of the data distribution was checked using the Kalmogorov-Smirnov test, and the homogeneity of the variances was checked using the Leven test. Due to the fact that the level of significance obtained for these tests was not significant (P <0.05), these assumptions were almost observed.

Mixed analysis of variance was used to compare the effectiveness of emotion-focused therapy and cognitive-behavioral therapy on pain coping strategies in patients with pain disorder, the results of which are presented in Table 5.

The results of Table 5 show that there is a significant difference between the research groups and the test stages in the components of pain reinterpretation, pain catastrophe, behavioral activity and coping efficiency of pain coping strategies (Sig <0.05). But there was no significant difference in the components of return attention, ignoring pain, prayer and hope, and self-talking of the pain coping strategies (Sig<0.05). To investigate the point of difference, Ben Foroni pairwise comparison was used. The results are presented in Table 6.

The results presented in Table 6 show that the components of pain reinterpretation, pain catastrophe, behavioral activity and coping efficiency of both experimental groups are significantly

**Table 8.** Results of mixed variance analysis to compare the effectiveness of emotion-focused therapy and cognitive-behavioral therapy on pain catastrophe

| Variability sources | Total squares | df | Mean squares | F value | P Value | Effect size | Test power |
|---|---|---|---|---|---|---|---|
| **Test stages** | 1290/14 | 2 | 645/07 | 84/46 | 0/001 | 0/60 | 1 |
| **Group membership** | 411/81 | 2 | 205/91 | 4/94 | 0/03 | 0/14 | 0/75 |
| **Interaction of stages and groups** | 373/22 | 4 | 93/31 | 12/22 | 0/001 | 0/30 | 1 |

different from the control group (Sig <0.05), which indicates the effectiveness of both treatments. Also, no significant difference was observed between the two experimental groups in any of these four components (Sig <0.05), which indicates that there is no significant difference between the effectiveness of these two treatments. Also, in all four components, the mean of pre-test is different compared to post-test and follow-up (Sig <0.05), but there is no significant difference between pre-test and follow-up (Sig <0.05). In Table 7, the adjusted means of significant components of pain coping strategies for groups and test stages are presented.

Mixed variance analysis was used to compare the effectiveness of emotion-focused therapy and cognitive-behavioral therapy on pain catastrophe, the results of which are presented in Table 8.

The results of Table 8 show that the difference between the test stages (F = 84.46 and P = 0.001), group membership (F = 4.94 and P = 0.03) and the interaction of stages and group (F=93.31 and P=0.001) is significant. To investigate the points of difference, the Benfroni pair comparison test was used and the results are presented in Table 9.

**Table 9.** Pair comparison of intergroup differences and test stages based on adjusted means of pain catastrophe

| Variability source | Base group | Secondary group | Mean difference | ESD (Error Standard Deviation) | P value |
|---|---|---|---|---|---|
| Group | Emotion-focused | Cognitive behavior | -0/50 | 1/24 | 1 |
| | | Control | -3/23 | 1/24 | 0/03 |
| | Cognitive behavior | Control | -3/18 | 1/24 | 0/04 |
| Test stage | Pre-test | Post-test | 6/18 | 0/56 | 0/001 |
| | | Follow up | 4/95 | 0/56 | 0/001 |
| | Post-test | Follow up | -1/20 | 0/56 | 0/003 |

The results presented in Table 9 show that the emotion-focused group has a significantly lower mean than the control group (P = 0.03), but is not significantly different with the cognitive-behavioral group (P = 1). The results also show that the cognitive-behavior therapy group has a significantly lower mean in pain catastrophe than the control group (P = 0.04). The results also show that the pre-test of pain catastrophe is significantly higher than the post-test and follow-up (P = 0.001).However, there is a significant difference between the post-test and follow-up stages (P = 0.003), which indicates the instability of the results. Table 10 presents the modified means.

**Table 10.** Modified means of pain catastrophic for groups and test stages

| variable | Secondary group | mean | SD |
|---|---|---|---|
| **Group** | Emotion-focused | 20/12 | 0/87 |
| | Cognitive behavior | 20/17 | 0/87 |
| | Control | 23/35 | 0/87 |
| **Test** | Pre-test | 24/93 | 0/70 |
| | Post-test | 18/75 | 0/52 |
| | Follow up | 19/95 | 51/0 |

## Discussion and conclusion

Pain disorder is a major problem in the public health system due to the lack of clear causes and the level of its unpleasant consequences. However, what seems to be the psychological nature of this disease is largely conceivable, and part of it is related to the cognitive and emotional functions and processes of these patients. As a result, the present study compared the effectiveness of emotion-focused therapy and cognitive-behavioral therapy on pain coping strategies and pain catastrophizing in patients with pain disorder. The results of mixed variance analysis and Benferroni pairwise comparison test showed that both emotion-focused therapy and cognitive-behavior therapy have significant effect on the components of pain reinterpretation, pain catastrophizing, behavioral activity and coping efficiency, but they do not have a significant effect on the components of return attention, ignoring pain, prayer and hope, and self-talking. Also, there was no significant difference between the two experimental groups in effectiveness on coping strategies. The findings of Asemi Zavareh, Asgari, Chitsaz, Mehrabi, and Jahanbazi (2013), Rahimian Booger (2011), KhodayariFard, Sadeghi, and Abedini (2007), Wesner et al. (2014), Lazaridou et al. (2017), and Turner et al. (2016) are in line with the finding of this study on the effectiveness of cognitive-behavioral therapy on the components of pain reinterpretation, pain catastrophe, behavioral activity, and coping efficiency.

One of the basic processes of cognitive-behavioral therapy is cognitive reconstruction and correction of the defective structure of one's beliefs and attitudes (Hoffman et al., 2014). It has been shown that catastrophe, as a defective cognitive structure, is one of the most basic cognitive functions in patients with pain disorder. Some studies point to a link between this strategy and greater disability and pain intensity (Meyer, Tschopp, Sprott, & Mannion, 2009), more depression, lower quality of life, and less exercise capacity (Nijs, Van de Putte, Louckx, Truijen, & De Meirleir, 2008). Therefore, modification of cognitive structures can lead to coping efficiency and also improve behavioral actions such as exercise in patients with pain disorder (Ho, 2019). In this regard, it has been stated that positive assessment of the situation and replacement of negative thoughts with positive thoughts has a positive effect on mood, behavior, physical reactions and how clients respond to environmental stressors (Dobson & Dobson, 2018). As a result, pain disorder can be considered as a stressor that if the patient uses more rational and positive cognitive strategies, she/he can experience more effective measures and better behavior, performance, and mood. It should also be noted that patients with pain disorder are generally suspicious about their skills and feel behaviorally incapacitated (Kumar & Elavarasi, 2016). In this regard, behavioral training such as relaxation, positive feedback and behavioral activation, which was used in the training of the experimental group, can improve self-confidence and increase the efficiency and rate of positive behaviors (Dobson & Dobson, 2018).

Testing the third hypothesis of the study also showed that emotion-focused therapy has a significant effect on the components of pain reinterpretation, pain catastrophe, and behavioral activity. This finding is consistent with the findings of Rieffe et al. (2010), Rezaei (2013), Luand Stanton (2010), Allen, Lu, Tsao, Hayesand Zeltzer (2011), Timolak et al. (2017), and Adler et al. (2018), which shows the importance of emotion and emotional correction in processing and regulating pain. In this regard, it can be noted that human emotions enable them to respond to the fundamental challenges of adaptation to life. According to this theory, emotions create physiological adaptive responses and the inner experience of emotion guides one's behavior (Buck, 2019). Thus, disruption or damage to the emotional organization can lead to behavioral and cognitive dysfunctions that lead to catastrophe, inefficiency, and reduced activity. In this regard, in emotional therapy, efforts are made to correct and repair the organization and emotional schemes that have been formed based on destruction and incompatibility in order to improve emotional, cognitive, and behavioral functions. In justifying this corrective process for pain disorder, it can be pointed out that the structure of pain has evolved from a one-dimensional concept to a multidimensional entity that includes sensory, cognitive, motivational and emotional characteristics and everyone experiences it through their previous experiences of damage (Kummer & Al-Aurasi, 2016).Accordingly, emotion-focused therapy seeks to improve the individual's current situation by focusing on problematic emotional designs resulting from past damages that have impaired a person's capacity for adaptive processing in the environment; because emotional processing, which is formed in interaction with problematic influencing factors, causes limitations and vulnerabilities. These limitations and vulnerabilities then act as absorbers of problematic processes that further limit one's capacity for healthy and resilient emotional processing (Greenberg, 2011). Thus, it can be said that emotion-focused therapy reduces the emotional context that reinforces negative interpretation and catastrophizing the pain and feelings of helplessness, and by adopting self-healing processes, such as self-compassion, leads to improved psychological and physical aspects of pain (Wren, Somers, Wright, Goetz, Leary, et al., 2012; Chapin, Darnall, Seppala, Doty, et al., 2014).

Also, the results of mixed variance analysis and Benferroni pairwise comparison test showed that both emotion-focused therapy and cognitive-behavioral therapy have a significant effect on pain catastrophe, and there is no difference between their effectiveness. The findings of Rahimian Booger (2011), KhodayariFard, Sadeghi, and Abedini (2007), Wesner et al. (2014), Lazarido et al. (2017), Turner et al. (2016), and Bernard et al. (2018) are in line with the findings of the present study regarding the effectiveness of cognitive-behavioral therapy on catastrophic pain. Catastrophizing is one of the most basic non-adaptive strategies used by patients with pain disorders and involves a cognitive process that is defined by negative statements and excessively negative beliefs about the future (Meyer, Tschopp, Sprott, & Mannion, 2009). In this regard, it has been stated that coping with pain by these patients, strategies such as cognitive reassessment are of particular importance for catastrophic correction; in that, interpreting the symptoms of the disease, as an opportunity, a hint to change lives, and reflecting on what is necessary in life, can lead to change and adaptation. As a result, patients may change their goals, change aspects of life or behavior, and may see the resulted situation as an opportunity for personal growth (development). Therefore, improving and correcting catastrophe can be the key to improving the condition of patients with pain disorder. As a result, it can be said that cognitive-behavioral

therapy with cognitive correction and reconstruction has been able to reduce the severity of disaster and increase the effectiveness of coping and behavioral activity of patients with pain disorders in the experimental group. In this regard, trainings related to cognitive reconstruction, recognition of defective thoughts and beliefs and their correction were considered and taught in the cognitive-behavioral group therapy to correct extreme beliefs that lead to catastrophizing and intensifying disability in patients and replace it with a more realistic and positive one. Overall, coping with pain is an ongoing process, which includes stress assessments, cognitive, behavioral, and emotional responses, and coping with subsequent emotions and assessments of stress (Büssing, Ostermann, Neugebauer, & Heusser, 2010). Therefore, assessments of pain are considered key to psychological response to pain disorder. As a result, cognitive-behavioral therapy whose originality is focused on improving cognitive assessments, can modify negative assessments and replace more realistic assessments to improve the catastrophic nature of pain.

Another finding of the present study was that emotion-focused therapy has a significant effect on improving pain catastrophe. This finding is in line with the findings of McWilliams and Asmundson (2007), Rezaei (2013), Lou and Stanton (2010), Allen, Lu, Tsao, Hayes, and Zeltzer (2011), and Timolak et al. (2017). Explaining the results, we can point to the focus of emotion focused therapy on improving attachment. In this regard, Meredith, Strong, and Feeney (2016) examined the effect of adult attachment styles on emotions, cognition, pain tolerance, pain intensity, and pain catastrophe during and after an activity. It was found that adult attachment style affects the severity of pain on the tendency to catastrophe and insecure attachment leads to higher pain scores and the possibility of pain catastrophe, while secure attachment is associated with better pain control, lower depression and pain catastrophe. Therefore, to some extent, the result can be due to the restoration of attachment in the experimental group in the environment with empathy and acceptance, which is done by using techniques such as empty seats, re-creation, and reinterpretation. People with ambivalent attachment styles often use highly effective emotion regulation strategies (such as catastrophizing) when confronted with a variety of threats, such as pain (Strong & Feni, 2016); therefore, improving attachment can reduce these behaviors. In addition, improving emotional schemes and emotional regulation during emotion-focused therapy can lead to applying more adaptive strategies and reducing catastrophizing, as the results show that being cautious and ambivalence in expressing emotion play a role in predicting increased pain and inefficient coping (Nasrollahi, Dehghani, Ghasedi, & Mazaheri, 2012). In addition, facilitating emotion expression appears to improve cognitive assessments and physiological symptoms (Lou & Stanton, 2010), and emotional malaise is associated with inefficient coping strategies such as physical symptoms and anxiety / rumination (Allen, Lou, Tswa, Hayes, & Zelter, 2011). Therefore, in general, it can be said that improving and repairing attachment, improving emotional regulation, facilitating emotional expression, and reducing emotional malaise can explain the obtained results.

In general, it can be said that pain disorder is one of the diseases that due to the lack of specific biological roots for it, and the somewhat specific role of psychological variables, is considered by psychologists and health professionals. In this regard, the present study sought to compare the effectiveness of emotion-focused therapy and cognitive-behavioral therapy on coping strategies and pain catastrophizing in women with pain disorders. The results showed that both treatments are significantly effective on coping strategies (components of pain

reinterpretation, pain catastrophizing, behavioral activity and coping efficiency). Therefore, the present study, in addition to confirming the previous results regarding the effectiveness of cognitive-behavioral therapy, indicates the effectiveness of emotion-focused therapy. Thus, therapists and psychologists who are interested in using emotion- focused therapy can benefit from this treatment while working with patients with pain disorders. However, due to issues such as lack of cooperation and lack of access to the necessary research sample, the researchers used available sampling in the initial sampling, which may limit the generalizability of the results. Therefore, it is suggested that due to this limitation and also due to the lack of research literature in the field of individual emotion focused therapy, other research in this field should be conducted.

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