Preventive Care in Nursing and Midwifery Journal
2022; 12(2): 18-23

The Effectiveness of Cognitive Therapy on Hope and Pain Management in Women with Chronic Pain

Seyed Babak Razavi[1], Shahnam Aboalghasimi[2*], Bahman Akbari[3], Bahram Nadirinabi[4]

[1]Ph.D Student of Public Psychology, Rasht Branch, Islamic Azad University, Rasht, Iran
[2]Assistant professor, Department of Psychology, Tonekabon branch, Islamic Azad University, Tonekabon, Iran
[3]Professor, Department of psychology, Rasht branch, Islamic Azad University, Rasht, Iran
[4]Department of Anesthesiology and Pain, Assistant professor, Guilan University of Medical Sciences, Rasht, Iran

Corresponding Author Address: Department of Psychology, Faculty of Humanities, Tonekabon branch, Islamic Azad University, Tonekabon, Iran

Tel: 0098-9113913907

Email: sh.abolghasemi@tonekaboniau.ac.ir

Received: 25 Sep 2021 **Accepted**: 8 Feb 2022

Abstract

Background: Chronic pain is a debilitating situation associated with some psychological variables.
Objectives: This research was conducted to evaluate the effectiveness of cognitive therapy on hope and pain management in women with chronic pain.
Methods: The present research was a quasi-experimental study with a pretest-posttest design and a control group. The study population included women living in region one of the city of Rasht referring to Guilan Pain Clinic in 2017-2018, of which 20 people were included in the study by convenience sampling method and were divided into two experimental (10 people) and control (10 people) groups by random assignment method. Before training, both groups completed the Miller Hope Scale (1988) and the McMillan Pain Management Questionnaire (2000). The experimental group received cognitive therapy for 8 sessions of 90 minutes, but the control group did not receive any intervention. The obtained data were entered into SPSS20 software and analyzed using descriptive statistical methods and univariate analysis of covariance (ANCOVA).
***Results*:** The mean age of participants in this study was 46.7(8.35) years. The comparison of pretest and posttest of the mean scores of hope and pain management after the intervention showed a significant increase (p=0.000). Based on univariate ANCOVA, cognitive therapy is effective on both hope and pain management variables.
Conclusion: According to the findings, cognitive therapy seems to be used by psychologists and related experts as a low-cost method by increasing hope and improving pain management in patients with chronic pain.

Keywords: cognitive therapy, hope, pain management, chronic pain, women

Introduction

The International Association for the Study of Pain (IASP) defines pain as an unpleasant sensory or emotional experience associated with actual or potential injury [1]. Individuals suffering from chronic pain often have severe problems in interpersonal relationships, financial costs, sleep, nutrition, and, in general, daily functioning [2]. So far, numerous drugs and medical methods have been used to control pain [3] without receiving proper treatment [4]. In this regard, the results of most studies indicate the potential role of various factors such as cognitive-emotional processes, avoidant behaviors, hyper vigilance, and

catastrophic thoughts in predicting chronic pain [5]. Therefore, it is believed that psychological techniques are able to block the sensation of pain at the brain level [6].

Hope is not a passive emotion that appears only in the dark moments of life, but it is a cognitive process by which individuals actively attempt to achieve their goals [7]. Pain management is also a complex concept and includes biological and psychological factors that effectively improve the condition of patients with chronic pain. Pain management means helping the patient improve his/her quality of life and reach the level of life enjoyment [8]. In this regard, some studies have indicated that cognitive therapy techniques can increase hope and belief in personal competence in pain management by changing the way individuals think and, consequently, can improve the patients' quality of life [9-13]. In a study, Janbozorgi et al. [14] treated 15 female patients with chronic low back pain referred to Imam Khomeini Hospital and a private office in Tehran using cognitive techniques. The results showed that participation in treatment sessions significantly reduced individuals' pain severity and psychological distress. In another study aimed to investigate the effect of cognitive therapy on pain reduction, depression, and anxiety in patients with chronic low back pain, Abdolghaderi et al. [15] treated 15 patients with chronic pain using cognitive therapy for 8 weeks. The results showed that participation in cognitive intervention sessions significantly affected pain reduction, depression, and anxiety in patients with chronic low back pain. In contrast, in Belarina et al.'s [16] study, it was found that attempt to minimize, control, and suppress anxiety and thoughts related to pain led to its reproduction.

Among the necessities of the present study is the presence of contradictory results. Also, suffering and disability caused by chronic pain reduce the quality of life in many individuals; therefore, pain management and reduction are among the important goals of various scientific disciplines, whereas pain severity and nature have been shown to be functions of emotional, cognitive, and affective mechanisms [3]. Thus, given the role of chronic pain in reducing patients' quality of life and also considering the possible effect of psychological therapies on changing mental and psychological processes affecting individuals' resistance to pain, the present study seeks to answer this question: "Does cognitive therapy affect hope and pain management in women with chronic pain?"

Methods

The present research was a quasi-experimental study with a pretest-posttest design and a control group. The study population included women living in region one of Rasht referring to Guilan Pain Clinic in 2017-2018. Using convenience sampling method with random assignment of groups by a coin toss, physician diagnosis, and initial interview, 20 female patients with chronic low back pain were selected and divided into two groups of 10: 10 people as the experimental group and 10 people as the control group. Inclusion criteria for the present study included the diagnosis and approval of spinal disorders at least six months before the study by an orthopedist, informed acceptance and willingness to participate in the study, the target group being in the age range of 18-60 years, reading and writing literacy, no history of surgery due to low back pain, no other uncontrolled underlying disease such as diabetes and high blood pressure, no disability caused by low back pain such as urinary incontinence or lower extremity anesthesia, lack of pregnancy, and no drug use.

Exclusion criteria also included not attending more than two sessions, not performing the weekly intervention exercises, and taking psychotropic drugs. The experimental group received cognitive therapy for 8 sessions (once a week), while the control group did not receive any intervention. In order to observe ethical principles, participation in this study was voluntary, with the full consent of the individuals. In addition, participants had the opportunity to refrain from attending the sessions at any stage of the research. Finally, 3 months after the last cognitive therapy session, the participants of both groups were invited by phone, and the posttest was performed in their presence in the clinic. The issues raised in the treatment sessions are summarized in Table 1.

Table 1: A brief description of cognitive therapy sessions

Sessions	Contents and Assignments
First	Introducing the members to each other / Presenting explanations about pain and its types and theories presented regarding pain / General introduction of the presence of mind based on pain control cognitive therapy / Presenting explanations about the automatic guidance system / Introducing eating meditation with practical experience in the session / Determining next week's assignment;
Second	Explaining the ABC cognitive model / Reviewing last week's assignment and providing a list of cognitive errors / Introducing physical examination meditation / Determining next week's assignment;
Third	Reviewing last week's assignment / Examining the relationship between negative thoughts and pain / Examining the relationship between pain and emotion / Repeating physical meditation / Introducing breathing meditation / Determining next week's assignment;
Fourth	Reviewing last week's assignment / Reviewing the relationship between stress and pain / A 5-minute practice of seeing and hearing / Introducing the 3-minute breathing space / Determining next week's assignment;
Fifth	Reviewing last week's assignment / Sleep hygiene / Sitting meditation, including the presence of mind, breathing, and body / Examining the effect of awareness of pleasant and unpleasant events on feelings, thoughts, and bodily sensations / Determining next week's assignment;
Sixth	Reviewing last week's assignment / Sitting meditation, including the presence of mind from sounds and thoughts / Discussion about staying in the present / Explaining a different way of seeing thoughts / Determining next week's assignment;
Seventh	Reviewing last week's assignment / Introducing the timely activity / Acceptance by using breathing / Using extended instruction breathing space / Determining next week's assignment;
Eighth	Reviewing last week's assignment / Reviewing the whole program / Answering the questionnaires.

Research data were collected using a three-part tool, including the personal information questionnaire, the life expectancy questionnaire, and the pain management scale. In this research, Miller and Powers' life expectancy questionnaire was used. The questionnaire has 48 questions with five options, scored on the Likert scale from 1 (very disagree) to 5 (very agree). The Miller questionnaire is scores in each item as follows: Very disagree = 1, disagree = 2, indifferent = 3, agree = 4, and very agree = 5. Fourteen items also are scored in reverse (questions 11-13-16-18-25-27-28-31-33-34-38-39-47-48). The minimum and maximum scores for each individual are 48 and 240, respectively, and the higher the individual's score, the more life expectancy he/she has. The reliability of the questionnaire in this study was obtained at 0.89 using Cronbach's alpha coefficient. In a study, Cronbach's alpha and halving methods were used to determine the reliability of the questionnaire, which were calculated to be 0.90 and 0.89, respectively [17]. Also, the questionnaire's concurrent validity using this questionnaire with Beck Anxiety Inventory (BAI) is negatively correlated ($P<0.0001$, $r= 0.79$) [18]. In this study, the reliability of the questionnaire was obtained at 0.81 by calculating Cronbach's alpha coefficient. Given that this questionnaire has no subscale, all items were finally collected, and the total score was obtained. The pain management questionnaire has been designed to assess the degree of chronic pain self-management. This questionnaire consisted of 25 questions with a 5-choice range of "never, rarely, sometimes, often, always" assesses totally three factors, including functional self-management (questions 1 to 14), emotional self-management (questions 15 to 19), and medical self-management (questions 20 to 25). It should be noted that questions 7, 12, 13, 15, 16, 17, 18, 19, and 24 are also scored in reverse; the higher score represents more chronic pain self-management. The results of factor analysis of this scale indicate the acceptability of the values of their fit indices. The content validity of 0.80, the convergent validity (with Nicholas chronic pain self-management scale, psychological stiffness, pain self-efficacy, pain catastrophic thoughts, and pain beliefs and perceptions) with coefficients of 0.68, 0.47, 0.50, -0.26, and -0.33, respectively, the

retest reliability of 0.87, and the reliability of 0.79 by Cronbach's alpha method were also confirmed [8].

Descriptive statistics were used to describe the participants' demographic characteristics and the pretest and posttest data. Univari ate analysis of covariance (ANCOVA) was used to determine the significance of the effect of the independent variable on the dependent variable. Data analysis was also performed using SPSS software version 20.

Results

Based on the present study's findings, the mean and standard deviation of the age of individuals in the experimental and control groups were (8.48) 44.6 and (8.22) 48.8 years, respectively. Four people (40%) of the experimental group and 4 people (40%) of the control group had a bachelor's degree or higher. Working individuals in the experimental and control groups were 8 (80%) and 9 (90%), respectively, and others were housewives.

At the beginning of the study in pretest, no statistically significant difference was observed in hope and pain management between the experimental and control groups (P>0.05). The comparison of the experimental and control groups after cognitive therapy sessions showed that hope significantly increased in the experimental group (P=0.000), while it slightly decreased in the control group during this period, which is not statistically significant. Also, the mean scores of the pain management questionnaire significantly increased in the experimental group after cognitive therapy sessions (P=0.000), while no significant difference was observed in the control group (Table 2).

Table 2: Mean and standard deviation of pretest and posttest of hope and pain Management in the experimental and control groups

Groups	Number	Hope				Pain Management			
		Pretest		Posttest		Pretest		Posttest	
		M	SD	M	SD	M	SD	M	SD
Experimental	10	27.30	3.74	33.70	2.58	19.90	1.52	28.00	6.00
Control	10	29.20	2.89	26.80	2.57	20.10	4.67	20.20	3.22

Before data analysis by univariate ANCOVA, the related assumptions were evaluated. The Shapiro-Wilk test was used to test the distribution normality assumption, showing the abnormal distribution of data (p=0.001). In order to investigate the homogeneity of error variance assumption, the Levene test showed that the equality of variances was observed (0.081; p>0.05). Also, the box test was used to test the homogeneity of the covariance matrix assumption, showing that the assumption was established (box= 4.618, F=1.354, p=0.001). Given the establishment of assumptions, univariate ANOVA was performed (effect size=0.706, p=0.001, F=18.028, Wilkes' lambda= 2.94), suggesting that cognitive therapy is effective in both hope and pain management variables (Table 3).

Table 3: The results of univariate analysis of covariance to investigate patterns of difference

Component	Total Squares	Degrees of Freedom	Mean Squares	F Statistics	Level of Significance	Eta Square
Hope	0.013	1	0.013	0.002	0.965	0.000
Pain management	18.964	1	18.964	0.919	0.352	0.254

Discussion

The results of the present study showed that participating in cognitive therapy sessions according to the defined protocol increases the hope and self-management abilities of women with chronic pain.

Janbozorgi et al. and Abdolghaderi et al. also investigated the effect of cognitive therapy on chronic low back pain using different questionnaires and presented similar results [14,15]. However, in Blarina et al.'s study, although patients' pain tolerance increased after

cognitive therapy sessions, it has been reported that attempts to control pain in some cases lead to focus on pain and consequently its reproduction [16]. This discrepancy between the results seems to be due to different cognitive therapy techniques and their educational content because cognitive therapy basically tries to increase the individual's awareness of problems and the treatment process and also the individual's ability to solve pain-related problems.

Participation in cognitive therapy sessions led to increased chronic pain self-management in this study. Different studies have reported similar results [10,12,19]. In a study by Vakili et al. in Tehran, it was reported that group cognitive therapy increased pain management ability in women with chronic low back pain [19]. In a review study involving quantitative and qualitative studies, Baeza-Velasco et al. stated that cognitive therapy-based interventions positively affected pain management in patients with chronic pain [20].

By creating a positive challenge between the individual and his/her thoughts, cognitive therapy techniques provide a context in which the patients, in addition to positive self-criticism, challenge their current thoughts about various phenomena. Since such a challenge is guided and based on scientific information, it often leads to the replacement of rigid and inflexible thoughts of the past with rational thoughts. In such circumstances, it is expected that an individual's view of his/her abilities in pain management and of the general conditions of future life related to the subject of hope will positively change to a large extent [19].

In the present study, the subjects' history of surgery was not controlled, which is one of this study's limitations. Considering the limited number of studies that have specifically examined the effect of cognitive therapy on pain management and hope in patients with chronic pain, this research was conducted as a pilot study, and the study population was selected only among women with chronic low back pain in Rasht who had referred to the clinic, which is the second limitation of this study. Another limitation of the current study was the lack of long-term follow-up of patients, which is suggested to be considered in other studies. Also, this research was a quasi-experimental study with heterogeneous groups, so it is suggested that another study be conducted with a larger sample size and group matching. It is also suggested that more samples should be investigated to confirm the results and variables such as a history of surgery be controlled in future studies.

Conclusion

Given the effect of cognitive therapy on pain management and improving hope in women with chronic low back pain, it seems that using this treatment as a low-cost method by clinical counselors and psychologists can help improve the quality of life of patients with chronic pain.

Acknowledgments

This research is the result of a ph.d dissertation in general psychology and has been conducted with the approval of Islamic Azad University, Rasht Branch (ethics code: IR.IAU.Rasht.REC.1396.169). We would like to thank all the individuals who helped us in this research, especially the esteemed participants

Conflict of interest

The authors state no conflict of interest in conducting this study and publishing its results.

Funding:

The research has been carried out by personal funding.

References

1. Sharpe L. Psychosocial management of chronic pain in patients with rheumatoid arthritis: challenges and solutions. J Pain Res. 2016; 9(5): 137-46.

2. Xiao Y, Liu H, Liu J, Zuo Y, Liu L, Zhu H. Pain Prevalence and Pain Management in a Chinese Hospital. Med Sci Monit. 2018; 24(6): 7809-19.

3. Karami M, Gohari AR, Ebrahimzadeh MA, Danaei GH, karimloo S. Pathophysiology of pain and effective drugs to control it. Clin Exc. 2016; 5(2): 28-44. [In Persian]

4. Vallerand A, Cosler P, Henningfield J, Galassini P. Pain management strategies and lessons from the military: A narrative review. Pain Res Manag. 2015; 20(5): 261-8.

5. Shafiei F, Amini M. Efficacy of mindfulness-based Stress reduction on reducing

catastrophizing and pain intensity in patients suffering chronic musculoskeletal pain. J Anesthesiol Pain. 2017; 8(1): 1-10. [In Persian]
6. Taheri NK. Effects of the nurse-patient communication skills training on reducing pain in patients. J Anesthesiol Pain. 2015; 5(2): 24-32. [In Persian]
7. Mohebi nooredinvand MH, Shehni yeilagh M, Pasha sharifi H. The relationship of psychological capital (hope, optimism, resiliency and self-efficacy) with the achievement goals and academic performance of the first-year students. J Res curriculum. 2014; 2(13): 61-79. [In Persian]
8. Shirazi M, Manoochehri H, Zagheri Tafreshi M, Zayeri F, Alipour V. Chronic pain management in older people: A qualitative Study. J Clin Nurs Midwifery. 2016; 4(4): 13-28. [In Persian]
9. Khaledian M, Mohammadifar MA. Effectiveness of Group Cognitive-Behavioral Therapy and Logotherapy in Reducing Depression and Increasing Life Expectancy in Drug Addicts. J Res addiction. 2016; 9(36): 63-80.
10. Kodal A, Fjermestad K, Bjellanda I, et al. Long-term effectiveness of cognitive behavioral therapy for youth with anxiety disorders. J Anxiety Disorders. 2018: 53; 58-67.
11. Ghalehkhani Safat S, Iravani M, Sayah Bargard M, Latify M. Efficacy of Cognitive Behavioral Therapy-Based Self-Management Intervention on Labor Outcome in Nulliparous Women. J Mazandaran Univ Med Sci. 2018; 28 (160): 123-32. [In Persian]
12. Stefan G, AnuAsnaani M, Imke J, Vonk M, Alice T, Sawyer MA, Angela Fang M. The Efficacy of Cognitive Behavioral Therapy: A Review of Meta-analyses. Cognit Ther Res. 2012; 36(5): 427-40.
13. Stefan G, AnuAsnaani M, Imke J, Vonk M, Alice T, Sawyer MA, Angela Fang M. The Efficacy of Cognitive Behavioral Therapy: A Review of Meta-analyses. Cognitive-Ther Res. 2012; 36(5): 427-40.
14. Jonbozorgi M, Alipour A, Golchin N, Agah Heris M. The Efficacy of Group Cognitive Behavior Therapy on severity of Pain and Mental Health in Chronic Back Pain Individuals. J Res Psychol Health. 2010; 4(1): 35-43. [In Persian]
15. Abdolghadery M, Kafee M, Saberi A, Aryapouran S. The Effectiveness of Mindfulness-based Cognitive Therapy (MBCT) and Cognitive Behavior Therapy on Decreasing Pain, Depression and Anxiety of Patients with Chronic Low Back Pain. J Shahid Sadoughi Univ Med Sci. 2014; 21(6): 795-807. [In Persian]
16. Blarrina M, Luciano C, Martinez O, Valdivia S, Valverde M, Ortega J. Coping With Pain in the Motivational Context of Values: Comparison Between an Acceptance-Based and a Cognitive Control–Based Protocol. Behav Modif. 2008; 32(3): 403-22.
17. Dadsetan P. Tension or Stress New Civilization Disease. Tehran: Roshd Pub; 1998. [In Persian]
18. Abolqasemi A, Narimani M. Psychological Tests. Tehran: Garden of Rezvan pub; 2006. [In Persian]
19. Vakili N, Neshat Doost HT, Asgari K, Rezaee F, Najafi MR. The Effect of Cognitive-Behavioral Group Pain Management Therapy on Depression of the Female with Chronic Low Back Pain. J Clin Psychol.2010: 1(4): 11-19. [In Persian]
20. Baeza-Velasco C, Bulbena A, Polanco-Carrasco R, Jaussaud R. Cognitive, emotional, and behavioral considerations for chronic pain management in the Ehlers–Danlos syndrome hypermobility-type: A narrative review. Disabil rehabil. 2019; 41(9): 1110-18.
21. Henriksson J, Wasara E, Ronnlund M. Effects of eight-week web-based mindfulness training on pain intensity, pain acceptance, and life satisfaction inn individuals with chronic pain. Pschol Rep. 2016; 119(3): 586-607.