

## **EFFECTIVENESS OF TREATMENT BASE ONE MOTIONAL REGULATION IN REDUCING CHRONIC PAIN OF PATIENTS WHO SUFFER FROM CHRONIC PAIN**

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### **ABSTRACT**

The purpose of this study is to investigate the effectiveness of treatment base on emotional regulation in improving chronic pain of patients who suffer from chronic pain in the city of Tehran. In this semi-experimental pre-test - post-test, 30 patients with chronic pain who referred to the pain specialized center of Tajrish martyrs Hospital were randomly assigned into two experimental and control groups. Initially the graded chronic pain questionnaire (GPQ) and multidimensional pain inventory (MPI) were implemented as pre-test in two groups. Then experimental group received 8 sessions treatment base on emotional regulation and after one month and half post-test was implemented for both groups. The data was analyzed using covariance analysis (Anoka). The results showed that emotional regulation group therapy effectively reduced pain intensity and improved the dimension and consequences of chronic pain include pain frequency, dysfunction of daily life, emotional disorder and support variable ( $P>0/05$ ). Regarded to acquire results, psychotherapy base on emotional regulation reduce pain intensity, improve the dimension and consequences of chronic pain and increase life quality of patients who suffer from chronic pain.

**Keywords:** *Emotion Regulation, Chronic Pain, Pain Frequency*

### **INTRODUCTION**

Pain is a common phenomenon that almost everyone in their lifetime experienced it. International Association of Pain Study (1979) defines pain as an unpleasant sense and emotional experience that associated with actual or potential texture trauma (Dehqan, 2004). In fact, "emotional and unpleasant" phrases revealed that affection, emotional and cognitive factors have significant role in explaining this experience.

Although, the pain is necessary for human survival, but the effects of this phenomenon makes it as second most common cause for using medical care (Turk and Okifuji, 1998). Chronic pain is pain that existed at least for three months during the past six months (Crombie and Oakley Devis, 1999). Researches that carried out in Iran, reported the prevalence of continued chronic pain in the adults population of (18 to 65 years) %9 to %21. Chronic pain often affects person's ability for performing different activities (International Association of Pain Study, 2003).

However in many studies, pain and physical injury are considered as important predictors of disabilities. Studies have shown that disability is a complex phenomenon that simply cannot be explained by biological-medical factors and range of different factors such as pain time length, pain avoidance, depression etc impact it (Linton, 2000).

The economic costs of chronic pain lonely are more than the costs caused by heart disease, cancer, and AIDS (Cousins, 1995). Research results that has been done in the Netherlands (Van Tulder, 1995) shows that the economic cost of back pain lonely is equivalent to 1.7 percent of GDP (four billion and six hundred and five million America dollars) in the country. Only 7 percent of this amount (365 million dollars) is spent on health services and health care and rest of it is spent (93percent or 4 billion and six hundred million dollars) on indirect costs that are related to the back pain indemnification.

Some evidence suggests that patients with chronic pain show certain psychological problems due to the failure in achieving pain relief. Living with chronic pain requires considerable emotional pressure. Also pain reduces the emotional abilities of individual and the constant desire of person to get rid of the pain is

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often unattainable, so this factor eventually weakens the patient's mood and cause hopelessness, helplessness and depression feeling of individuals (Turk *et al.*, 1996, Turk, 2002).

Patients with chronic pains suffer from long term psychological problems, impaired physical function, excessive dependence on others and an unclear prognosis of chronic pain, so effective treatment of chronic pain often requires a multidimensional approach include medication, physiotherapy and counseling psychology. People with chronic pain use varied coping strategies that some of them are adaptive and some non-adaptive. Studies on patients with chronic pain have shown that active coping strategy (such as trying to do our tasks despite of pain existence, ignoring the pain, the use of muscle relaxation) have adaptive results, and inactive coping strategies (dependence or relying on others for pain controlling in the range of activities) are accompanied with depression, pain and more severe physical disability. The process of pain coping and emotion regulation is one of the strategies that can modulate the perception and effects of pain. Belger (1990) quoted by Memar, 2009 believed that coping strategies practically are personality manifestations. Coping personal resources is complex set of cognitive, personality and feedback factors that provide some parts of individual's psychological background for coping. Personal resources are relatively stable background characteristics that impact the selection of evaluation and coping process, so background factors are modified by the compression process. Some of these factors include the Id development, self efficacy, optimism, integrity sense, cognitive styles, defense style, coping and problem-solving ability (Mose and Schaefer, 2000, quoted by Memar, 2009). Strategies that individuals apply for increasing and sustaining the happiness and reducing discomfort feeling are important to their mental health. Mans have more control and effect on their emotion when apply these strategies. This means that they apply their methods for liberating themselves when any discomfort or stress situation occurs. Individuals might use efficient strategies to increase positive emotions (listening to music, sports, etc.) or use ineffective strategies (taking tablets) (Baumeister and Aohes, 2004) International Association of Pain Study (International Association of Pain Study quoted by Mersky and Bogdok, 1994) based on the available evidence, introduced the pain and its consequences as a complex perceptual experience that largely is influenced by psychosocial factors and based on the recommendations of the mentioned association pain consequences can't be explained by simple pattern such as bio-medical model and it should be explained by multidimensional pattern (biological pattern- psychosocial pattern).

There are different treatment approaches for healing the chronic pain such as medication, surgery, local injection, physiotherapy, mobility, psychological treatments (hypnosis, relaxation, cognitive therapy, behavioral therapy) psychiatry, alternative approaches (or complementary medicine) (Nichols *et al.*, 2006). American Psychological Association recently determined the psychological treatment of patients with chronic pain as one of the twenty-five areas that has clinical and experimental support for psychological knowledge (Asqari Moqadam *et al.*, 2002). Clinical observations and researches on chronic pain show that patients with chronic pain have different psychological and behavioral problems and show significant disorders in coping with pain (Keefe *et al.*, 1990; Nicholas, 2007). Finally regardless the pain definition, it can be said that chronic pain may lead to many changes in the everyday life of the patients. So, it seems that if there is no significant result for chronic pain, solving some of its problems (such as negative affect) can reduce pain overall impact in the patient's life and improve individual self efficiency (Nichols *et al.*, 2006). The purpose of the present study is to investigate the effectiveness of treatment base on emotional regulation in improving chronic pain of patients who suffer from chronic pain.

## MATERIALS AND METHODS

### Methods

Present research is interventional study that has been done in control and experimental groups and consisted of three pretest, intervention and posttest parts which the aim is to investigate the efficiency of treatment base emotional regulation in improving chronic pain of patients who suffer from chronic pain.

Study entrance criteria included: age 30-65 years, chronic pain confirmation base on questionnaire and clinical interview, the absence of psychiatry and chronic medical disease, upper secondary education.

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Exclusion criteria included: individual's unwillingness to cooperate, having no chronic pain, medical disorder.

The study's population base on sampling method is all patients with chronic pain that referred to the Tajirsh hospital during a month (August 6 to September 6, 2014). Based on the entrance criteria, the questionnaire was filled for 30 patients who attend to the hospital after receiving their consent and explaining study's purpose. Individuals were assigned randomly into two control and experimental groups. The formula of determining sample size was used in the comparison of a quantity variable in the both groups base on  $A=0/05$  and  $B=0/2$ . Subjects who acquired upper than cutoff point score in the graded chronic pain questionnaire (GPQ) were selected and for more homogeneity, semi-structured interviews by researcher were conducted for them. According to the mentioned questionnaire and specialized interview, 30 examinees randomly were assigned into two experimental (15 individuals) and control (15 individuals) groups. Then experimental group once week (totally 8 sessions and the duration of each session 1:30) received emotional regulation treatment for improving or reducing chronic pain. Treatment contents are as follow:

**First Session:** Implementation of the pre-test, communication, conceptualization and the necessity for training of emotion regulation.

**Second Session:** Training the awareness of positive emotions include short review of the previous session, training the awareness of the positive emotions and its variety (happiness, interest and love) and training attention to the positive emotions and the necessity to use those.

**Third Session:** Training the awareness of negative emotions include short review of the previous session, training the awareness of the negative emotions and its variety (anxiety, sadness, anger and hate) and training attention to the negative emotions.

**Fourth Session:** Training the acceptance of positive emotions include short review of the previous session, training the acceptance without judgment, number (up or down) of positive emotions and the consequences of positive and negative usage of emotions, home task and recording the opinion of wife, husband or a friend about the level of positive emotion.

**Fifth Session:** Training fourth session for negative emotions and same home task for negative emotions.

**Sixth Session:** Training reevaluation and disclosure of positive emotion include short review of the previous session; mental experience of positive emotions (happiness, interest and love interest), mental inhibition and appropriate training of positive emotions.

**Seventh Session:** Training reevaluation and disclosure of negative emotion include short review of the previous session; mental experience of negative emotions (anxiety, sadness, anger and hate), inappropriate disclosure and inhabiting inappropriate disclosure of negative emotions.

**Eighth Session:** Summarizing the training sessions and implementing the posttest.

Questionnaires again were recompleted by both groups and pre-test and post-test forms were analyzed by statistical method. The examinees were ensured that their information will remain confidential and they are free at any stage to be excluded of the study.

### **Research Tools**

#### **A-Graded Chronic Pain Questionnaire (GPQ),**

This questionnaire that has 42 questions has been invented by Asqari Moqadam (1997) for evaluation the severity of the problems caused by chronic pain. The implementation of this questionnaire give us information about demographic characteristics of the participants and its results make us aware about pain initiation, pain progression, treatment and pain impact on daily life of individuals. In addition, the mentioned questionnaire is answered by the patient and provides the classification for chronic pain. This questionnaire has been used in extensive studies in the Iranian patients who suffer from chronic pain (Asqari Moqadam and Geleg, 2005; Asqari Moqadam and Jolaeiha, 2008). This questionnaire was used for acquiring demographic information and chronic pain diagnosis of participants.

#### **B-Multidimensional Pain Inventory (MPI)**

Corner *et al.*, (1985) had designed the multidimensional pain inventory based on pain cognitive-behavioral theory. This inventory reliability and validity was confirmed among a sample of 120 patients.

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The inventory consists of three independent parts. The first section has 20 phrases that patient is asked to have self evaluation in five subscales include pain severity, disruption in the daily life, life control, emotional disorder and life support. The second part contains 14 phrases that patient is asked to give his/her pain self evaluation about the reactions of those that has important role in his/her life in the three subscales include negative reaction, the effort for ignoring the pain and showing sympathy. The third section consisted of 18 phrases in 4 subscales that evaluate the frequency of the patient's activities at home; the matters pertaining to repair house instruments, social activities and outdoor activities. In the internal and external studies the psychometric properties of this questionnaire were approved (Asqari Moqadam and Corner *et al.*, 1985). According Iran findings, Cronbach's alpha coefficients are from 0.77 to 0.92 and the mean of correlation coefficients of each subscale items are from 0.25 to 0.40. Therefore, all of the inventory's subscales have high reliability. Also criterion validity of 5 subscales was confirmed. In general we can say that psychometric properties (validity and reliability) of the first and second parts of multidimensional pain inventory about Iranian patients who suffer from chronic pain have been approved (Asqari Moqadam and Geleg, 2008).

The collected data were analyzed using SPSS statistical software (version 20) and covariance analysis. The significance level was less than 0/05.

## RESULTS AND DISCUSSION

### Results

For investigation the normal distribution of each variable, the results of Kolmogorov - Smirnov test was considered. Regarded to the z value of Kolmogorov – Smirnov, in all pain severity variables, pain's consequences and dimension are from +1/96 and -1/96; therefore it can be said that score distribution of all variables were normal. Table 1 shows the descriptive indicators of pain severity questionnaire and chronic pain's dimension and consequences questionnaire.

**Table 1: The Score Mean and Standard Deviation of Chronic Pain Components**

| Statistical Indicator Variable | Mean  | Standard Deviation | Number |
|--------------------------------|-------|--------------------|--------|
| Pain Severity                  | 63.93 | 14:50              | 30     |
| Pain Frequency                 | 22:06 | 4.041              | 30     |
| Disruption of Daily Life       | 19:03 | 2.76               | 30     |
| Life Control                   | 22.93 | 3.24               | 30     |
| Affective Disorder             | 17.60 | 3.02               | 30     |
| support                        | 14.66 | 2.00               | 30     |

Following Anoka covariance analysis method was used for investigation the significance of the changes rate and the impact of group therapy on emotional regulation of chronic pain. Characteristic of covariance homogeneity statistically was not significant so covariance homogeneity was confirmed.

**Table 2: The Results of One-Way Covariance Analysis on Post-Test Scores Mean of Chronic Pain Severity in the Experimental and Control Groups with Pretest Controlling**

| Variable     | The Source of Changes | Total Squares | Degree of Freedom | Square Mean | F      | Significant Level. | Squares |
|--------------|-----------------------|---------------|-------------------|-------------|--------|--------------------|---------|
| Chronic Pain | Intervention Effect   | 762.542       | 1                 | 762.542     | 36.209 | 0.001              | 0.573   |
|              | Error                 | 568.602       | 27                | 21.059      |        |                    |         |
|              | Total                 | 97149.000     | 30                |             |        |                    |         |

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As shown in Table 2, chronic pain severity significantly are different between control and experimental groups ( $F=26.209$  and  $P<0.001$ ), in the other word attachment centered couple therapy base on the mean score of experimental group, reduced (improved) pain severity in experimental group compare to the pain severity of control group. So, due to the negative impact of variables, this variable has been decreased in the posttest stage.

**Table 3: The Results of One-Way Covariance Analysis on Post-Test Scores Mean of Chronic Pain Dimension in the Experimental and Control Groups with Pretest Controlling**

| Variable                      | The Source of Changes | Total Squares | Degree of Freedom | Square Mean | F      | Significant Level. | Squares |
|-------------------------------|-----------------------|---------------|-------------------|-------------|--------|--------------------|---------|
| The Frequency of Chronic Pain | Intervention Effect   | 66.831        | 1                 | 66.831      | 39.362 | 0.001              | 0.593   |
|                               | Error                 | 45.842        | 27                | 1.698       |        |                    |         |
|                               | Total                 | 11924.000     | 30                |             |        |                    |         |
| Disruption Everyday Life      | Intervention Effect   | 24.307        | 1                 | 24.307      | 10.819 | 0.003              | 0.286   |
|                               | Error                 | 60.659        | 27                | 2.247       |        |                    |         |
|                               | Total                 | 9670.000      | 30                |             |        |                    |         |
| Life Control                  | Intervention Effect   | 1.327         | 1                 | 1.327       | 0.262  | 0.613              | 0.010   |
|                               | Error                 | 136.954       | 27                | 5.072       |        |                    |         |
|                               | Total                 | 14693.000     | 30                |             |        |                    |         |
| Affective Disorder            | Intervention Effect   | 13.635        | 1                 | 13.635      | 9.548  | 0.005              | 0.261   |
|                               | Error                 | 38.557        | 27                | 1.428       |        |                    |         |
|                               | Total                 | 7674.000      | 30                |             |        |                    |         |
| Support                       | Intervention Effect   | 14.041        | 1                 | 14.041      | 9.037  | 0.006              | 0.251   |
|                               | Error                 | 41.951        | 27                | 1.554       |        |                    |         |
|                               | Total                 | 5459.000      | 30                |             |        |                    |         |

As you can see the major dimensions and consequences of chronic pain in the fields of pain frequency, affection disorder and support variable after emotion regulation intervention at the posttest stage has significant difference with the results of pretest stage. The negative impact of these variables revealed that these variables at posttest stage had reduction. At the same time, this type of treatment in the other dimension of chronic pain has no effect on the life control.

### Discussion

The results of this study showed that the emotion regulation treatment significantly decrease the frequency and severity of pain in patients who suffer from chronic pain. The results obtained in this study is consistent with study's results of Winter (2002), Ishii *et al.*, (2003) Ikonomidou *et al.*, (2004), Henry (1995), Carrol and Bowsher (1993).

Behavioral methods have priority to the other methods due to their cheapness; simple implementation, non-invasive factor and creating independence feeling in patients. Emotion regulation treatments reduce the number of heart beating, deepening breathing and have positive effect on pain. This treatment may ease the pain with no physiological or emotional sources. These effects have been created due to the thought distraction. The semi-experimental study by Eylkhani (1991) on 90 cancerous patients showed that relaxation reduced the pain. In this study the numbers of patients who report unbearable pain have



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been reduced after implementation of emotion regulation treatment. The study by Ventafridda (1986) showed that emotion regulation treatment reduced the severity of pain.

Many studies have been done about the impact of emotion regulation treatment on pain and stress reduction such as investigation which was carried out by Winter (2002) about the influence of emotional regulation treatment on the cancerous patients in the one of USA hospital. The samples were 80 examinees that randomly were assigned to the control and experimental groups. The results showed that the measure of pain in the experimental group significantly differ with control group after receiving emotion regulation treatment. The relieving impact of emotion regulation treatment was proved in Japan in 2003 by Ishii et al research (Ishii *et al.*, 2003). There are some psychological and neurological theories and reasons about emotion regulation treatment. Some neurologists believe that increasing the secretion of dopamine and morphine at synaptic gap reduces the severity of pain. This impact can be explained through the reduction of stress hormones stimulation and reduction of sympathetic nervous activities. From psychological perspective the impact of emotion regulation treatment can be explained through positive conditioning reinforcing and the creation of appropriate stimulus (Clark *et al.*, 1981). In this regard, neurological and psychological explanation like pain issues existed. In fact emotional regulation treatment through brain influence anxiety and hormone stresses. Obviously hormones such as cortisol, Nero adrenaline and ACTH are influenced by emotional regulation treatment. Espentech and Dodo (1985) in their research show that emotion regulation treatment influences the level of endorphins and ACTH in the women who give birth.

Anxiety and stress are the main causes of pain attacks, artery constriction and dilation. Therefore, certainly the methods of emotion regulation treatment as one of the main components of desensitization can reduce anxiety and stress level of individuals and can be effective in pain controlling. The general assumption of this study is that individuals consciously learn to control their muscles. In fact when individuals use these methods they can easily and calmly cope with anxiety and its pain. In general, these findings are consistent with the researches that have been done at the international level. One of the limitations is that the population of the present study has been gathered from Tehran city. False belief of patients is the other limitation of the study because it decreased the measure of patient's cooperation. Finally lack of information about this treatment method will intense the severity of emotional disorder. So, we can say that training of emotion regulation is one of the ways for overcoming stress effects. Thus, we suggest that in later research increase the number of samples. Alternative treatments such as emotional regulation cognitive therapy and acceptance and commitment therapy for more impact should be started at least two weeks before pain treatment. At the end we suggest that researchers investigate the other dimensions of chronic pain and use the other tool for evaluation of pertaining variables.

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