



The Effectiveness of Cognitive-Behavioral Therapy on Alexithymia and Pain Self-Efficacy of Patients with Chronic Pain

Sara saedi¹, Mohammad Hatami*², Parviz Asgari³, Hassan Ahadi⁴, Hamid Poursharifi⁵

¹ Ph.D. student, Department of Psychology, Kish International Branch, Islamic Azad University, Kish Island, Iran

² Assistant professor, Department of psychology, University of Kharazmi, Tehran, Iran

³ Assistant professor, Department of psychology, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran

⁴ Professor, Department of psychology, Karaj Branch, Islamic Azad University, Karaj, Iran

⁵ Assistant professor, Department of psychology, University of Tabriz, Tabriz, Iran

*Corresponding Email: sa.saedi@yahoo.com

ABSTRACT

Chronic pain is one of the most common reasons for visit to primary medical centers. Evidences show that cognitive-behavioral therapy is the effective therapy in chronic pains. The present study evaluates the effectiveness of cognitive-behavioral therapy on alexithymia and pains self-efficacy of patients with chronic pain. For this purpose, in a quasi-experimental plan and pre-test and post-test kind with control group, 45 patients with chronic musculoskeletal pain who visited to the therapeutic-sanitary centers in Ahwaz city were selected by using the available sampling method and they were assigned randomly in two experimental and control groups. Groups were tested in terms of alexithymia and self-effectiveness of pain at first. Then behavioral-cognitive training was presented in the time of 8 sessions of 90 minutes to the group and after ending the training program and three month consistency period, both groups were tested in terms of alexithymia and self-efficacy of pain. analyzing data by multivariate covariance method showed that the behavioral-cognitive therapy has been effective on alexithymia and pain intensity of patients with chronic musculoskeletal pain and these effects remain on patients in the high amount in the consistency stage, too. According to the results, behavioral-cognitive therapy causes to increasing the self-efficacy of pain and reducing the alexithymia and harmful effects of pain to the least level by changing non-efficiency behaviors, correction of adverse cognitions and destructive emotions related to pain.

Keywords: accepting and commitment, cognitive emotion regulation, sensitivity anxiety, cognitive disorder, self-efficacy

INTRODUCTION

Human may experiences the pain in any age. Pain is the phenomenon which is experienced any person during the life [1]. International Association for the Study of Pain [2] introduces the pain as the unpleasant sensory or emotional experience which is related to real or potential damage. Experiencing the pain is formed by two sensory and emotional dimensions. Sensory dimension of the pain expresses the pain intensity and emotional dimension of that shows the dissatisfaction amount of the person from experiencing the pain. Pain is divided to acute pain and chronic pain in terms of time period. Acute pain is usually the result of the illness or injury and lasts less than three months, while chronic pain continues for at least three months and can be associated with tissue damage or be recurring over the time [3, 4].

Pain is the most common reason for visits of patients to the doctor. According to the evaluations from each three person, one person suffers from chronic pain, a situation that is frequently related to reduction of life quality and high levels of mental distress [5, 6]. Based on forecasts, chronic diseases will be the main cause of death and public disability in 2020 and will be allocated two-thirds of all diseases to themselves [7]. Researches show that pain

process is not appear only by stimulating nerve receptors or affected by particular physical illness and injury, but the early signs of pain are associated with set of neurological and psychological phenomenon and culture features. Events that enter in the mind as the receptions and sensory information and mental factors play a significant role in selecting and abbreviation of these perceptions. Thus, pain is not only the direct and sensory result due to nerve transmission system from bottom to top, but it is a dynamic and active process which many factors can play role in controlling or resonance of that in ascending and descending process of the nervous system; So one of the most important areas for evaluating the pain is the role of psychological factors as the predictor of the pain [8, 9].

According to the done researches of Kosrurek, Gregory, Sousou, &Trife[10], Lumley, Smith, & Longo[11], Hosoi[12] one of the effective psychological factors on the chronic pain is alexithymia, disability in cognitive processing and regulation of emotions is named alexithymia [13].

Alexithymia is the multi-dimensional structure formed by difficulty identifying feeling and difference between bodily sensations related to emotional stimulation, difficulty describing feeling for others and limited visualization power which is determined as the poverty in fantasy or objective cognitive style [non-visual], pragmatic and fact-based or externally oriented thinking [14]. In the opinion of researchers, reduction of expressing emotions basically is a kind of poverty or bad-regulation of emotions.

In the same way, damage in the capacities of emotion processing and emotion regulation bases on alexithymia may be a risk factor for appearing and continuing the kinds of medical and psychiatric diseases [15]. Research findings of Porcelli, Tulipani, Maiello, Cilenti, &Todarello [16]; Lumley, Smith, & Longo [11], Lumley [17], Mehling, & Krause[18], Huber, Suman, Biasi, & Carli [19] show that alexithymia is related to the pain in a patient group with chronic pain. In addition, many evidences show that alexithymia and difficulty have relationship in physical identification such as inflammatory bowel disease [20], chronic back pain [21], and impairment of bodily pain [22] and tension headache [23].

Also pain self-efficacy beliefs, is another main factor which expresses so many observed behaviors and disabilities in patients with chronic pains. For example Woby[24] have shown that lower levels of self-efficiency beliefs in patient with chronic backache is associated with more pain intensity and high physical disability. In opinion of Bandura [25] self-efficiency is described as the belief of the person to his ability in order to operation particularly for obtaining desirable results and this can be effective in amount of the person's effort and stability in confronting with irritant problems and experiences.

Formerly also Arnstein showed that insufficiency of self-efficacy in controlling the pain is an important predictor from disability intensity and depression in patient with chronic pain. Totally, higher levels of self- efficacy play useful role for improvement and retention of the desired effects of rehabilitation [27, 28] and have an important effect in amount of utilization from coping strategies with pain [29], controlling pain and disability [30] adaptive psychological functioning [31] and obtaining desirable result of therapy in patients with chronic pain. Due to the multi-dimensional nature of chronic pain, the current approaches in pain management have increasingly exceeded from physical and pharmacological treatment approaches and have considered multidimensional and interdisciplinary approaches that include multidimensional therapies such as combination of pain medications, physical, behavioral and psychological therapies. Current psychological approaches in management of the chronic pain includes interventions that the purpose of them is achieving to more self-management, changing behavior and changing cognition instead of direct destroying of pain [32].

In the approach of behavioral-cognitive therapy in treatment of the chronic pain it is assumed that considering to effective emotional and cognitive factors on the pain leads to improvement and preservation of therapeutic results. This assume is completely compatible with gate control of pain theory which shows the pain perception is the result of a complex interaction of afferent from pain receptors and mediating factors such as subliminal stimuli, environmental events, emotional reactions and cognitions [33].

Behavioral-cognitive therapy of pain management is referred to the family from clinical interventions that focus on behavioral-cognitive approach. All methods of behavioral-cognitive are the same in having a set of theoretical assumptions about interaction between environmental events, cognitions and behaviors that have effect on subjective reception of clear indication of pain. This intervention consists of elements such as raising awareness about the physiology of pain, role of cognitive factors in feeling the pain, identification of the inefficient thoughts, cognitive restructuring, training coping skills with pain, training activity- rest cycle, planning the activity. In fact, since the existence of the pain causes to negative mood and anxiety in patients, during the treatment; this insight is given to patients that they have disastrous and incorrect thoughts into illness treatment and treatment process which leads to show the negative and selective bias to their health and betterment process. For this purpose, in behavioral-

cognitive therapy, it is trained to patient to identify negative inefficient thoughts, to challenge them and replace them with positive thoughts by using cognitive restructuring technique. Another goal of behavioral-cognitive therapy of pain management is learning active coping skills to patient to better pain controlling and regulate negative emotions caused by pain. Active coping strategies such as trying to acting despite the existence of pain and inattention to pain training cycle of rest activity, activity planning technique and using the attention deviation strategies, can be replaced with passively coping strategies, such as relying on others to controlling the pain and limitation of activities. In other words, using the rest activity cycle, attention deviation strategies and planning activity, inattention to pain and continuing to daily activities leads to increasing the self-efficacy feeling of pain, reducing negative unpleasant thoughts and increasing the differentiation of body sensations, emotional regulation and finally adequacy feeling in the person [34].

In a research, the effect of behavioral cognition meditation on positive capital of psychological of government employees was evaluated, the results of this research showed that this meditation has the great effect on promotion of psychological capital and increasing its subsidiary; means improvement of performance, optimism, hope, resiliency and self-efficiency level of employees in the workplace[35]. In another research, with the purpose of evaluating the effectiveness of cognition therapy on self-efficacy of women pain with breast cancer hospitalization in Tehran governmental hospitals, researchers found that training the mindfulness is effective in increasing the self-efficacy and improvement of mood disease [36].

Review study that was conducted by Merkes[37], showed that from the study which had entrance criteria to the study and focused on disorders such as fibroma, chronic pain, rheumatoid arthritis, type 2 diabetes, chronic fatigue syndrome, multiple chemical sensitivity and cardiovascular heart diseases, all of them in addition to emphasize on positive results of therapy in behavioral-cognitive, had been added behavioral-cognitive management doesn't have any special side effect and negative consequences.

Morley, Williams, & Hussain [38] also reported the clinical effectiveness of behavioral-cognitive therapy, positive and high in chronic pain management. In addition, researchers found that multidisciplinary approaches which one of their components had been based on psychological interventions, have more short-term and long-term effects on the pain and improvement of daily function and job of people. For example, emotional reactions which patients show to their pain not only influence on experience of their current pain intensity, but it is also effective on duration of their disability and disablement [39]. Also in another research that was evaluated to effect of group behavioral-cognitive therapy on improvement of pain multi-faceted signs in patients with chronic backache with four-month follow-up period, results of variance analyze with repeated measures showed that group behavioral-cognitive therapy has led to significant reduction of mean scores of pain multi-faceted signs of test groups compared with controlled group [40].

Generally, according to above issues and role of behavioral-cognitive on inefficient processing methods, on improvement of patients moods with chronic pain, the purpose of this research is evaluating efficacy of behavioral-cognitive therapy on alexithymia and self-efficacy patients pains with chronic pain in Ahwaz city.

MATERIALS AND METHODS

This research is a kind of quasi-experimental with pretest-posttest plan with the control group. In this plan, that formed by two groups of [experimental and control], the pre-test form was implemented for both groups and then the post-test form was implemented after applying intervention in this research. The statistical population of this research was all patients with chronic musculoskeletal pain who visit to Therapeutic Sanitary centers in the Ahwaz city. 30 available patients that had entry criteria and volunteered to participate in these meetings were selected in order to choosing sample and then were assigned as the simple randomly method into two groups of 15 people [experimental and control] according to research purposes and having satisfaction to presence in the research. Presence Criteria in the sample included: 1) identifying the catching musculoskeletal chronic pain by the expert, 2) having the age range between 20-50 years old, 3) having minimum literacy and reading, 4) not having hospitalization precedent in a psychiatric part.

The tools used in this research Included

1- Case-finding chronic pain questionnaire

This test has been compiled by Asghari Moghaddam[33], have 58 articles that in addition to diagnosis and case-finding people with chronic pain, evaluates various aspects of chronic pain. Chronic pain questionnaire were used for evaluation initial chronic Pain and receive demographic information. The test is composed of different parts. subject specifies Its status on the multiple responses. Some of the areas of test are graded on the 10 scale that a zero score show no 10-point and 10-score is show the maximum mark [41]. Reliability coefficient of the test by using

Cranach's alpha method, alpha and retest, respectively receive 88/0, 79/0 and 78/0 in research by Pouladi Reyshahri. Review test validity by editing a few criteria questions was done that was correlation between Criteria questions and chronic pain questionnaire $0.68 = r$ was $[p > 0.01]$.

This questionnaire was used to evaluate chronic pain and demographic Information's first received (Question 7 and 8).

2- Toronto questionnaire Alexithymia

This scale has been created by Taylor in 1986 and then has been reconsidered by Taylor, & Bagby [42]. This Self-Rating Scale contains 20 articles as expressed sentences that measures three dimensions of the difficulty in recognition and identifying feelings [7 articles], Difficulty in describe feelings [5 articles] and focuses on the external experiences [8 articles] measures based on Likert 5 criteria from strongly agree [1] to strongly disagree [5]. The minimum scale of this score is 20 and the maximum is 100. Over the 60 scores are considered as alexithymia with high-intensity and lower than 52 scores are considered as alexithymia with low-intensity. In the Persian version the alexithymia scale of Cronbach's alpha coefficient has been calculated equal to 0.85 for total scale and in diagnosis and recognition and identifying feelings, difficulty in describe feelings and focus on the external experiences has been calculated equal to 0.82, 0.75 and 0.72 for the subscales of the difficulty respectively [43].

In addition, the validity of this scale in another study [44] by value of 0.74 Cronbach's alpha has been obtained for recognition and identifying feelings, 0.61 for difficulty in describe feelings and 0.50 for focus on the external experiences and reliability equal to 0.72 has been reported with retest method in another research [45].

In the present research Cronbach's alpha method and split-half method were used to determine the reliability of alexithymia questionnaire that was equal to 0.68 and 0.71 that shows acceptable reliability coefficient on the mentioned questionnaire.

3) Pain self-effectiveness questionnaire

In this study the self-effectiveness scale and controlling chronic disease were used to measure pain self-effectiveness that has been made and normalized in Stanford's epidemiological studies center by Lorig and et al, 2001. Persian version of this scale has been validated for patients by [46] with chronic back pain by Iranian researchers. This scale has six items each of the items of this scale scored between I'm not sure [0] to I'm quite sure [10] and Minimum and maximum raw scores of this scale oscillate between 0 and 60.

The findings of these researchers were achieved reliability coefficient of this scale in 0.05 level equal to 0.87 by using Cronbach's alpha. That it is approved in terms of psychometric criteria. These researchers also evaluated the internal consistency of this scale as excellent $[0.91 = \alpha]$ and Retest coefficients equal to 0.73 and correlation coefficient of item -total score for each items in the 0.73 up to 0.87 domain. In the present research to determine the reliability of the pain self-efficacy questionnaire was used Cronbach's alpha method and split-half that was equal to 0.60 and 0.64 that show acceptable reliability coefficient of the mentioned questionnaire.

The research methodology in this research is in this way that after selection of sample from the intended population subjects fully randomly were divided into two groups [Experimental and control] then pretest was done from two groups. Then independent variable in this research, means Cognitive behavior therapy method were taught during 90-minutes in eight sessions for five weeks, and every week two sessions.

In addition, experimental group's subjects did not receive any intervention, then after running training sessions from both groups [experimental and control] pretest was taken, so the test results compared in two experimental and control groups.

RESULTS

A-descriptive findings

In this section, data was collected and analyzed by suitable statistical methods.

As it seen in table 1, in the before experimental form, average scores of subjects in terms of alexithymia in behavioral-cognitive and control groups are respectively 69.67 and 71.07, their standard deviation are respectively 9.65 and 10.44, in posttest form after experimental ending of subjects average scores in behavioral-cognitive and control groups are respectively 58.07 and 70.53 and their standard deviation are respectively 8.40, 10.54 and also in posttest form in follow-up period, average scores of subjects in terms of alexithymia in behavioral-cognitive and control groups are respectively 46.67 and 66.87 and their standard deviation are respectively 8.86 and 12.07. Also in the before experimental form, average scores of subjects in terms of self-efficacy of pain in behavioral-cognitive and control groups are respectively 17.60 and 17.47 and their standard deviation are respectively 3.90 and 1.80, in posttest form after experimental ending of subjects average scores in behavioral-cognitive and control groups are

respectively 25.13 and 16.73 and their standard deviation are respectively 4.03 and 2.40, also in posttest form in follow-up period, average scores of subjects in behavioral-cognitive and control groups are respectively 35.93 and 16.40 and their standard deviation are respectively 6 and 1.92.

Table1. Descriptive features of variables in three periods of before experimental, after experimental and follow-up period

cycle	group	Variables	average	standard variation	number
pre test	Cognitive Behavioral	alexithymia	69.67	9.65	15
		effectiveness of pain	17.60	3.90	
	control	alexithymia	71.07	10.44	15
		effectiveness of pain	17.47	1.80	
Past test	Cognitive Behavioral	alexithymia	58.07	8.40	15
		effectiveness of pain	25.13	4.03	
	control	alexithymia	70.53	10.54	15
		effectiveness of pain	16.73	2.40	
Follow-up	Cognitive Behavioral	alexithymia	46.67	8.86	15
		effectiveness of pain	35.93	6	
	control	alexithymia	66.87	12.07	15
		effectiveness of pain	16.40	1.92	

B- Related findings to research hypothesis

The multivariate analysis of covariance [MANCOVA] was used with observance of its assumptions for testing the research hypothesis based on this: behavioral-cognitive is effective on alexithymia and pain self-efficacy.

Table2. Evaluating the assumptions of variance homogeneity

Variables	F	df	df2	Sig
alexithymia	3.18	1	28	0.08
effectiveness of pain	1.31	1	28	0.26

As it has been presented in table 2, according to this, the obtained significant level is more than 0.05; so data has not undermined the assumption of equality of variances error.

Table3. Evaluating equality of variance-covariancematrix

Box.sm	F	df	df2	Sig
4.84	1.48	3	1.41	0.21

Also by observing the statistics of table 3 we find that box test is not significant. Insignificance of box test [F [3 & 1.41] – 0.21, p-0.215] shows that correlation assumption of variance-covariance matrix is not rejected.

Table4. Results of analyzing multivariate analysis of covariance [MANCOVA] by controlling the pre-test and analyzing posttest of alexithymia and pain self-efficacy of experimental and control groups

Test	Value	Hypothesis df	Error df	F	Sig
Pillai's trace	0.89	2	25	1.02	0.001
Wilks' lambda	0.10	2	25	1.02	0.001
Hotelling's trace	8.20	2	25	1.02	0.001
Roy's largest root	8.20	2	25	1.02	0.001

As it is observed in table 4, significant levels of all tests show that there is significant difference between subjects of experimental and control groups at least in terms of one of the dependent variables [alexithymia and pain self-efficacy]. To realize the difference, results of effects test between subjects have been shown in table 5.

Table 5. Result of analyzing one-way covariance in text [MANCOVA] on scores of alexithymia and pain self-efficacy posttest of two experiment and control groups

Variables	F	df	Sig
alexithymia	50.48	1	0.001
effectiveness of pain	89.89	1	0.001

As it is seen in table 5, there is significant difference between patients who have trained the behavioral-cognitive [experimental group] than patients who have not learnt this method [control group] in terms of alexithymia and pain self-efficacy [p ≤0.001]. So the main hypothesis of this research is confirmed.

CONCLUSION

At it is expressed, the hypothesis of this research was with the purpose of evaluating the effect of behavioral-cognitive therapy on alexithymia and pain self-efficacy of patients with chronic pain in Ahwaz city. Findings of 1 to 7 tables showed that there is significant difference between patients who have trained the behavioral-cognitive [experimental group] than patients who have not learnt this method [control group] in terms of alexithymia and pain self-efficacy [$p \geq 0.001$] and this means that behavioral-cognitive therapy is effective on reduction of alexithymia and increasing the self-efficacy of patients pain with chronic pain in Ahwaz city and these effects also remain in follow-up stage in patient so the research hypothesis was confirmed. Results of this research about alexithymia is indirectly similar to research results of Clark, & Beck [47], Gilson, Freeman, Yates, & Freeman [48], Sage, Sowden, Chorlton, Edeleau [49], Branstetter, Wilson, Hildebrandt, & Mutch [50], Buhrman, Nilsson-Ihrfeldt, Jannert, Ström, & Andersson [51], Mehrabi, Fathi, Davazdah emami & Rajab [52], Rafiei, Sohrabi, Shams & Foruqi [53] and about pain self-efficiency is directly similar to research results of Hossini, & Jamshidifar Sanaei, [36], Morley, Williams, & Hussain [38], Hoffman, Papas, Chatkoff, & Kerns [39], Rafieei, Sohrabi, Shams and Forughi [53], Rahimian Bougar [40].

In discussion of expressing the effectiveness of cognitive-behavioral therapy on alexithymia should be said that since alexithymia not only leads to somatization of signs and disease resonance of people by making disorder in cognitive processing of emotions, but also it can increase the possibility of using non-adaptive regulation strategies in people because of non-recognition and non-describe of the physical sensations [54].

So it seems that, changing in alexithymia aspects in first group patients [behavioral-cognitive therapy], primarily can be considered as the result of dividing feels to two part of bodily and emotional feels and emphasize on the role of body feels in stimulation of negative thoughts in chronic patients which could to have effective contribution in reduction of alexithymia and modification of patient's identity feel [reduction of physical signs documents to musculoskeletal pains][50].

In addition this therapy became effective by targeting the bio-psycho-social factors [such as fear and injury from damage, perception of controlling pain, low self-efficacy for pain management, making disastrous and related behavioral answers such as avoiding activity, occupation to so much activity or conversely, low activity alternately, exorbitance alertness to bodily senses] which have role in appearing and evolution of chronic pain and its subsequent disabilities [52].

In other word, behavioral-cognitive pattern could lead to reduction of emotional distresses directly and reduction of alexithymia indirectly by correcting improper interpretations from physical senses, guidance of negative self-talking, reforming the irrational patterns of thought and controlling negative emotions with the launch of efficient and adaptive coping responses according to studies [47, 48]. Also, since false interpretation and perception from physical senses lead to activation the mental of occurring death corms and threatening of situation [48] so training each one of cognitive components such as cognitive reconstruction, restructuring the negative emotion, training problem solving and using efficient copying strategies, positive mental imagery and de-tension in this research could lead to reducing the stimulation of negative emotions in patients. In addition, in the discussion of expressing effectiveness of behavioral-cognitive therapy on pain self-efficacy should be said that there are many possible expresses: first, pain experiment is not the main factor lonely for creating multifaceted signs of pain such as pain intensity, pain controlling, control in daily life, or emotional and emotive disorder in patients, but psychological, social and context factors especially the beliefs system of patients, inefficient cognitions and his irrational attitudes about pain and its control relates to appearing signs and consequences of pain and its persistence in these groups of patients more than psychological and physical factors.

Second, Inefficient thoughts, maladaptive interpretation of pain, cognitive distortions about the pain, such as pain making disasters, excessive generalization and fear from doing behavioral-cognitive activities and avoidance of pain associated with the condition that possible to pain, using from negative copying strategies and non-control feeling on the pain are the factors that more than just experiencing pain lead to disability feel and different signs of pain which all of these factors are the target of behavioral-cognitive therapy. Third, reduction of ability in doing task and social roles because of continuing pain associated with non-control feeling on pain lead to appearing related signs to pain in patients with chronic pain. So since the purpose of behavioral-cognitive therapy is pain management, training special copying skills, correcting inefficient cognitions, training relaxation and training management of mental pressure, cognitive reconstruction and problem solving in chronic pain management so it can improve the pain self-efficacy in them by improving confidence and adequacy feeling in patients.

Generally, although behavioral-cognitive therapy has been effective on alexithymia and pain self-efficacy but because of limitations such as available sampling and less number of subjects have less generalizability ability so it is suggested that this research plan be done randomly and in larger sample size to results be generalized to society with more possibility.

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