



# The Effect of Cognitive-Behavioral Hypnotherapy on Modifying the Pain Beliefs and Pain Self-Efficacy in Patients with Chronic Low Back Pain (CLBP)

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## ABSTRACT

Chronic low back pain is a major spine disorder. In modern societies, besides the economic costs that pain incurs on the patient and the society, the chronic consequences of such pains in the personal, emotional, family, and social lives of the individual have gained the attention of scholars. Since pain sensation is both an emotional and cognitive experience, it is important to use non-pharmacological therapies to reduce the patient's pain. Therefore, the purpose of this study was to investigate the effects of cognitive behavioral hypnotherapy in changing self-efficacy and pain-related beliefs in patients with chronic low back pain. Materials and Methods: A-B single-subject method is used in this research. The statistical population included the adult women with chronic low back pain who referred to the specialized Pain clinic of Labbafinejad Hospital in Tehran in 2017. Convenience method of sampling was used. Four subjects received 8 sessions of individual cognitive-behavioral hypnotherapy. The baseline, intervention and follow-up evaluations were performed using Pain Beliefs and Perception Inventory and the Pain Self-efficacy Questionnaire. Results: Visual analysis of the data charts and comparing the changes in the dependent variable levels based on the median and mean indices, trend, and the percentage of overlapping and non-overlapping data (PND) in the baseline, intervention and follow up stages showed that intervention has been effective in changing the pain beliefs and increasing the self-efficacy of the patients with chronic low back pain. Conclusion: In general, it can be concluded that cognitive-behavioral hypnotherapy can be effective in modifying the pain beliefs and increasing self-efficacy; hence, it can be used as a treatment without side effects regarding the management and control of pain in patients with chronic low back pain.

**Key Words:** Cognitive Behavioral Hypnotherapy, Lower Back Pain, Pain Beliefs, Pain Self-efficacy.

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## INTRODUCTION

Chronic pain is a big problem among patients. This issue involves the important people in a patient's life as well as the health care system and the whole society. In addition to its undesirable effects on various aspects of patients' personal and emotional life (including negative mood, reducing self-efficacy and creating cognitive errors), chronic pain leads to reduced productivity, reduced job efficiency, absence from work and even unemployment [1]. The duration and severity of pain are unpredictable and not directly related to the degree of injury, and the

duration and type of treatment. Hence, chronic low back pain is associated with major medical and socioeconomic outcomes [2]. Patients with long-term CLBP are prone to physical disabilities and a variety of psychological and social problems that incur indirect costs on the individual. The impact of chronic low back pain on the physical, psychological, and social performance is as complex and specific as its etiology [3]. The New Zealand Health and Disability Committee (1997) states that non-adaptive attitudes and beliefs about low back pain are a major risk factor of disability due to back pain. The concept of self-efficacy has been widely used in the field of chronic pain. A group of researchers [4, 5] concluded that self-efficacy

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beliefs along with another group of psychological constructs play a major role in adapting to chronic pain. In studies on patients with chronic pain, it is found that self-efficacy beliefs could explain many specific behaviors and pain experience among patients with chronic pain [5, 6].

The way patients perceive their pain and their beliefs about pain, as well as the coping strategies they use to deal with pain, has a major role in adapting to pain and predicting the treatment result. Psychological interventions are used as part of an interdisciplinary approach in pain clinics, and are more inclined to enhance patient self-management, modifying patient's behavior patterns and cognitive changes rather to relieving pain in a certain part of the body. In fact, psychological techniques target the psychological factors and pain components that cause and sustain pain.

One of the most important and most widely used psychological interventions in treating chronic pain is cognitive-behavioral therapy. CBT seeks to resolve the existing problems by modifying the patient's ineffective and unhealthy behaviors and thoughts [7]. Studies have concluded that CBT is an effective treatment for chronic pain and pain relief, which has been compared in control conditions in the waiting list, indicating significant differences in various dimensions such as pain intensity, mood and distress, cognitive coping and evaluation, pain behavior, levels of activity and social role play [8].

Also, empirical evidence suggests that an increased therapeutic effect can be achieved through the combination of hypnosis techniques with CBT [9]. Despite the research support that is focused on the perceptory interpretive aspect of pain, the level of using effective psychological interventions on clinical patients, including those suffering from chronic low back pain, is still very low.

Today, emphasis is placed on short-term psychological interventions to overcome the resistance of patients with chronic back pain toward psychological treatment and to save time and money. These treatments have the minimum cognitive complexities and can easily be combined with pharmaceutical and physical therapies of patients. Hypnosis-based therapies double the power in cognitive-behavioral therapies and accelerate and facilitate treatment. Suspension of critical thinking in hypnosis encourages the patient to accept convincing conversations of cognitive-behavioral therapy [10]. Therefore, the purpose of this study was to investigate the effectiveness of cognitive behavioral hypnotherapy on pain self-efficacy and beliefs in patients with chronic low back pain.

## Research hypotheses

- Cognitive Behavioral Hypnotherapy is effective in modifying the pain beliefs in patients with CLBP.
- Cognitive Behavioral Hypnotherapy is effective in increasing the self-efficacy of pain in patients with CLBP.

## METHODOLOGY

This research has been conducted as a single subject study with A-B empirical design. To select the sample, purposive sampling method was used and the sample size included 4 subjects.

The statistical population of this study included the adult women with chronic low back pain who referred to the specialized pain clinic of Labbafinejad Hospital in Tehran in 2017. The statistical sample consisted of patients who volunteered to participate in the study and comply with the inclusion-exclusion criteria.

### Inclusion Criteria

- diagnosed with chronic low back pain.
- being adult and female (18 to 55 years).
- Their hypnotizability score in HIP test should be average and high (score of 10 or higher).

### Exclusion criteria

- Not being prohibited of using hypnosis (epilepsy, paranoid personality disorder, borderline personality disorder, history of psychosis, major depression)

Implementation process: first, after coordinating with the specialist at Pain Clinic for studying the record of recent patients, those diagnosed with CLBP were invited via phone call to an interview. Clinical interview sessions included:

- 1) Semi-structured interview about the basic demographic properties and descriptive information about pain such as the main location of the pain, the duration of persistence, severity, cause, therapies and their effectiveness, as well as triggers, reductions, and ways of coping with pain, and patient's aim of the treatment. The information above is also essential for a comprehensive understanding of the patient, and to establish a good relationship with the patient.
- 2) Familiarity with hypnotherapy and elimination of ambiguities and misunderstandings about it: The subject's knowledge of hypnosis was questioned and it was tried to discuss the following problems in the conversation to remove the ambiguities.
  - The hypnotizability of the patient was measured using hypnosis induction profile test. In the implementation of the HIP test, the eye circling mark was evaluated as a biological reagent for

hypnosis capacity. Furthermore, the subject with the "flying hands" induction entered hypnosis in a limited scale, and their grades in terms of the convergence of three factors of hypnotizability, absorption and deflection, the difference in sense of control, and the level of unconscious movements and phenomena were examined.

Thereafter, the intervention phase started, which included 8 sessions of cognitive-behavioral hypnotherapy based on Donald Robertson's (2012) cognitive-behavioral hypnotherapy guide. The combination of cognitive conversation and hypnotherapy was customized depending on the formulation of pain for each individual, and the therapeutic goals specified in the cognitive-behavioral formulation were intervened with hypnosis pain therapy techniques. The agenda of the meetings is shown in Table 1.

**Table 1: Guideline of CLBP Sessions**

Sessions	The content of the sessions
<b>First session</b>	Cognitive-Behavioral Formulation and Hypnotherapy Formulation
<b>Second session</b>	Changing the sensory experience of pain with techniques such as pain sensitivity, gradual change in perception of pain through separation from body, pain substitution, time distortion, increasing pain tolerance, changing pain location, the development of anesthesia
<b>Third &amp; Fourth Session</b>	Discovering and addressing thoughts or emotions associated with pain, age return technique for emotional exhaustion or emotional experience correction then using one of the techniques of forgiveness, healing spring, red balloon, sacred religious personality and so on
<b>Fifth &amp; Sixth session</b>	Changing attention to positive aspects of self and life and new concepts on having a pain, including techniques of symbolic images, embodiments that emphasize choices and substitutes, and metaphors such as the one-hand hero
<b>Seventh session</b>	Teaching body scan technique for mindfulness and periodic clearing of unpleasant excitement and road health technique for positive coping
<b>Eighth session</b>	Reviewing the treatment course and the main techniques useable in self-hypnosis

**Instruments**

**1. Pain Beliefs and Perception Inventory (PBPI)**

This questionnaire of pain beliefs and perceptions [11] has been used in several studies as a tool to measure the beliefs associated with chronic non-cancer pain [12]. The questionnaire has 16 statements, each ranked based on a 4-degrees Likert scale. The four subscales in this questionnaire include: 1. perception of pain as mysterious (MYST), 2. Self-blame (S-B), 3. beliefs about the

temporal stability of pain (TIME), 4. beliefs that pain is a constant and enduring experience ("Constancy"), validity of this questionnaire has been examined by Williams and Keef (1991) [13].

**2. The pain self-efficacy questionnaire:**

The Pain Self-Efficacy Questionnaire [14], with 10 statements, measures the power and circle of generalizing the patient's belief in his ability to perform some of the affairs, despite the pain. Using a 7 degrees Likert scale (0 to 6), the patient expresses how confident he is to do the activities listed in the questionnaire, despite the pain. The range of the questionnaire scores is from zero to 60, and higher scores indicate stronger perception of self-efficacy in dealing with pain. This questionnaire has good psychometric properties. In two separate studies on patients with chronic low back pain the retest and the internal consistency coefficients of its statements have been reported 0.79 and 0.92, respectively [14].

**RESEARCH FINDINGS**

The demographic characteristics of the participants in the study are as described in Table 2.

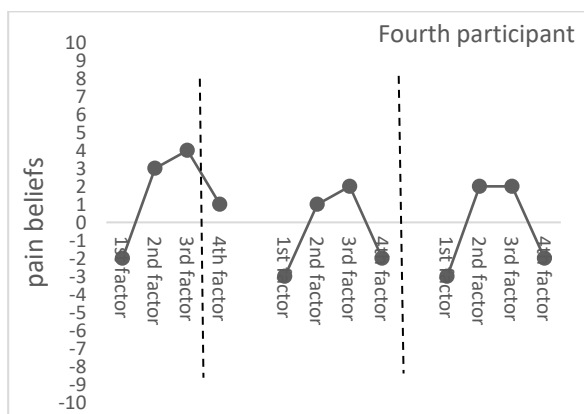
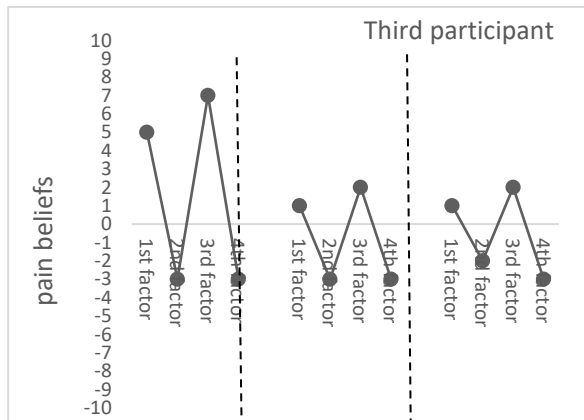
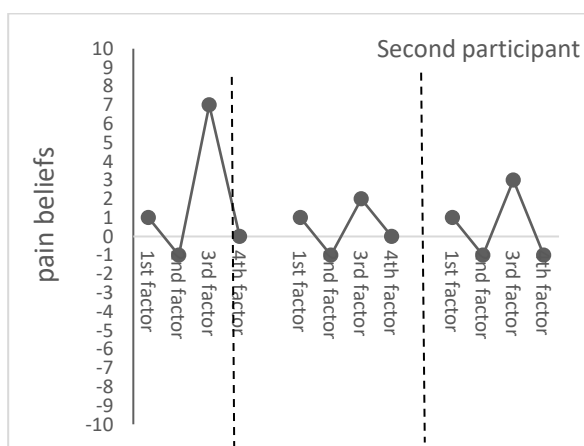
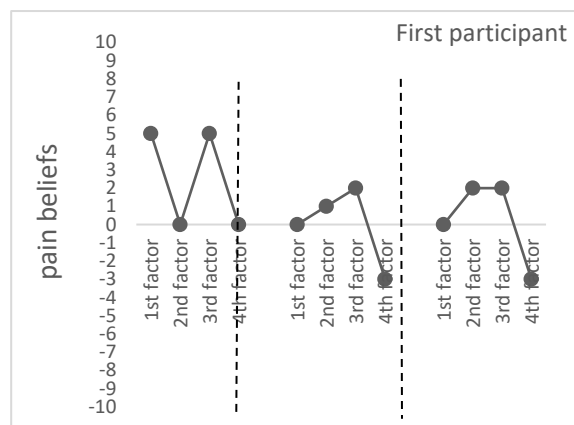
**Table 2: Demographic characteristics of participants**

Participant	Gender	Age	Marital	Status	Occupation	Disease Experience in years
1	Female	34	Married	Bachelor	Housewife	1
2	Female	56	Married	Diploma	Housewife	2
3	Female	56	Married	Diploma	Employed	3
4	Female	49	Married	Sub-diploma	Housewife	1

Hypothesis 1: Cognitive-behavioral hypnotherapy is effective in modifying the beliefs associated with pain in patients with chronic low back pain.

In order to examine this hypothesis, the pain beliefs of each participant were compared under the four subscales of MYST, S-B, TIME, Constancy in the baseline, intervention, and follow up stages. The raw scores of repeated measurements, during the baseline, intervention and follow-up steps are as follows. Higher scores represent the severity of these negative beliefs.





**Figure 1:** participants' pain beliefs in the baseline, intervention and follow up stages

The raw scores of repeated measurements of pain beliefs, in baseline, intervention and follow-up steps, and the percentage of changes made by factors are provided in Tables 3, 4, 5 and 6.

**Table 3- The 1<sup>st</sup> factor: Belief in the Constancy of pain in the future**

Evaluation	baseline	intervention	follow-up	Changes
First participant	5	0	0	26%
Second participant	1	1	1	0%
Third participant	5	1	1	21%
Fourth participant	-2	-3	-3	5%

**Table 4- The 2<sup>nd</sup> factor: of self-reflection and self-blaming**

Evaluation	baseline	intervention	follow-up	Changes
First participant	0	1	2	7%
Second participant	-1	-1	-1	0%
Third participant	-3	-3	-2	0%
Fourth participant	3	1	2	15%

**Table 5- The 3<sup>rd</sup> factor: Belief in the stability of pain in the present**

Evaluation	baseline	intervention	follow-up	Changes
First participant	5	2	2	15%
Second participant	7	2	3	26%
Third participant	7	2	2	26%
Fourth participant	4	2	2	10%

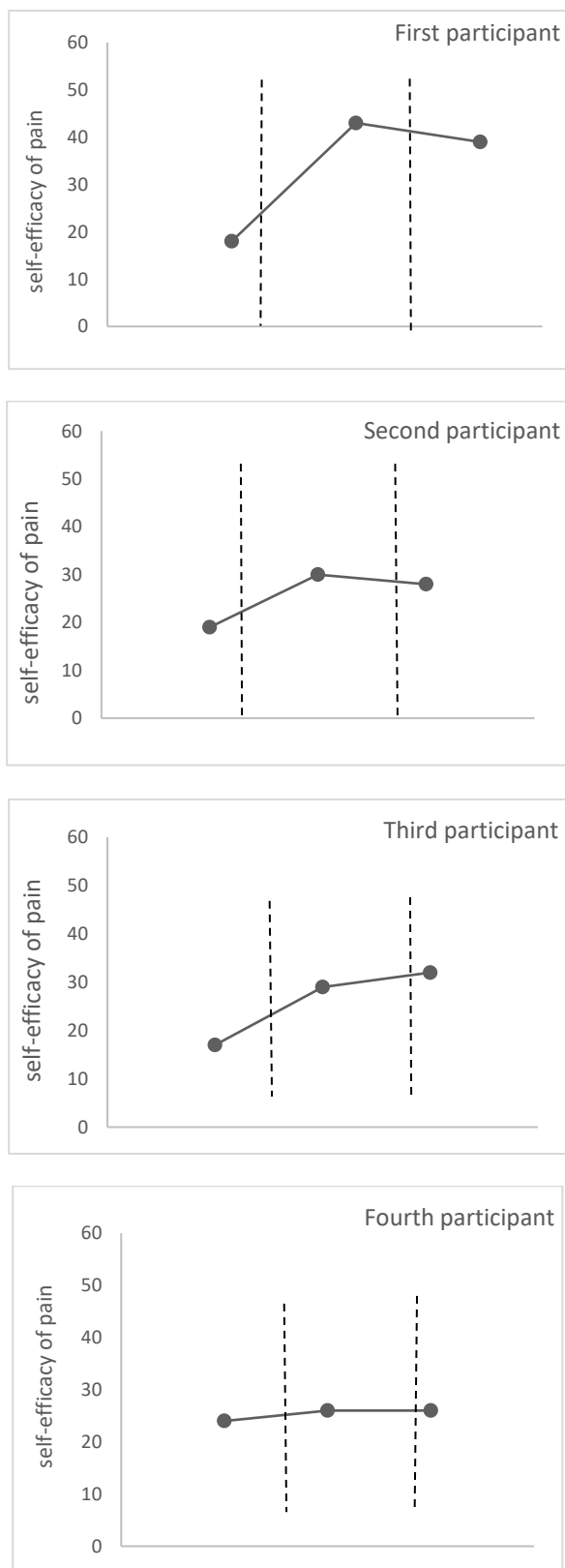
**Table 6- The 4<sup>th</sup> factor: belief in pain unknown**

Evaluation	baseline	intervention	follow-up	Changes
First participant	0	-3	-3	15%
Second participant	0	0	-1	0%
Third participant	-3	-3	-3	0%
Fourth participant	1	-2	-2	15%

As observed in this study, the negative beliefs have decreased among all participants. This reduction is seen in the 1<sup>st</sup> and 3<sup>rd</sup> factors, i.e. belief in the constancy of pain in the future and belief in the stability of pain in the present. The key issue is that all the high scores of negative beliefs have dropped significantly in the four participants.

Hypothesis 2: Cognitive Behavioral Hypnotherapy is effective in increasing the self-efficacy of pain in patients with chronic low back pain.

In order to examine this hypothesis, the self-efficacy of each participant's pain was compared in baseline, intervention, and follow-up steps. Raw scores of repeated measurements, in the baseline, intervention and follow-up stages are as follows.



**Figure 2: pain self-efficacy of participants in the baseline, intervention and follow-up stage**

Raw scores of repeated measurements of pain self-efficacy in baseline, intervention and follow-up stages, and the percentage of change are provided in Table 5.

**Table 7: pain self-efficacy scores of participants and percentage of change**

Evaluation	baseline	intervention	follow-up	Changes
First participant	18	43	39	41%
Second participant	19	30	28	18%
Third participant	17	29	32	20%
Fourth participant	24	26	26	3%

As you can see, pain self-efficacy has increased for all participants. The range of changes ranged from 3% to 41%, reflecting the high potential for change in the pain self-efficacy.

## DISCUSSION AND CONCLUSION

Regarding the first hypothesis, cognitive-behavioral therapy of pain is focused on correcting thoughts, predictions and disastrous beliefs. In cognitive-behavioral hypnotherapy using guided imagery, new insights is gained by the patient on the mechanism of pain in the body as well as pain prognosis which can lead to correction of errors and cognitive bias and reduce the catastrophic pain beliefs of these patients. The present findings show that this intervention's modification was significant in believing in the constancy of pain in the future and the stability of pain in the present. The study of Jensen et al. (2009) also showed that the hypnotherapy group had a significant improvement in perceived control of pain compared to other groups in the experimental groups of the present study [15].

Regarding the second hypothesis, Jemeni (2008) suggests cognitive reconstruction is used to increase the self-efficacy of pain and to gain the essential psychological flexibility to fully engage in behaviors that cause fear and avoidance among painful patients [16]. Most importantly, increasing self-efficacy and reducing helplessness is a secondary effect of hypnotherapy, which is caused by the increased pain control effect. Emphasizing that any hypnosis is a self-hypnosis, self-efficacy beliefs are reinforced in the cognitive conversations of the present intervention. Apart from the procedural aspect, hypnotherapy with imagery of pain works as a comparative subject and the imagery aimed at enhancing the Ego affect the increase of self-efficacy of pain.

The level of benefiting from psychological interventions in patients with chronic pain is very low due to numerous barriers such as lack of knowledge, intolerance of patients, interdisciplinary gaps, resistance to psychological interventions, etc.. Since cognitive-behavioral therapy is the common psychological treatment approach in pain management, in order to overcome the above obstacles, it is suggested to combine Hypnotherapy with CBT, which leads to a dramatic

increase in the therapeutic effect and facilitates treatment. In cognitive-behavioral hypnotherapy, hypnosis speeds up relaxation and the reliability of therapeutic relationships, and gives us the opportunity to focus more on the behavior, cognition, perceptions and emotions of the patients and treating them. It also gives patients the opportunity to have a more active participation in their therapeutic process, use their internal capacity to control their pain and experience better personal abilities and self-control. In cognitive-behavioral hypnotherapy, simultaneous with helping the help-seekers to identify their distorted thinking patterns and ineffective behaviors, they also focus on emotions and, thus pay attention to all three domains at the same time. Regarding the findings of this study, it can be concluded that cognitive-behavioral hypnotherapy is effective on improving pain-related beliefs and increasing the pain self-efficacy of patients; therefore, it can be used as a non-invasive therapy without side effects in managing and controlling pain in patients with chronic low back pain.

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