ISSN: 2476-5279; International Journal of Musculoskeletal Pain Prevention. 2026;11(3): 1451-1460

The Effectiveness of Cognitive-Behavioral Therapy on Pain Anxiety, Coping Strategies, and Somatization Disorder in Opioid-Dependent Patients with Chronic Pain

ARTICLEINFO

Article Type

Quasi-experimental

Authors
Farzin Bagheri Sheykhangafshe*[1],
Roya Heydarzadeh[2]PhD
Niki Norouzi[3]
Solmaz Lotfi Azar[4]
Leila Tankar[5]

How to cite this article

Bagheri Sheykhangafshe F, Heydarzadeh R, Norouzi N, Lotfi Azar S, Tankar L. The Effectiveness of Cognitive-Behavioral Therapy on Pain Anxiety, Coping Strategies, and Somatization Disorder in Opioid-Dependent Patients with Chronic Pain. Int J. Musculoskelet. Pain. Prev. 2026;11(3):1451-1460

ABSTRACT

Aims: This study aimed to evaluate the effectiveness of cognitive-behavioral therapy (CBT) in reducing pain-related anxiety, improving coping strategies, and alleviating somatization disorder in patients with chronic pain and a predisposition to opioid addiction.

Method and Materials: This study utilized a quasi-experimental framework, incorporating a pre-test/post-test methodology with a control group. The participants were drawn from male individuals undergoing treatment for opioid dependence at addiction clinics in Tehran during 2025. Through convenience sampling, 36 individuals were recruited and subsequently randomized into two groups: an experimental group (n=18) and a control group (n=18). To gather data, the following instruments were administered: the Pain Anxiety Symptoms Scale (McCracken et al., 1992), the Multidimensional Coping Inventory (Endler & Parker, 1990), and the Patient Health Questionnaire (Kroenke et al., 2022). Participants in the experimental group underwent eight 90-minute Cognitive Behavioral Therapy (CBT) sessions, as described by Knapp and Beck (2008), whereas the control group did not receive any intervention. Statistical analysis was performed using multivariate covariance analysis via SPSS version 27.

Findings: CBT significantly reduced pain-related anxiety, somatization disorder, and maladaptive coping styles (emotion-focused and avoidance strategies) while enhancing adaptive problem-focused coping strategies in patients with chronic pain and a predisposition to opioid addiction (P<0.001).

Conclusion: CBT demonstrates significant efficacy in reducing psychological distress and promoting adaptive coping strategies, making it a valuable approach for managing chronic pain and addressing the psychological needs of patients with opioid addiction tendencies.

Keywords: Opioids, Pain Anxiety, Coping Strategies, Somatization Disorder, Chronic Pain

[1] Department of Psychology, Faculty of Humanities, Tarbiat Modares University, Tehran, Iran
[2] General Psychology, Faculty of Psychology and Educational Sciences, Ferdowsi University, Mashhad, Iran
[3] M.A in General Psychology, Faculty of Humanities, Islamic Azad University, Shahr-e Qods Branch, Tehran, Iran
[4] Clinical Psychology, Faculty of Humanities, Islamic Azad University, Ardabil Branch, Ardabil, Iran
[5] General Psychology, Faculty of Humanities, Islamic Azad University, Semnan Branch, Semnan, Iran

** Correspondence*
Department of Psychology, Faculty of Humanities, Tarbiat Modares University, Tehran, Iran.
P.O.BOX: 88006544
Tel : 00 98 2182885048
E-mail: farzinbagheri@modares.ac.ir
Orcid:0000-0002-3435-3870

Article History
Received: Apr 20, 2026
Revised: May 30, 2026
Accepted: May 31, 2026
ePublished: Jun 30, 2026

Introduction

Chronic pain is one of the most prevalent public health issues, significantly impacting patients' quality of life [1]. This type of pain, typically lasting over three months, adversely affects not only physical health but also the psychological and social dimensions of individuals' lives[2]. Due to symptom severity and reduced coping abilities, many patients with chronic pain resort to pain relievers, particularly opioids [3]. These substances, including medications such as morphine, codeine, and oxycodone, are commonly prescribed as a strategy for alleviating severe pain [4]. However, the sustained use of opioid medications presents significant challenges. A primary concern is the escalating physical and psychological dependence on these drugs, which can precipitate misuse and addiction [5]. A review by De Sola et al. [6] indicated a prevalence of 2.3% for long-term opioid use and 8% for short-term use in the general population. The prevalence rates were reported as 20.5% for patients with musculoskeletal pain and 24.5% for those with fibromyalgia. Furthermore, opioid use was more common among males, younger individuals, uninsured patients, and smokers. In patients with chronic pain, pain-related anxiety can exacerbate the pain- anxiety- maladaptive behaviors cycle[7] This anxiety typically manifests as persistent worry about pain experiences, anticipation of inability to manage it, and a diminished

quality of life [8]. In such circumstances, opioid use becomes a common behavior for temporary anxiety reduction and pain relief. However, this approach often leads to drug dependence and even substance misuse, as the pain-relieving effects of opioids diminish over time, necessitating higher doses [9]. Pain anxiety in these patients can increase pain sensitivity and reduce the efficacy of coping strategies [10]. This issue is particularly complex in individuals using opioids, as dependence on these medications can contribute to psychological disorders such as depression, generalized anxiety, and somatization disorders [11].

Patients with chronic pain who utilize maladaptive coping strategies such as avoidance and denial typically have limited capacity to manage pain-induced stressors [12]. These individuals may turn to opioid use as a quick, temporary solution for pain and anxiety reduction [13]. Emotion-focused and avoidant coping strategies can impair a patient's ability to engage in non-pharmacological treatments like physical therapy or psychological rehabilitation programs [14]. Such patients often experience a cycle of opioid dependence and reduced pain coping efficacy, resulting in intensified pain symptoms, increased anxiety, and a diminished quality of life [15]. In contrast, problem-focused coping strategies can play a significant role in breaking this detrimental cycle [16]. Education and reinforcement of skills such as pain acceptance, cognitive restructuring, utilizing social support, and focusing on solutions can reduce opioid dependence and substantially improve the pain experience [17].

Somatic symptom disorder in patients with chronic pain is often considered a response to psychological stressors and an inability to regulate emotions [18]. These patients tend to experience their psychological distress as physical symptoms, which can lead to increased dissatisfaction, a reduced quality of life, and greater treatment complexity [19]. Furthermore, somatization can lead to a vicious cycle of increased pain intensity, feelings of helplessness, and greater dependence on opioid medications [20]. Patients with somatic symptom disorder typically seek rapid solutions for their physical symptoms and often resort to opioid analgesics as an immediate method for symptom control [21]. However, long-term use of these medications not only leads to physical and psychological dependence but can also exacerbate physical symptoms and psychological disorders. Consequently, these patients are at high risk for substance misuse and psychosocial problems [22].

Cognitive Behavioral Therapy (CBT), as a comprehensive psychological approach, is designed to enhance patients' skills in pain management and reduce dependence on opioid medications [23]. This therapeutic modality is based on the principle that pain-related thoughts, emotions, and behaviors can significantly influence pain intensity and experience [24]. In this approach, patients are encouraged to identify their negative and maladaptive thoughts and, by replacing them with more rational and adaptive cognitions, to alter their attitude toward pain [25]. Cognitive Behavioral Therapy also assists patients in identifying avoidant behaviors or medication dependence that may intensify the pain cycle and in learning new behavioral patterns for more effective pain and stress management [26]. Other objectives of this method include strengthening adaptive coping strategies, improving emotional regulation, and reducing sensitivity to physical symptoms [27]. For patients experiencing chronic pain along with opioid dependence, CBT can have a particularly significant impact [28]. By reducing medication dependence and enhancing patients' self-management capabilities, this therapy helps to decrease pain-related anxiety, improve quality of life, and mitigate the risks associated with long-term opioid use [29].

Chronic pain is one of the complex and widespread issues in public health, affecting a considerable portion of the population. Many of these patients resort to opioid use for pain relief, substances that offer short-term soothing effects but can have irreversible consequences in the long term. Dependence on opioid medications such as morphine and oxycodone not only reduces drug efficacy but

also increases the risk of misuse, addiction, and serious psychological and physical problems. Opioid dependence in patients with chronic pain complicates the treatment process due to the complex nature of pain and its impact on an individual's life, leading to significant healthcare and social costs. Given the growing global use of opioid medications and increasing concerns about dependence and misuse, addressing effective strategies to reduce the use of these drugs is essential. In this context, the present research was conducted to determine the effectiveness of CBT on pain anxiety, coping strategies, and somatic symptom disorder in patients with chronic pain dependent on opioid use.

Method and Materials

This investigation utilized a quasi-experimental framework, specifically a pre-test-post-test design with a control group. The study population consisted of males experiencing opioid dependence who were seeking treatment at addiction clinics in Tehran during 2025. Through convenience sampling, 36 recently admitted individuals were recruited from two clinics. These participants exhibited homogeneity regarding the type of substance consumed, the duration of their chronic pain condition, and their baseline clinical status. The sample size was initially estimated using G*Power software (version 3.1.9.2). While a target power of 0.80 is conventional, this study was designed as a pilot clinical investigation; consequently, the sample size reflects a pragmatic balance between recruitment feasibility in a clinical setting and statistical requirements. Post-hoc power analysis confirmed the adequacy of the achieved sample for the observed effects. To ensure methodological rigor and minimize potential bias, participants were randomly assigned to either the experimental (n=18) or control (n=18) arm using a computer-generated randomization sequence. To maintain allocation concealment, the randomization process was managed by an independent research assistant, and the data analyst remained blinded to the group assignments throughout the statistical procedures.

Potential participants were screened based on specific eligibility criteria. Inclusion factors required individuals to be free from significant physical or psychological health concerns, possess a confirmed diagnosis of opioid dependence verified by a clinic psychiatrist, and not be undergoing any major concurrent physical or psychological treatments. A minimum of a high school diploma was required, alongside the absence of current psychiatric medication use. Exclusion criteria included missing more than two scheduled sessions, failure to adhere to program requirements, insufficient engagement, or experiencing a relapse in substance use. Throughout the research process, adherence to the Helsinki ethical principles was maintained, including obtaining informed personal consent, ensuring data confidentiality, and preserving participant anonymity through data aggregation. Finally, the collected data were analyzed using the multivariate Analysis of Covariance (MANCOVA) to account for potential baseline differences and assess treatment efficacy.

The research herein involved the administration of the following instruments:

Pain Anxiety Symptoms Scale (PASS): The Pain Anxiety Symptoms Scale is a self-report instrument consisting of 20 items, developed by McCracken et al. in 1992 to assess anxiety and fear responses related to pain in individuals with chronic pain [31]. This scale evaluates pain-related anxiety symptoms, for which participants respond using a 5-point Likert scale ranging from Never (score of 0) to Always (score of 5). The score range for the short form varies between 0 and 100. Furthermore, the internal consistency of the short form has been calculated using Cronbach's alpha coefficient as 0.91 for the entire scale and between 0.75 and 0.86 for subscales [31]. In the present study, the Cronbach's alpha coefficient for this scale was found to be 0.86.

Multidimensional Coping Inventory (MCI): This questionnaire was designed by Endler and Parker [32]. The test includes 48 items and 3 subscales: problem-focused coping (16 items), emotion-focused coping (16 items),

and avoidant coping (16 items). This scale is scored on a 5-point Likert scale from 1 to 5. The minimum and maximum scores on this scale are 48 and 240, respectively. The reliability of this test was established by Endler and Parker (1990) through Cronbach's alpha coefficient for the three coping styles, ranging from 0.82 to 0.92. The reliability coefficient of the scale was obtained by Endler and Parker [32] for problem-focused, emotion-focused, and avoidant coping styles as 0.92, 0.82, and 0.85, respectively, for the male sample, and 0.90, 0.85, and 0.82 for the female sample. In the current study, the Cronbach's alpha coefficient for this questionnaire ranged between 0.79 and 0.84.

Patient Health Questionnaire (PHQ-15): This questionnaire was developed by Kroenke, Spitzer, and Williams [33] and is a valid and widely used tool for assessing the severity of somatic symptoms and somatization-related disorders. The questionnaire includes 15 items that assess symptoms such as stomach pain, back pain, pain in arms, legs, or joints, dizziness, heart palpitations, fatigue, shortness of breath, nausea, sleep problems, and chest pain. Each item is scored on a 3-point scale (not at all 0, slightly 1, and a lot 2) based on the level of interference caused by the symptoms over the past four weeks, with an overall score ranging from 0 to 30. The results are categorized into four severity levels: minimal, mild, moderate, and severe. This tool possesses high reliability (Cronbach's alpha 0.80 to 0.86) and strong validity, and it is utilized in research and clinical settings for screening somatic symptom disorders, monitoring their severity, and examining the overlap of somatic symptoms with psychological conditions such as anxiety and depression [33]. In the present study, the Cronbach's alpha coefficient for this questionnaire was reported as 0.83.

Cognitive–Behavioral Therapy Protocol: Before commencing this study, all requisite permits were obtained from the relevant organizations, and ethical guidelines were strictly observed. Subsequently, 36 male patients diagnosed with chronic pain and opioid dependence were recruited via convenience sampling from addiction treatment clinics in Tehran during the first half of 2025. Participants were randomly assigned (via lottery) to either the experimental or control group. After receiving general information and confirming their eligibility according to the inclusion/exclusion criteria, participants provided informed consent. CBT was administered over 8 weekly sessions (two 90-minute group sessions per week) at a psychological center affiliated with an addiction treatment clinic. CBT aims to induce cognitive and behavioral changes by addressing dysfunctional thoughts, facilitating shared experiences, employing cognitive restructuring, schema review, problem-solving skills training, and self-esteem exercises [34]. Table 1 details the content of these intervention sessions.

Table 1) Characteristics of CBT Training Sessions [34]

Session	Objective	Content
1	Introduction and Establishing Therapeutic Rapport	Member introductions, building rapport, agreeing on therapeutic goals, motivating patients for effective participation, and providing individual motivational feedback.
2	Understanding the Cognitive Change Map	Understanding addiction and its processes, principles of recovery, the cognitive change map, and identifying high-risk situations.
3	Controlling Antecedents	Understanding triggers, identifying and controlling antecedents and consequences of substance use, and coping with cravings for drugs.
4	Understanding Cognitive Errors	Identifying relapse triggers, recognizing cognitive errors that lead to relapse, strategies for managing negative thoughts, coping with warning signs, and reducing relapse.
5	Understanding Expectancy Thoughts	Identifying and controlling expectancy thoughts, understanding cognitive distortions, thought-stopping techniques, emotion-focused coping, and examining seemingly unrelated decisions.
6	Understanding Cognitive Salience Errors	Identifying cognitive errors causing cravings, causes of craving, enhancing skills in managing risky situations, and planning for emergencies.
7	Teaching Refusal Skills	Understanding positive and negative emotions, enhancing anxiety management skills, transforming unpleasant states into pleasant ones, and teaching refusal skills.
8	Conclusion	Reviewing past sessions, fundamental planning for sustained recovery, teaching self-criticism, and conducting a post-test.

The data were analyzed using both descriptive statistics (means and standard deviations) and inferential statistics (analysis of covariance), following verification of all necessary assumptions. SPSS version 27 was utilized for all calculations, with a significance threshold of 0.05.

Findings

The mean age for opioid-dependent patients in the experimental cohort was 31.45±6.74 years, while the control group's mean age was 30.87±7.31 years. A chi-square test was conducted to assess significant differences between the intervention and control groups in key demographic variables. The results showed no statistically significant differences between the groups in age, educational attainment, marital status, or duration of chronic pain (Table 2).

Table 2 presents the mean and standard deviation for pre-test and post-test scores concerning pain anxiety, coping strategies, and somatization disorder among patients with chronic opioid-dependent pain, comparing the experimental and control groups. To assess the normality of data distribution within these groups, the Shapiro-Wilk (S-W) test was conducted, and its results are also detailed in this table. Importantly, the S-W statistic was not statistically significant for any of the variables analyzed. This indicates that the data for all variables are normally distributed, a prerequisite for the subsequent analyses (as detailed in Table 3). The chi-square test result, with $p > 0.05$, further supports the conclusion that there is no significant difference.

Table 2) Demographic characteristics of the participants in the experimental and control groups

Variables	Levels	Experimental (n, %)	Control (n, %)	P-value
Education	Diploma	8 (44.4)	7 (38.8)	0.258
	Bachelor's	6 (33.4)	7 (38.8)	
	Master's	4 (22.2)	4 (22.2)	
Marital Status	Single	11 (61.1)	10 (55.5)	0.152
	Married	7 (38.8)	8 (44.4)	
Pain Duration (years)	2–3	4 (22.2)	5 (27.8)	0.197
	4–5	9 (50.0)	8 (44.4)	
	6 and above	5 (27.8)	5 (27.8)	

Table 2 presents the mean and standard deviation for pre-test and post-test scores concerning pain anxiety, coping strategies, and somatization disorder among patients with chronic opioid-dependent pain, comparing the experimental and control groups. To assess the normality of data distribution within these groups, the Shapiro-Wilk (S-W) test was conducted, and its results are also detailed in this table. Importantly, the S-W statistic was not statistically significant for any of the variables analyzed. This indicates that the data for all variables are normally distributed, a prerequisite for the subsequent analyses (as detailed in Table 3). The chi-square test result, with $p > 0.05$, further supports the conclusion that there is no significant difference.

To assess how CBT impacts pain anxiety, coping strategies, and somatization disorder in patients with chronic opioid-dependent pain, a MANCOVA was employed. Initial assumption checks confirmed the suitability of the MANCOVA model. Levene's test for homogeneity of variances indicated that the variances for pain anxiety ($F=1.97$, $p<0.05$), coping strategies ($F=2.06$, $p<0.05$), and somatization disorder ($F=1.71$, $p<0.05$) were equivalent across groups. Box's M test, evaluating the equality of covariance matrices, also showed no significant difference between the experimental and control groups (Box's $M = 15.11$, $F=11.34$, $p=0.84$), satisfying this assumption as well ($p<0.05$). Bartlett's chi-square test confirmed a significant relationship among pain, anxiety, coping strategies, and somatization disorder ($\chi^2=125.16$, $df=14)=16.125$, $p>0.05$). Finally, the homogeneity of regression coefficients, a crucial MANCOVA assumption, was assessed by examining interactions between the dependent variables and the independent variable at the pre-test and post-test stages. The non-significant interaction effects indicated consistent regression slopes across groups, further validating the use of MANCOVA. With all assumptions met, the

MANCOVA was conducted to compare group differences (Table 4).

Table 3) Descriptive Indices of the Study's Variables in Control and Intervention Groups

Variables		Groups	Mean	SD	S-W	P*
Pain Anxiety	Pre-test	Intervention	73.55	2.75	0.165	0.058
		Control	72.61	2.15	0.147	0.069
	Post-test	Intervention	70.11	2.36	0.121	0.075
		Control	74.44	2.11	0.103	0.069
Problem-Focused	Pre-test	Intervention	42.63	1.92	0.152	0.057
		Control	41.10	1.48	0.124	0.073
	Post-test	Intervention	45.88	1.39	0.163	0.052
		Control	40.96	1.55	0.101	0.084
Emotion-Focused	Pre-test	Intervention	48.52	2.36	0.128	0.069
		Control	47.70	2.48	0.130	0.071
	Post-test	Intervention	45.03	2.25	0.114	0.054
		Control	49.21	2.11	0.110	0.074
Avoidance	Pre-test	Intervention	46.65	1.65	0.162	0.091
		Control	47.23	1.59	0.142	0.064
	Post-test	Intervention	43.11	1.94	0.132	0.084
		Control	47.02	1.64	0.125	0.097
	Pre-test	Intervention	22.56	1.84	0.101	0.066
Somatization		Control	21.96	2.01	0.140	0.085
	Post-test	Intervention	19.24	1.92	0.126	0.071
		Control	23.35	1.75	0.108	0.057

* Shapiro-Wilk test

Table 4) The Results of Multivariate Analysis of Covariance on Mean Post-Test Scores

Test	Value	F	df	Error df	P	Effect Value
Pillai's Trace	0.696	11.459	25	5	<0.001	0.69
Wilks Lambda	0.304	11.459	25	5	<0.001	0.69
Hotelling Trace	2.292	11.459	25	5	<0.001	0.69
Roy's Largest Root	2.292	11.459	25	5	<0.001	0.69

Table 4 demonstrates that the independent variable has produced a measurable impact on the dependent measures. This means that the experimental and control groups differ significantly in at least one of the variables—pain, anxiety, coping strategies, or somatization disorder. The reported effect size indicates that 69% of the total variance between the two groups is attributable to the independent variable. In addition, the statistical power of the test is reported as 1, confirming that the sample size was sufficient to detect meaningful effects. To identify the specific domains in which these group differences occur, a one-way analysis of covariance was subsequently performed within the MANCOVA framework, and the results are presented in Table 5.

Table 5) Results of Univariate Analysis of Covariance on the Mean of Post-Test Scores of Dependent Variables in Intervention and Control Groups

Variables	SS	SS Error	DF	MS	MS Error	F	P	Effect Value
Pain Anxiety	81.987	49.607	1	81.987	1.71	47.93	<0.001	0.62
Problem-Focused	71.841	47.316	1	71.841	1.63	44.03	<0.001	0.60
Emotion-Focused	57.307	42.073	1	57.307	1.45	39.50	<0.001	0.58
Avoidance	99.165	47.545	1	99.165	1.63	60.49	<0.001	0.67
Somatization	69.183	46.797	1	69.183	1.64	41.98	<0.001	0.59

Based on the results presented in Table 5, the analysis shows that the F-values for pain anxiety (F= 47.93), problem-focused coping (F= 44.03), emotion-focused coping (F= 39.50), avoidant coping (F= 60.49), and somatization disorder (F= 41.98) all reach statistical significance at the 0.001 level. This pattern of findings demonstrates that the

groups differ meaningfully across all measured variables. Moreover, the effect size estimates reveal that the independent variable accounts for 62% of the variance in pain anxiety, 60% in problem-focused coping, 58% in emotion-focused coping, 67% in avoidant coping, and 59% in somatization symptoms. Taken together, these results suggest that CBT exerted a substantial therapeutic influence, enhancing patients' use of problem-focused coping strategies while concurrently leading to notable reductions in pain anxiety, reliance on emotion-focused and avoidant coping styles, and somatization disorder among individuals with chronic pain related to opioid dependence.

Discussion

The present study was conducted with the aim of determining the effectiveness of CBT on pain anxiety, coping strategies, and somatization disorder in patients with chronic pain dependent on opioid use. The obtained results indicated that CBT significantly reduced pain anxiety in patients with chronic pain dependent on opioid use. This finding is consistent with previous studies that have reported the positive effect of CBT on reducing anxiety and improving pain management [23, 26]. CBT, by focusing on identifying and changing negative thoughts related to pain, modifying maladaptive behaviors, and strengthening adaptive coping skills, helps patients alter their attitudes and reactions toward the experience of pain [27].

Pain-induced anxiety, especially in opioid-dependent patients, plays a significant role in the formation and continuation of the vicious cycle of opioid dependence [10]. The findings of this research suggest that CBT can help break this cycle by reducing anxiety and changing negative thought patterns. This not only affects the reduction of anxiety experience but can also lead to a decrease in the use of narcotic drugs and the risks associated with substance abuse [9]. The results also emphasize the importance of using non-pharmacological psychological therapies in managing chronic pain. While opioid narcotic drugs are widely prescribed for short-term pain relief, findings indicate that psychological interventions like CBT can have longer-term effectiveness and reduce the risks associated with opioid dependence [25].

Furthermore, the findings of this study showed that CBT significantly increased problem-focused coping strategies and decreased avoidant and ambidextrous coping strategies in patients with chronic pain dependent on opioid use. CBT improves patients' ability to cope with chronic pain by focusing on modifying maladaptive thought and behavioral patterns, leading to significant changes in their coping strategies [29]. Through the training of cognitive and behavioral skills, this therapy encourages patients to confront their pain actively and rationally, rather than avoiding the problem or using maladaptive behaviors [24]. First, CBT helps increase problem-focused coping strategies. Patients, using techniques such as cognitive restructuring, learn to identify and replace negative and irrational thoughts about pain with more rational thoughts. This change in attitude causes patients to seek practical solutions for pain management instead of focusing on feelings of helplessness. Additionally, problem-solving training helps patients analyze pain-related problems step by step and find adaptive solutions [26].

Furthermore, this therapy leads to a reduction in avoidant coping strategies. Many patients avoid specific situations or activities due to fear of increased pain or failure in confronting it [12]. CBT, through gradual exposure, reduces these fears and helps patients strengthen their ability to manage difficult situations [34]. Also, the relaxation and pain acceptance skills taught in this therapy reduce pain-related stress and anxiety, enabling patients to actively face their conditions instead of avoiding them. Finally, CBT also helps reduce ambidextrous coping strategies [18]. These behaviors, which result from confusion or fluctuation between acceptance and denial of the problem, are reduced by clarifying therapeutic goals and strengthening the sense of self-efficacy. Through repeated practice of adaptive coping skills, patients achieve greater ability in pain management and move away from contradictory behaviors [28].

Moreover, the results of this study indicated

the effectiveness of CBT in reducing somatization disorder in patients with chronic pain dependent on opioid use. Somatization disorder, which manifests as the experience of physical symptoms without a clear medical cause, is a common psychological problem in these patients. This disorder is usually a result of misprocessing emotions and stressors in the form of physical symptoms, which can increase the patient's pain intensity and disability [18]. CBT is effective in reducing this disorder through several key pathways. First, this therapy helps patients identify the connection between their negative emotions, stress, and physical symptoms. Through cognitive restructuring techniques, patients learn how to correct misconceptions and exaggerations about their physical symptoms [34]. For example, a patient might interpret mild physical symptoms as a sign of a serious illness, which increases anxiety and exacerbates symptoms. CBT stops the cycle of anxiety and somatization exacerbation by correcting these misinterpretations [23].

In the next stage, relaxation and stress management techniques help reduce physical and psychological tension [24]. These techniques reduce physical symptoms by decreasing sympathetic nervous system activation, which plays a role in somatization disorder and the experience of pain. By learning and practicing relaxation skills, patients can control their overall stress and anxiety levels, thereby reducing the severity of somatization [27]. CBT teaches patients to return to their daily and social activities instead of focusing on physical symptoms. This shift in focus not only reduces excessive attention to physical symptoms but also helps patients escape the cycle of avoidance and social isolation, improving their quality of life [26].

The limitations of this study include the use of convenience sampling and a focus on male patients attending addiction treatment clinics in Tehran, which limits the generalizability of the findings to other demographic groups. Furthermore, the lack of long-term follow-up of the effects of cognitive-behavioral intervention has prevented the investigation of the durability of the results over time. It is recommended that future research use more diverse samples, including women and other geographical areas, and also examine the long-term effects of the treatment. Additionally, the application of CBT in conjunction with other psychological or medical interventions could lead to a more comprehensive improvement in chronic pain management and a reduction in opioid dependence.

This research was carried out with the valuable cooperation and participation of addiction treatment centers in Tehran city and the individuals participating in the study. We hereby express our gratitude to all individuals who provided the necessary cooperation and support at various stages of this research, including sampling and implementation. We also extend our sincere thanks to the respected managers and staff of the addiction treatment clinics for providing the groundwork for this study. The authors of this article express their deepest appreciation to all participants in the research who patiently attended the sessions and provided the necessary information to the research team.

Conclusion

The present research demonstrated that CBT, as an evidence-based psychological intervention, can have significant effects on the management of chronic pain in opioid-dependent patients. This therapy not only reduced pain and anxiety but also played an important role in improving the quality of life for these patients by enhancing coping strategies and reducing somatization disorder. The results indicate that CBT can break the vicious cycle of opioid dependence and psychological problems arising from pain by changing thought patterns, strengthening adaptive behaviors, reducing sensitivity to physical symptoms, and improving stress management skills. This study emphasizes the importance of using non-pharmacological approaches, especially psychological interventions, in managing chronic pain. CBT enables patients to increase their ability to cope with the physical and psychological challenges caused by pain using learned skills and to reduce opioid dependence. Overall, the findings of this study indicate the high

potential of CBT in improving the mental and physical health of patients with chronic pain. It is suggested that, in the future, more research be conducted to investigate the effects of this therapy on various aspects of these patients' lives and to compare it with other therapeutic approaches, to provide more precise evidence for the use of this intervention in managing chronic pain.

Acknowledgment
We express our profound gratitude to all participants whose generous contributions of time and experience were instrumental in the successful execution of this study.

Authors' Contribution
F.BSH: Conceptualization, Methodology, Formal analysis, Investigation, Writing – Original Draft, Writing – Review & Editing
R.H: Data Curation, Software, Validation, Formal analysis, Investigation, Writing – Original Draft, Writing – Review & Editing
N.N: Supervision, Methodology, Investigation, Writing – Review & Editing
S.LA: Conceptualization, Methodology, Investigation, Resources, Writing – Review & Editing
L.T: Validation, Formal analysis, Writing – Review & Editing, Project administration, Funding acquisition

Conflict of Interest
The authors declare no conflicts of interest.

Ethical Approval
Compliance with ethical principles in manuscript preparation has been ensured through adherence to the guidelines of the National Ethics Committee and COPE regulations.

Funding
Noting

References
1. Dickerson DM, Mariano ER, Szokol JW, Harned M, Clark RM, Mueller JT, et al. Multiorganizational consensus to define guiding principles for perioperative pain management in patients with chronic pain, preoperative opioid tolerance, or substance use disorder. Reg Anesth Pain Med. 2024;49(10):716-24. DOI: 10.1136/rapm-2023-104435
2. Cheatle MD, Giordano NA, Themelis K, Tang NK. Suicidal thoughts and behaviors in patients with chronic pain, with and without co-occurring opioid use disorder. Pain Med. 2023;24(8):941-8. DOI: 10.1093/pm/pnad043
3. Bagheri Sheykhangafshe F, Farahani H, Dehghani M, Fathi-Ashtiani A. Examining Alexithymia and Post-Traumatic Stress Disorder across Different Levels of Chronic Pain in Patients. IJMPP. 2025;9(2):1026-33. Doi: 10.22034/IJMPP.9.2.1026
4. Nadeau SE, Wu JK, Lawhern RA. Opioids and chronic pain: an analytic review of the clinical evidence. Front Pain Res. 2021;2:721357. DOI: 10.3389/fpain.2021.721357
5. Hoffman KL, Milazzo F, Williams NT, Samples H, Olfson M, Diaz I, et al. Independent and joint contributions of physical disability and chronic pain to incident opioid use disorder and opioid overdose among Medicaid patients. Psychol Med. 2024;54(7):1419-30. https://doi.org/10.1017/S003329172300332X
6. De Sola H, Dueñas M, Salazar A, Ortega-Jiménez P, Failde I. Prevalence of therapeutic use of opioids in chronic non-cancer pain patients and associated factors: a systematic review and meta-analysis. Front Pharmacol. 2020;11:564412. doi: 10.3389/ fphar.2020.564412
7. Feingold D, Brill S, Goor-Aryeh I, Delayahu Y, Lev-Ran S. The association between severity of depression and prescription opioid misuse among chronic pain patients with and without anxiety: a cross-sectional study. J Affect Disord. 2018;235:293-302. DOI: 10.1016/j.jad.2018.04.058
8. Garland EL, Sullivan MD. It is Time to Integrate Chronic Pain and Addiction Services for Patients with Opioid Misuse: Garland and Sullivan. J Gen Intern Med. 2025;40(13):3217-9. https://doi.org/ 10.1007/ s11606-025-09664-7
9. Greenberg J, Penn T, Doorley JD, Grunberg VA, Duarte BA, Fishbein NS, et al. Pain catastrophizing, pain anxiety, and substance use among Black individuals with chronic pain who use opioids. Psychol Addict Behav. 2023;37(7):977. DOI: 10.1037/adb0000881
10. Langdon KJ, Dove K, Ramsey S. Comorbidity of opioid-related and anxiety-related symptoms and disorders. Curr Opin Psychol. 2019;30:17-23. DOI: 10.1016/j.copsyc.2018.12.020
11. Rogers AH, Garey L, Bakhshaie J, Viana AG, Ditre JW, Zvolensky MJ. Anxiety, depression, and opioid misuse among adults with chronic pain: the role of anxiety sensitivity. Clin J Pain. 2020;36(11):862-7. DOI: 10.1097/AJP.0000000000000870
12. Arshonsky J, Krawczyk N, Bunting AM, Frank D, Friedman SR, Bragg MA. Informal coping strategies among people who use opioids during COVID-19: thematic analysis of Reddit forums. JMIR Form Res. 2022;6(3):e32871. doi: 10.2196/32871
13. Kovač N, Ratković K, Watson P, Farahani H, Bagheri Sheykhangafshe F. Machine learning classification models for predicting chronic pain. Current Psychology. 2025;44(18):15409-22. https:// doi.org / 10.1007/s12144-025-08294-w
14. Cruden G, Karmali R. Opioid misuse as a coping

behavior for unmet mental health needs among US adults. Drug Alcohol Depend. 2021;225:108805. DOI: 10.1016/j.drugalcdep.2021.108805
15. Messina BG, Worley MJ. Effects of craving on opioid use are attenuated after pain coping counseling in adults with chronic pain and prescription opioid addiction. J Consult Clin Psychol. 2019;87(10):918. doi: 10.1037/ccp0000399
16. Dev R, Kim YJ, Reddy A, Hui D, Tanco K, Liu D, et al. Association between tobacco use, pain expression, and coping strategies among patients with advanced cancer. Cancer. 2019;125(1):153-60. DOI: 10.1002/cncr.31783
17. Kadi M, Bourion-Bédès S, Bisch M, Baumann C. A structural validation of the brief COPE scale among outpatients with alcohol and opioid use disorders. Int J Environ Res Public Health. 2023;20(3):2695. doi: 10.3390/ijerph20032695
18. Masood R, Mandalia K, Moverman MA, Puzzitiello RN, Pagani NR, Menendez ME, et al. Patients with functional somatic syndromes—Fibromyalgia, irritable bowel syndrome, chronic headaches, and chronic low back pain—have lower outcomes and higher opioid usage and cost after shoulder and elbow surgery. Arthroscopy. 2023;39(6):1529-38. DOI: 10.1016/j.arthro.2022.12.028
19. Van Rijswijk SM, van Beek MHCT, Schoof GM, Schene AH, Steegers M, Schellekens AF. Iatrogenic opioid use disorder, chronic pain and psychiatric comorbidity: A systematic review. Gen Hosp Psychiatry. 2019;59:37-50. DOI: 10.1016/j.genhosppsych.2019.04.008
20. Lee SJ, Koussa M, Gelberg L, Heinzerling K, Young SD. Somatization, mental health and pain catastrophizing factors associated with risk of opioid misuse among patients with chronic non-cancer pain. J Subst Use. 2020;25(4):357-62. https://doi.org/10.1080/14659891.2019.1704079
21. LaVigne TW, Laake LM, Ibeziako P. Somatic symptom and related disorders in pediatric patients: Associations with parent psychiatric and substance use histories. Clin Child Psychol Psychiatry. 2020;25(4):932-44. https://doi.org/10.1177/1359104520931579
22. Bjørnestad ED, Vederhus JK, Clausen T. Change in self-reported somatic symptoms among patients in opioid maintenance treatment from baseline to 1-year follow-up. BMC Psychiatry. 2024;24(1):149. https://doi.org/10.1186/s12888-024-05590-w
23. Pielech M, Lunde CE, Becker SJ, Vowles KE, Sieberg CB. Comorbid chronic pain and opioid misuse in youth: Knowns, unknowns, and implications for behavioral treatment. Am Psychol. 2020;75(6):811. doi: 10.1037/amp0000655
24. Sheykhangafshe FB, Haghighat Bayan N, Baheri M, Savabi Niri V, Esrafilian F. The Efficacy of Cognitive Behavioral Therapy on Sense of Coherence, Social Support, and Spiritual Well-being in Students with Post-Traumatic Stress Disorder. Int J Humanit. 2024;31(4):70-91. Doi: 10.48311/eijh.31.4.70
25. Gilpin HR, Keyes A, Stahl DR, Greig R, McCracken LM. Predictors of treatment outcome in contextual cognitive and behavioral therapies for chronic pain: a systematic review. J Pain. 2017;18(10):1153-64. DOI: 10.1016/j.jpain.2017.04.003
26. DeBar L, Mayhew M, Benes L, Bonifay A, Deyo RA, Elder CR, et al. A primary care-based cognitive behavioral therapy intervention for long-term opioid users with chronic pain: a randomized pragmatic trial. Ann Intern Med. 2022;175(1):46-55. DOI: 10.7326/M21-1436
27. Ehde DM, Alschuler KN, Day MA, Ciol MA, Kaylor ML, Altman JK, et al. Mindfulness-based cognitive therapy and cognitive behavioral therapy for chronic pain in multiple sclerosis: a randomized controlled trial protocol. Trials. 2019;20:1-12. https://doi.org/10.1186/s13063-019-3761-1
28. Barry DT, Beitel M, Cutter CJ, Fiellin DA, Kerns RD, Moore BA, et al. An evaluation of the feasibility, acceptability, and preliminary efficacy of cognitive-behavioral therapy for opioid use disorder and chronic pain. Drug Alcohol Depend. 2019;194:460-7. DOI: 10.1016/j.drugalcdep.2018.10.015
29. Barrett D, Brintz CE, Zaski AM, Edlund MJ. Dialectical pain management: feasibility of a hybrid third-wave cognitive behavioral therapy approach for adults receiving opioids for chronic pain. Pain Med. 2021;22(5):1080-94. doi: 10.1093/pm/pnaa361
30. Haile ZT. Power analysis and exploratory research. Journal of Human Lactation. 2023;39(4):579-83. https://doi.org/10.1177/08903344231195625
31. McCracken LM, Zayfert C, Gross RT. The Pain Anxiety Symptoms Scale: development and validation of a scale to measure fear of pain. Pain. 1992;50(1):67-73. DOI: 10.1016/0304-3959(92)90113-P
32. Endler NS, Parker JD. Multidimensional assessment of coping: a critical evaluation. J Pers Soc Psychol. 1990;58(5):844. DOI: 10.1037//0022-3514.58.5.844
33. Kroenke K, Spitzer RL, Williams JB. The PHQ-15: validity of a new measure for evaluating the severity of somatic symptoms. Psychosom Med. 2002;64(2):258-66. DOI: 10.1097/00006842-200203000-00008
34. Knapp P, Beck AT. Cognitive therapy: foundations, conceptual models, applications and research. Brazilian Journal of Psychiatry. 2008;30:54-64. DOI: 10.1590/s1516-44462008000600002