

The Effectiveness of Cognitive Behavioral Therapy (CBT) in Reducing Addiction Severity and Craving and Improving Emotional Regulation in Individuals with Substance Use Disorder: A Quasi-Experimental Study

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ABSTRACT

The present study aimed to examine the effectiveness of cognitive behavioral therapy in reducing addiction severity and substance craving and improving emotional regulation among individuals with substance use disorder. This study was conducted using a quasi-experimental design with a pretest–posttest structure and a control group. The statistical population included individuals with substance use disorder who referred to addiction treatment centers in Tehran in 2025. Using convenience sampling, 40 eligible participants were selected and randomly assigned to an experimental group and a control group, with 20 participants in each group. The experimental group received cognitive behavioral therapy in 10 sessions of 90 minutes, while the control group received no psychological intervention during the study period. Data were collected using the Addiction Severity Index, the Substance Craving Questionnaire, and the Difficulties in Emotion Regulation Scale. Data were analyzed using multivariate analysis of covariance. The results of ANCOVA showed that, after controlling for pretest scores, there was a statistically significant difference between the experimental and control groups in addiction severity, $F(1, 37) = 54.36, p < 0.001$, partial $\eta^2 = 0.595$, substance craving, $F(1, 37) = 72.22, p < 0.001$, partial $\eta^2 = 0.661$, and emotional regulation difficulties, $F(1, 37) = 63.12, p < 0.001$, partial $\eta^2 = 0.630$. These findings indicated that CBT significantly reduced addiction severity and substance craving and improved emotional regulation in the experimental group compared with the control group. The findings suggest that cognitive behavioral therapy can be considered an effective psychological intervention for individuals with substance use disorder. By targeting maladaptive thoughts, craving-related beliefs, emotional triggers, and ineffective coping patterns, CBT may help reduce addiction-related problems and strengthen emotional regulation capacity. Therefore, integrating CBT into addiction treatment programs may improve treatment outcomes and support relapse prevention.

Keywords: Cognitive Behavioral Therapy; Addiction Severity; Substance Craving; Emotional Regulation; Substance Use Disorder.

1. Introduction

Substance use disorder is one of the most persistent and multidimensional mental health challenges, affecting not only the biological and psychological functioning of individuals but also their interpersonal relationships, occupational stability, family systems, and broader social adaptation. Although addiction has often been approached through pharmacological and detoxification-based models, clinical evidence increasingly indicates that substance use disorder cannot be adequately understood or treated solely as a pattern of physiological dependence. Rather, it involves a complex interaction among cognitive distortions, emotional dysregulation, craving, behavioral reinforcement, interpersonal stress, avoidance patterns, and impaired coping skills. This multidimensional nature explains why many individuals experience repeated relapse even after completing detoxification or medical treatment. In this regard, addiction severity is not limited to frequency or quantity of substance use; it also reflects the extent to which substance-related behaviors disrupt emotional, cognitive, social, legal, occupational, and psychological domains of functioning. Early cognitive-behavioral approaches emphasized that maladaptive beliefs, conditioned cues, automatic thoughts, and inadequate coping strategies contribute substantially to the maintenance of substance use, making psychological intervention an essential component of effective treatment (Carroll & Kiluk, 2017; Magill & Ray, 2009; McHugh et al., 2010).

One of the central constructs in addiction research is craving, which has been described as a powerful motivational state that increases the probability of substance-seeking behavior and relapse. Craving is not merely a simple desire to use substances; it is a psychologically and physiologically activated state that may be triggered by internal cues, such as negative affect, stress, anxiety, intrusive thoughts, or emotional discomfort, as well as external cues, including people, places, objects, or situations previously associated with substance use. Theoretical models of addiction have placed craving at the core of relapse processes because it links prior substance-related learning with current behavioral impulses and future substance use. When individuals lack effective strategies for managing craving, they may interpret urges as uncontrollable and respond through impulsive use, avoidance, or emotional escape. Therefore, reducing craving is a major treatment target in substance use interventions, especially for individuals whose relapse episodes are closely

connected to emotional distress and cue-induced urges (Skinner & Aubin, 2010; Smout et al., 2010; Tull et al., 2018).

Emotion regulation is another key construct in understanding the development, maintenance, and treatment of substance use disorder. Emotion regulation refers to the processes through which individuals monitor, evaluate, modulate, and respond to emotional experiences in ways that support adaptive functioning. Effective emotion regulation allows individuals to tolerate distress, delay impulsive responses, reinterpret emotionally activating situations, and select behaviors that are consistent with long-term goals. In contrast, emotion dysregulation involves difficulty identifying emotions, limited access to adaptive regulation strategies, poor impulse control under distress, nonacceptance of negative emotions, and inability to maintain goal-directed behavior when emotionally aroused. Contemporary psychological models increasingly consider emotion regulation a transdiagnostic mechanism underlying multiple forms of psychopathology, including anxiety, depression, trauma-related problems, high-risk behaviors, and substance use disorder (Aldao et al., 2016; Gross, 2015; Manesh, 2026). From this perspective, substance use may function as a maladaptive emotion regulation strategy, particularly when individuals use substances to reduce distress, suppress painful affect, escape intrusive thoughts, or temporarily control emotional instability.

The relationship between emotion dysregulation and substance use disorder has received growing empirical support. Individuals with substance use problems frequently report difficulty tolerating negative affect, limited emotional awareness, poor impulse control during distress, and reliance on avoidant coping strategies. These difficulties may intensify vulnerability to craving because negative emotions can activate substance-related memories and expectations of relief. In patients recovering from opioid use disorder, craving has been linked to distress tolerance, experiential avoidance, and emotion dysregulation, suggesting that emotional processes are central to the early recovery period (Fazeli Rad et al., 2024). Systematic review and meta-analytic evidence also indicates that people with substance use disorders show significant problems in emotion regulation, supporting the view that emotional dysfunction is not a secondary or peripheral issue but a core feature of addiction vulnerability and relapse risk (Stellern et al., 2023). Accordingly, interventions that directly or indirectly improve emotion regulation may reduce both craving and addiction severity by increasing the individual's capacity to

manage internal discomfort without returning to substance use.

The importance of emotion regulation in addiction treatment is further supported by studies showing that regulation strategies can reduce craving and improve behavioral control. Experimental evidence suggests that brief emotion regulation strategies can decrease alcohol craving, and this effect may be mediated by reductions in state emotion regulation difficulties (Chang et al., 2024). Similarly, interventions based on mindfulness and relapse prevention principles have shown promise in enhancing emotion regulation and reducing craving among individuals with alcohol dependence, indicating that the ability to observe and tolerate internal experiences without immediate behavioral reaction is clinically meaningful in addiction recovery (Riya et al., 2024). Research on emotion regulation group therapy has also demonstrated beneficial effects on craving and emotional problems among patients with substance use disorders, suggesting that treatment programs focusing on emotional awareness, acceptance, cognitive reappraisal, and adaptive coping can reduce relapse-related vulnerability (Zargar et al., 2019). These findings support the assumption that craving and addiction severity are not isolated outcomes but are closely intertwined with broader emotional regulation processes.

Cognitive behavioral therapy is one of the most widely studied and empirically supported psychological treatments for substance use disorder. CBT is based on the assumption that substance use is maintained by learned behavioral patterns, maladaptive cognitions, distorted expectations about substance effects, and insufficient coping skills in high-risk situations. In CBT, individuals are helped to identify the antecedents and consequences of substance use, recognize automatic thoughts and cognitive distortions, challenge beliefs that justify or normalize use, develop alternative coping responses, and practice strategies for preventing relapse. The efficacy of CBT has been supported across multiple psychological disorders, and meta-analytic reviews have emphasized its broad clinical utility as a structured, skill-oriented, and evidence-based intervention (Hofmann et al., 2012). In the field of addiction, CBT has been described as a core psychosocial treatment for alcohol and drug use disorders because it directly targets the cognitive and behavioral mechanisms that maintain substance use (Carroll & Kiluk, 2017; McHugh et al., 2010).

The effectiveness of CBT for substance use disorder has also been supported by outcome research and meta-analytic evidence. A meta-analysis of cognitive-behavioral treatment

for adult alcohol and illicit drug users showed that CBT is associated with meaningful improvements in substance use outcomes, highlighting its value for reducing maladaptive consumption patterns and relapse-related behaviors (Magill & Ray, 2009). Clinical reviews have emphasized that CBT contributes to recovery by strengthening functional analysis skills, coping with craving, refusing substance offers, enhancing problem-solving, and modifying distorted beliefs about the perceived benefits of substance use (McHugh et al., 2010). In addition, cognitive-behavioral interventions have been presented as adaptable treatments that can be delivered individually, in groups, or through technology-supported formats, making them useful across diverse clinical contexts (Carroll & Kiluk, 2017; Kiluk, 2019). These characteristics are particularly important for individuals with substance use disorder because treatment adherence, accessibility, relapse prevention, and skill generalization are major clinical concerns.

The mechanisms through which CBT reduces addiction severity and craving can be explained through several interrelated pathways. First, CBT increases awareness of high-risk situations and helps individuals recognize the chain of thoughts, emotions, cues, and behaviors that precede substance use. Second, it challenges dysfunctional beliefs such as “I cannot tolerate this feeling,” “using once will not matter,” or “substance use is the only way to calm down.” Third, CBT teaches coping strategies that provide alternatives to substance use, including cognitive restructuring, urge surfing, problem-solving, behavioral activation, refusal skills, and relapse prevention planning. Fourth, CBT can indirectly improve emotion regulation by helping individuals reinterpret emotional events, tolerate distress, and engage in goal-directed behavior despite emotional discomfort. This is consistent with broader research showing that emotion regulation strategies derived from process-based models can produce meaningful changes in emotional responses (Webb et al., 2012). Recent meta-analytic work also suggests that cognitive control and emotion regulation are closely connected, indicating that interventions targeting cognitive processes may influence emotional regulation capacities (Schulze et al., 2026).

Although CBT was originally developed around cognitive and behavioral principles, its relevance to emotion regulation has become increasingly clear. Cognitive restructuring, one of the central components of CBT, is conceptually related to reappraisal because it changes the interpretation of emotionally activating events. Behavioral techniques can reduce avoidance and increase adaptive

engagement with life activities, thereby weakening the cycle of distress and substance use. Skills training can also improve impulse control and help individuals delay immediate responses to craving. Studies in related clinical populations have shown that cognitive-behavioral interventions can reduce difficulties in emotion regulation, intolerance of uncertainty, and maladaptive thought processes, supporting the potential of CBT to improve emotional functioning beyond symptom reduction (Nedaei et al., 2025). Imagery-based cognitive therapy has also been used to reduce emotional dysregulation and mood instability, suggesting that cognitive therapeutic methods may be particularly useful when emotional experiences are vivid, intrusive, and difficult to control (Paulet & Weiner, 2025). These findings reinforce the theoretical expectation that CBT may be effective not only in reducing substance-related symptoms but also in improving the emotional processes that contribute to relapse risk.

Other psychosocial interventions have also demonstrated the clinical importance of targeting emotion regulation and coping in addictive and high-risk behaviors. For example, dialectical behavior therapy skills training has been shown to have therapeutic value through emotion regulation and coping strategies among individuals with alcohol use disorder and concurrent substance use problems (Wilks et al., 2019). Mindfulness-based interventions have similarly emphasized awareness, acceptance, and nonreactivity as pathways for reducing craving and preventing relapse (Riya et al., 2024). In adolescents, mindfulness therapy has improved emotion regulation, cognitive self-awareness, and tendencies toward high-risk behaviors, suggesting that strengthening regulatory capacity can protect against maladaptive behavioral patterns across developmental stages (Sharei et al., 2025). While these approaches differ from CBT in their theoretical foundations and techniques, they converge on a common clinical principle: individuals are less likely to engage in harmful or addictive behaviors when they can understand, tolerate, and regulate internal emotional states. CBT is therefore well positioned within this broader therapeutic landscape because it combines cognitive change, behavioral skill development, and relapse prevention in a structured intervention model.

In substance use disorder, emotional triggers often interact with craving in a recursive pattern. A negative emotional state may activate craving; craving may increase anxiety, shame, or perceived loss of control; and these emotional reactions may further intensify the urge to use substances. This cycle is especially problematic when

individuals interpret craving as dangerous, intolerable, or impossible to resist. CBT seeks to interrupt this cycle by changing the meaning attributed to craving and by teaching practical responses that reduce behavioral reactivity. Rather than viewing craving as a command that must be obeyed, participants learn to understand it as a temporary internal experience that can be monitored, challenged, and managed. This approach may reduce both the subjective intensity of craving and the probability that craving will lead to substance use. Research on trauma cue exposure among patients with substance use disorders also shows that emotion regulation strategy use is associated with negative affect, craving, and physiological stress responses, further supporting the need for interventions that address both emotional and craving-related mechanisms (Tull et al., 2018).

Despite the strong theoretical and empirical support for CBT, continued research is needed to examine its effectiveness in specific clinical contexts and populations, particularly in quasi-experimental designs conducted in treatment settings. Substance use disorder is influenced by social, cultural, emotional, and contextual factors, and intervention outcomes may vary depending on participants' treatment history, dominant substance type, severity of dependence, motivation for recovery, and access to psychosocial support. Moreover, many treatment programs focus primarily on detoxification or medication, while psychological dimensions such as craving management and emotion regulation may receive less systematic attention. Given that relapse is frequently associated with unmanaged craving and emotional distress, it is important to evaluate interventions that simultaneously target addiction severity, craving, and emotion regulation. CBT is especially relevant for this purpose because it provides structured techniques for identifying high-risk situations, modifying maladaptive beliefs, managing urges, and strengthening adaptive emotional and behavioral responses (Carroll & Kiluk, 2017; Kiluk, 2019).

Overall, the literature suggests that addiction severity, craving, and emotion regulation are deeply interconnected constructs in substance use disorder. Craving increases relapse vulnerability, emotion dysregulation weakens coping capacity, and addiction severity reflects the broader functional consequences of these processes. CBT offers a theoretically grounded and empirically supported intervention framework for addressing these mechanisms through cognitive restructuring, coping skills training, behavioral change, and relapse prevention. Evidence from

cognitive-behavioral treatment studies, emotion regulation research, mindfulness-based relapse prevention, DBT skills training, and clinical studies of emotion-focused interventions all supports the clinical value of targeting the cognitive and emotional mechanisms that maintain addictive behaviors (Aldao et al., 2016; Chang et al., 2024; Gross, 2015; Stellern et al., 2023; Webb et al., 2012; Zargar et al., 2019). Therefore, examining the effectiveness of CBT on addiction severity, craving, and emotion regulation can contribute to the development of more comprehensive psychological interventions for individuals with substance use disorder.

The aim of the present study was to examine the effectiveness of cognitive behavioral therapy in reducing addiction severity and substance craving and improving emotional regulation among individuals with substance use disorder.

2. Methods and Materials

2.1. Study Design and Participants

The present study was conducted using a quasi-experimental design with a pretest–posttest structure and a control group. The statistical population consisted of individuals with substance use disorder who referred to addiction treatment centers in Tehran during 2025. From this population, 40 eligible participants were selected through convenience sampling based on the inclusion and exclusion criteria and were then randomly assigned to two groups: an experimental group and a control group, with 20 participants in each group. The main inclusion criteria included diagnosis of substance use disorder, willingness to participate in the study, ability to attend therapy sessions regularly, and completion of the research questionnaires at both assessment stages. The exclusion criteria included absence from more than two therapy sessions, receiving another structured psychological intervention during the study period, and incomplete responses to the research instruments. Before the intervention, both groups completed the pretest measures, including addiction severity, substance craving, and emotional regulation. The experimental group received cognitive behavioral therapy, whereas the control group did not receive any psychological intervention during the study period. After completion of the intervention, both groups completed the posttest measures under similar conditions.

2.2. Measures

The Addiction Severity Index (ASI) was used to assess the severity of addiction among participants. This instrument is one of the most widely used clinical and research tools for evaluating the multidimensional consequences of substance use. It examines different domains related to addiction, including substance use pattern, medical status, employment and financial condition, legal problems, family and social relationships, and psychiatric status. In the present study, the ASI was used to determine the overall severity of addiction and related functional impairments before and after the intervention. Higher scores indicate greater addiction severity and more serious substance-related problems. Previous studies have reported acceptable reliability and validity for this instrument in clinical populations with substance use disorder.

The Cocaine Craving Questionnaire or Substance Craving Questionnaire (CCQ) was used to measure participants' craving for substance use. This questionnaire assesses the intensity, frequency, and psychological dimensions of craving, including desire to use substances, anticipation of positive outcomes, perceived loss of control, and difficulty resisting urges. In the present study, the CCQ was administered at the pretest and posttest stages to evaluate changes in craving following cognitive behavioral therapy. Higher scores indicate stronger craving and a higher tendency toward substance use. Previous research has confirmed the desirable psychometric properties of this questionnaire, including adequate internal consistency, construct validity, and applicability in substance use populations.

The Difficulties in Emotion Regulation Scale (DERS) was used to assess participants' emotional regulation difficulties. This scale evaluates several dimensions of emotion regulation, including nonacceptance of emotional responses, difficulty engaging in goal-directed behavior, impulse control difficulties, limited access to effective emotion regulation strategies, lack of emotional awareness, and lack of emotional clarity. In the present study, the DERS was used to examine whether cognitive behavioral therapy could improve participants' ability to understand, manage, and regulate emotional states. Higher scores on this scale indicate greater difficulty in emotional regulation, whereas lower scores after intervention reflect improvement in emotional regulation capacity. Previous studies have reported satisfactory reliability and validity for the DERS in both clinical and nonclinical samples.

2.3. Intervention

The intervention consisted of cognitive behavioral therapy delivered to the experimental group in 10 sessions, each lasting 90 minutes. The treatment protocol was designed based on the main principles of CBT for substance use disorder and focused on identifying dysfunctional thoughts, recognizing high-risk situations, modifying maladaptive beliefs related to substance use, strengthening coping skills, and preventing relapse. In the initial sessions, participants were introduced to the cognitive behavioral model of addiction and learned how thoughts, emotions, cravings, and behaviors interact in the cycle of substance use. Subsequent sessions focused on identifying automatic thoughts, cognitive distortions, emotional triggers, and environmental cues associated with craving and relapse. Participants were trained in cognitive restructuring, problem-solving, urge management, emotional regulation strategies, behavioral activation, refusal skills, and coping with negative affect. The final sessions emphasized relapse prevention, development of a personal coping plan, strengthening self-control, and reviewing skills learned during treatment. The control group did not receive any psychological intervention during the same period and only participated in the pretest and posttest assessments.

2.4. Data Analysis

Data were analyzed using descriptive and inferential statistical methods. In the descriptive section, mean and standard deviation were calculated for addiction severity, craving, and emotional regulation scores in the experimental and control groups at the pretest and posttest stages. Before conducting the main analysis, the assumptions of multivariate analysis of covariance were examined,

including normality of score distribution, homogeneity of variances, homogeneity of covariance matrices, linearity, and homogeneity of regression slopes. To determine the effectiveness of cognitive behavioral therapy, multivariate analysis of covariance was used by controlling the pretest scores of the dependent variables. This method made it possible to compare the posttest scores of the experimental and control groups while adjusting for baseline differences. The level of statistical significance was set at $p < 0.05$, and results with $p < 0.01$ were interpreted as highly significant. The analysis was conducted to determine whether CBT significantly reduced addiction severity and craving and improved emotional regulation among individuals with substance use disorder.

3. Findings and Results

The participants in the present study included 40 individuals with substance use disorder who were assigned to the experimental group and control group, with 20 participants in each group. The total sample consisted of 27 men and 13 women, and the mean age of the participants was 35.10 years with a standard deviation of 6.82. The age range of the participants was between 24 and 49 years. In terms of marital status, 22 participants were married and 18 were single or divorced. Regarding educational level, most participants had completed high school or university education. The mean duration of substance use was 6.45 years with a standard deviation of 2.71. Comparison of the demographic characteristics of the two groups indicated that the experimental and control groups were relatively similar in terms of age, gender distribution, marital status, educational level, and duration of substance use before the intervention.

Table 1

Descriptive Statistics of Addiction Severity, Craving, and Emotional Regulation Difficulties in the Experimental and Control Groups

Variable	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Addiction Severity	Experimental	42.35	6.41	28.70	5.82
Addiction Severity	Control	41.80	6.09	40.95	6.34
Substance Craving	Experimental	66.45	8.73	45.20	7.61
Substance Craving	Control	65.85	8.40	64.30	8.12
Emotional Regulation Difficulties	Experimental	105.70	11.85	81.35	10.26
Emotional Regulation Difficulties	Control	104.90	12.14	103.10	11.76

As shown in Table 1, the pretest mean scores of the experimental and control groups were close to each other in addiction severity, substance craving, and emotional

regulation difficulties, indicating relative similarity between the two groups before the intervention. However, after the implementation of cognitive behavioral therapy, the

experimental group showed a clear reduction in addiction severity and substance craving compared with the control group. The mean score of addiction severity in the experimental group decreased from 42.35 at pretest to 28.70 at posttest, whereas the control group showed only a slight change from 41.80 to 40.95. Similarly, the mean score of substance craving in the experimental group decreased from 66.45 to 45.20, while the control group remained almost

unchanged. In addition, the mean score of emotional regulation difficulties decreased from 105.70 to 81.35 in the experimental group, whereas the control group showed only a minor reduction. Since higher scores on the DERS indicate greater difficulty in emotional regulation, this reduction reflects an improvement in emotional regulation ability among participants who received CBT.

Table 2

Results of ANCOVA for the Effect of Cognitive Behavioral Therapy on Study Variables

Dependent Variable	Source	Sum of Squares	df	Mean Square	F	p	Partial Eta Squared
Addiction Severity	Group	1638.42	1	1638.42	54.36	<0.001	0.595
Addiction Severity	Error	1115.08	37	30.14			
Substance Craving	Group	3654.21	1	3654.21	72.22	<0.001	0.661
Substance Craving	Error	1872.35	37	50.60			
Emotional Regulation Difficulties	Group	5160.88	1	5160.88	63.12	<0.001	0.630
Emotional Regulation Difficulties	Error	3025.49	37	81.77			

The results of ANCOVA presented in Table 2 indicate that, after controlling for pretest scores, there was a statistically significant difference between the experimental and control groups in the posttest scores of all three dependent variables. The group effect was significant for addiction severity, $F(1, 37) = 54.36, p < 0.001$, partial $\eta^2 = 0.595$, showing that cognitive behavioral therapy significantly reduced addiction severity in the experimental group compared with the control group. The group effect was also significant for substance craving, $F(1, 37) = 72.22, p < 0.001$, partial $\eta^2 = 0.661$, indicating a significant reduction in craving among participants who received CBT. Moreover, the group effect for emotional regulation difficulties was significant, $F(1, 37) = 63.12, p < 0.001$, partial $\eta^2 = 0.630$, demonstrating that CBT significantly improved emotional regulation by reducing emotional regulation difficulties. Overall, these findings suggest that cognitive behavioral therapy was effective in reducing addiction severity and substance craving and improving emotional regulation among individuals with substance use disorder.

4. Discussion

The present study aimed to examine the effectiveness of cognitive behavioral therapy in reducing addiction severity and substance craving and improving emotional regulation among individuals with substance use disorder. The findings showed that, after controlling for pretest scores, participants who received CBT demonstrated significantly lower posttest

scores in addiction severity and craving compared with the control group. In addition, the experimental group showed a significant reduction in emotional regulation difficulties, indicating improvement in the ability to identify, tolerate, and manage emotional states. These findings suggest that CBT was effective not only in reducing substance-related symptoms but also in strengthening psychological capacities that are closely associated with relapse prevention and recovery maintenance. The significant ANCOVA results for addiction severity, craving, and emotional regulation difficulties indicate that the observed changes were not merely due to baseline differences between groups but can be attributed to the therapeutic intervention.

The first finding of the study indicated that CBT significantly reduced addiction severity in individuals with substance use disorder. This finding is consistent with the theoretical foundations and empirical evidence supporting cognitive behavioral interventions for alcohol and drug use disorders. CBT conceptualizes substance use as a learned behavioral pattern maintained by maladaptive beliefs, automatic thoughts, reinforcement processes, environmental cues, and insufficient coping skills. Through functional analysis, cognitive restructuring, behavioral rehearsal, and relapse prevention strategies, individuals learn to recognize the antecedents of substance use and replace maladaptive responses with more adaptive coping behaviors. This mechanism is consistent with prior evidence showing that CBT is an effective psychosocial intervention for substance use disorders and can reduce problematic patterns of alcohol

and illicit drug use (Carroll & Kiluk, 2017; Magill & Ray, 2009; McHugh et al., 2010). The present result therefore supports the view that substance use treatment should not be limited to detoxification or pharmacological management but should also include structured psychological interventions targeting cognitive and behavioral mechanisms.

The reduction in addiction severity can also be explained by the skill-based nature of CBT. Individuals with substance use disorder often experience difficulty managing high-risk situations, interpersonal stress, negative affect, and substance-related cues. In such conditions, substance use may function as a habitual coping response. CBT directly targets this pattern by helping clients identify triggers, challenge permissive beliefs, increase awareness of consequences, and develop alternative behaviors. Previous studies have emphasized that CBT teaches patients how to manage craving, refuse substance offers, solve problems, and prevent relapse, all of which may reduce the overall severity of addiction-related impairment (Carroll & Kiluk, 2017; McHugh et al., 2010). The present finding is also aligned with research indicating that computerized forms of CBT for substance use disorders can produce therapeutic benefits, suggesting that the active mechanisms of CBT may involve structured learning, repeated practice, self-monitoring, and cognitive-behavioral skill acquisition (Kiluk, 2019). Therefore, the improvement observed in the experimental group may reflect the cumulative effect of repeated exposure to coping skills and cognitive restructuring during the ten-session protocol.

The second major finding showed that CBT significantly reduced substance craving. This result is clinically important because craving is one of the strongest relapse-related processes in substance use disorder. Craving has been conceptualized as a motivational and affective state that connects internal discomfort, environmental cues, substance-related memories, and behavioral urges. When individuals interpret craving as uncontrollable or unbearable, they are more likely to return to substance use as a means of immediate relief. The present finding is consistent with addiction theories that place craving at the center of relapse vulnerability and treatment planning (Skinner & Aubin, 2010). CBT may reduce craving by modifying the cognitive appraisal of urges, helping individuals view craving as a temporary internal experience rather than an irresistible command. In addition, CBT teaches practical strategies such as urge management, distraction, cognitive reframing, problem-solving, and

avoidance of high-risk cues, which can weaken the link between craving and substance use.

This finding is also supported by previous research showing that craving is closely related to emotional distress, experiential avoidance, and emotion dysregulation in people with substance use disorder. Fazeli Rad and colleagues reported that craving, distress tolerance, emotion dysregulation, and experiential avoidance are important factors among patients in early recovery from opioid use disorder, indicating that craving is not merely a biological urge but is embedded in broader emotional and cognitive processes (Fazeli Rad et al., 2024). Similarly, research on brief emotion regulation strategies has shown that reducing state difficulties in emotion regulation can decrease alcohol craving, suggesting that craving may decline when individuals become better able to regulate emotional activation (Chang et al., 2024). The present study is consistent with these findings because CBT addressed both cognitive and emotional components of craving. By teaching participants how to identify emotional triggers, challenge craving-related thoughts, and apply coping responses, the intervention likely reduced the intensity and behavioral impact of craving.

The reduction of craving in the present study is further aligned with studies showing that psychological interventions targeting regulation, awareness, and coping can decrease craving in substance-using populations. Mindfulness-based relapse prevention has been shown to enhance emotion regulation and reduce craving among individuals with alcohol dependence, demonstrating the importance of increasing awareness and reducing automatic reactions to urges (Riya et al., 2024). Emotion regulation group therapy has also been reported to reduce craving and emotional problems in patients with substance use disorders (Zargar et al., 2019). Although CBT differs from mindfulness-based and emotion-focused approaches in its theoretical emphasis, these interventions share a common therapeutic principle: craving becomes less dangerous when individuals can observe, reinterpret, tolerate, and respond to internal experiences more adaptively. The present findings suggest that CBT can achieve this goal through cognitive restructuring, behavioral coping, and relapse prevention planning.

The third finding showed that CBT significantly improved emotional regulation, as reflected in reduced emotional regulation difficulties in the experimental group. This result is theoretically meaningful because emotion dysregulation is increasingly recognized as a transdiagnostic

mechanism in psychopathology and a central factor in substance use disorder. Emotion regulation involves the ability to understand emotional experiences, modulate emotional intensity, control impulsive behavior during distress, and remain engaged in goal-directed behavior despite negative affect. According to Gross, emotion regulation includes multiple processes through which individuals influence the timing, intensity, expression, and experience of emotions (Gross, 2015). Aldao and colleagues also emphasized emotion regulation as a transdiagnostic factor that contributes to different psychological disorders (Aldao et al., 2016). From this perspective, substance use may emerge as a maladaptive attempt to regulate distressing emotional states, and improving emotion regulation may reduce reliance on substances as an emotion-management strategy.

The present finding is consistent with systematic review and meta-analytic evidence showing that individuals with substance use disorders experience significant problems in emotion regulation (Stellern et al., 2023). These difficulties may include impulsive responding under distress, emotional nonacceptance, lack of clarity, and limited access to effective regulation strategies. CBT may improve these domains by increasing emotional awareness, helping individuals identify the relationship between thoughts and emotions, and teaching strategies for cognitive reappraisal and behavioral self-control. Previous research has shown that emotion regulation strategies derived from the process model can effectively change emotional responses, which supports the idea that structured therapeutic training can improve emotional functioning (Webb et al., 2012). Moreover, recent meta-analytic evidence has highlighted the relationship between cognitive control and emotion regulation, suggesting that interventions targeting cognitive processes may strengthen the regulatory capacity needed to manage emotional reactions (Schulze et al., 2026). Therefore, the improvement in emotional regulation in the CBT group may be explained by the intervention's emphasis on cognitive monitoring, reinterpretation, impulse control, and planned behavioral responses.

This result also corresponds with studies showing that CBT and related cognitive interventions can reduce emotional dysregulation in clinical populations. For example, CBT has been found effective in reducing difficulties in emotional regulation, intolerance of uncertainty, and thought fusion among individuals with comorbid depression and anxiety (Nedaei et al., 2025). Imagery-based cognitive therapy has also been used to

reduce emotional dysregulation and mood instability, suggesting that cognitive therapeutic approaches may influence emotional processes by modifying the meaning and mental representation of distressing experiences (Paulet & Weiner, 2025). Although these studies were conducted in different clinical populations, they support the broader conclusion that cognitive-based interventions can improve emotional functioning. In the context of substance use disorder, this improvement is particularly important because emotional instability, negative affect, and poor distress tolerance often precede craving and relapse.

The findings are also consistent with evidence from interventions that focus explicitly on coping and emotional skills in substance-related disorders. Wilks and colleagues showed that emotion regulation and coping strategies played a therapeutic role during dialectical behavior therapy skills training for alcohol use disorder and concurrent substance use disorders (Wilks et al., 2019). Similarly, research on trauma cue exposure among patients with substance use disorders has shown that emotion regulation strategy use is associated with negative affect, craving, and cortisol reactivity, indicating that emotional regulation processes are closely tied to substance-related responses under stress (Tull et al., 2018). These findings support the present result by showing that improving emotional regulation may help individuals tolerate distress without engaging in substance use. CBT may produce similar effects by teaching participants to recognize emotional triggers, restructure catastrophic interpretations, delay impulsive reactions, and use adaptive coping responses.

The results of the present study may also be understood in relation to high-risk behaviors and self-regulation more broadly. Difficulties in cognitive emotion regulation have been associated with high-risk behaviors among young adults, highlighting the role of regulatory strategies in preventing maladaptive behavioral outcomes (Manesh, 2026). In addition, mindfulness therapy has been shown to improve emotion regulation and reduce the tendency toward high-risk behaviors in vulnerable adolescents (Sharei et al., 2025). These studies suggest that the ability to regulate emotions and thoughts is a protective factor across different populations and behavioral problems. In individuals with substance use disorder, this protective role may be especially pronounced because substance use is often maintained by immediate emotional relief, avoidance of distress, and impulsive responses to internal or external cues. Therefore, the improvement in emotional regulation observed in the

present study may have contributed directly and indirectly to reductions in both craving and addiction severity.

5. Conclusion

Overall, the findings of this study support the effectiveness of CBT as a comprehensive psychological intervention for individuals with substance use disorder. The intervention reduced addiction severity and craving while improving emotional regulation, which suggests that CBT may influence both the behavioral symptoms and underlying psychological mechanisms of addiction. These results are consistent with prior evidence showing the efficacy of CBT for substance use disorders (Carroll & Kiluk, 2017; Kiluk, 2019; Magill & Ray, 2009; McHugh et al., 2010), as well as research emphasizing the importance of emotion regulation in craving, relapse risk, and substance-related problems (Aldao et al., 2016; Chang et al., 2024; Gross, 2015; Stellern et al., 2023). The findings indicate that when individuals learn to identify high-risk situations, modify maladaptive thoughts, regulate emotional distress, and apply coping strategies, they become better equipped to resist craving and reduce substance-related impairment. Thus, CBT can be considered a valuable intervention for treatment programs that seek to move beyond symptom suppression toward skill development, relapse prevention, and emotional self-regulation.

The present study had several limitations that should be considered when interpreting the findings. First, the sample size was relatively small and included only 40 individuals with substance use disorder, which may limit the generalizability of the results to broader clinical populations. Second, the participants were selected through convenience sampling from addiction treatment centers in Tehran; therefore, the findings may not fully represent individuals receiving treatment in other cities, rural areas, private clinics, residential programs, or community-based rehabilitation settings. Third, the study used a quasi-experimental pretest–posttest design without long-term follow-up, making it impossible to determine whether the therapeutic effects of CBT were maintained over time. Fourth, the study relied on self-report instruments, which may be influenced by social desirability, recall bias, or participants' willingness to disclose substance-related problems. Finally, the study did not separately examine the effects of CBT according to type of substance, severity of dependence, psychiatric comorbidity, medication use, or previous treatment history.

Future studies are recommended to replicate this research with larger and more diverse samples to increase the generalizability of the findings. It would be useful to conduct randomized controlled trials with longer follow-up periods, such as three-month, six-month, and one-year assessments, to evaluate the stability of CBT effects on addiction severity, craving, and emotional regulation. Future research should also compare CBT with other psychological interventions, such as mindfulness-based relapse prevention, acceptance and commitment therapy, dialectical behavior therapy skills training, motivational interviewing, and emotion regulation therapy, to identify which interventions are most effective for specific groups of individuals with substance use disorder. In addition, future studies should examine mediating and moderating variables, such as distress tolerance, experiential avoidance, self-efficacy, impulsivity, social support, psychiatric comorbidity, and motivation for treatment. Researchers are also encouraged to investigate whether the effectiveness of CBT differs according to substance type, duration of use, relapse history, gender, age, and treatment setting.

Based on the findings of this study, addiction treatment centers are encouraged to integrate structured CBT programs into their routine treatment services. CBT can be used as a complementary intervention alongside medical treatment, detoxification, and relapse prevention services because it directly targets maladaptive thoughts, craving-related beliefs, emotional triggers, and ineffective coping patterns. Therapists working with individuals with substance use disorder should place particular emphasis on functional analysis of substance use, identification of high-risk situations, cognitive restructuring, craving management, refusal skills, emotional regulation training, and relapse prevention planning. It is also recommended that clinicians provide homework assignments and between-session practice to help clients transfer therapeutic skills to real-life situations. Treatment teams should consider training counselors and psychologists in CBT protocols for substance use disorder so that patients receive consistent, evidence-informed, and skill-based psychological support throughout the recovery process.

Authors' Contributions

Authors equally contributed to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

References

- Aldao, A., Gee, D. G., De Los Reyes, A., & Seager, I. (2016). Emotion regulation as a transdiagnostic factor. *Current opinion in psychology*, 3, 1-6. <https://doi.org/10.1016/j.copsyc.2015.09.004>
- Carroll, K. M., & Kiluk, B. D. (2017). Cognitive behavioral interventions for alcohol and drug use disorders. *American Journal of Psychiatry*, 174(10), 944-951. <https://doi.org/10.1176/appi.ajp.2017.17020239>
- Chang, Y. C., Rubey, R. L., & Ladd, B. O. (2024). Brief emotion regulation strategies to reduce alcohol craving: Mediating role of state difficulties in emotion regulation. *Behaviour Research and Therapy*, 177, 104527. <https://doi.org/10.1016/j.brat.2024.104527>
- Fazeli Rad, H., Noury Ghaesm Abadi, R., & Hasani, J. (2024). Craving, distress tolerance, emotion dysregulation, and experiential avoidance among patients in early recovery from opioid use disorder in residential programs. *Journal of Substance Use*, 29(3), 369-375. <https://doi.org/10.1080/14659891.2023.2167743>
- Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, 26(1), 1-26. <https://doi.org/10.1080/1047840X.2014.940781>
- Hofmann, S. G., Asnaani, A., Vonk, I. J. J., Sawyer, A. T., & Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive therapy and research*, 36(5), 427-440. <https://doi.org/10.1007/s10608-012-9476-1>
- Kiluk, B. D. (2019). Computerized cognitive behavioral therapy for substance use disorders: A summary of the evidence and potential mechanisms of behavior change. *Perspectives on Behavior Science*, 42(3), 465-478. <https://doi.org/10.1007/s40614-019-00205-2>
- Magill, M., & Ray, L. A. (2009). Cognitive-behavioral treatment with adult alcohol and illicit drug users: A meta-analysis of randomized controlled trials. *Journal of Studies on Alcohol and Drugs*, 70(4), 516-527. <https://doi.org/10.15288/jsad.2009.70.516>
- Manesh, S. E. (2026). Prediction of High-Risk Behaviors Based on Behavioral Brain Systems and Emotional Neglect with the Mediating Role of Cognitive Emotion Regulation Strategies among Young Adults in Tehran. *International Journal of Education and Cognitive Sciences*, 7(2), 1-14. <https://doi.org/10.61838/kman.ijecs.329>
- McHugh, R. K., Hearon, B. A., & Otto, M. W. (2010). Cognitive behavioral therapy for substance use disorders. *Psychiatric Clinics of North America*, 33(3), 511-525. <https://doi.org/10.1016/j.psc.2010.04.012>
- Nedaei, A., Ghamri, H., Sheykholeslami, A., & Sadri, E. (2025). The Effectiveness of "Cognitive-Behavioral Therapy" on the Difficulties of Emotional Regulation, Intolerance of Uncertainty and Thought Fusion in People Suffering From Comorbid Depression and Anxiety. *Journal of Health Promotion Management*, 13(5), 12-29. <https://jhpm.ir/article-1-1588-fa.html>
- Paulet, T., & Weiner, L. (2025). Imagery-based cognitive therapy to reduce emotional dysregulation and mood instability in bipolar disorder: a case-series study. *Behavioural and Cognitive Psychotherapy*, 53(1), 1-16. <https://doi.org/10.1017/S1352465824000420>
- Riya, Kumar, N., & Chandel, N. (2024). Enhancing emotion regulation and overcoming craving in alcohol dependence syndrome through mindfulness-based relapse prevention. *Indian Journal of Psychological Medicine*, 47(5). <https://doi.org/10.1177/02537176241246332>
- Schulze, K., Mueller, I., Holt, D. V., Putz, S., Barnow, S., & Pruessner, L. (2026). Rethinking the Link between Cognitive Control and Emotion Regulation: A Meta-Analytic Review. *Neuroscience & Biobehavioral Reviews*, 106708. <https://doi.org/10.1016/j.neubiorev.2026.106708>
- Sharei, A., Kasaei Esfahani, A., & Salmani, A. (2025). The Effect of Mindfulness Therapy on Emotion Regulation, Cognitive Self-Awareness, and Tendency to High-Risk Behaviors in Orphaned and Poorly Monitored Adolescents: A Quasi-Experimental Study. *Journal of Rafsanjan University of Medical Sciences*, 23(9), 812-827. <https://doi.org/10.61186/jrums.23.9.812>
- Skinner, M. D., & Aubin, H. J. (2010). Craving's place in addiction theory. *Addiction*, 105(4), 606-613. <https://doi.org/10.1111/j.1360-0443.2009.02873.x>
- Smout, M. F., Longo, M., Harrison, S., Minniti, R., Wickes, W., & White, J. M. (2010). Psychosocial treatment for methamphetamine use disorders: A preliminary randomized controlled trial of cognitive behavior therapy and Acceptance and Commitment Therapy. *Substance Abuse*, 31(2), 98-107. <https://doi.org/10.1080/08897071003641578>
- Stellern, J., Xiao, K. B., Grennell, E., Sanches, M., Gowin, J. L., & Sloan, M. E. (2023). Emotion regulation in substance use disorders: A systematic review and meta-analysis. *Addiction*, 118(1), 30-47. <https://doi.org/10.1111/add.16001>
- Tull, M. T., Berghoff, C. R., Wheeler, L. E., Cohen, R. T., & Gratz, K. L. (2018). PTSD symptom severity and emotion regulation strategy use during trauma cue exposure among patients with substance use disorders: Associations with negative affect, craving, and cortisol reactivity. *Behaviour Therapy*, 49(1), 57-70. <https://doi.org/10.1016/j.beth.2017.05.005>

- Webb, T. L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: A meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychological bulletin*, 138(4), 775-808. <https://doi.org/10.1037/a0027600>
- Wilks, C. R., Yin, Q., Ang, S. Y., Matsumiya, B., & Linehan, M. M. (2019). The therapeutic role of emotion regulation and coping strategies during a stand-alone DBT skills training program for alcohol use disorder and concurrent substance use disorders. *Addictive behaviors*, 98, 106035. <https://doi.org/10.1016/j.addbeh.2019.106035>
- Zargar, F., Bagheri, N., Tarrahi, M. J., & Salehi, M. (2019). Effectiveness of emotion regulation group therapy on craving, emotion problems, and marital satisfaction in patients with substance use disorders: A randomized clinical trial. *Iranian Journal of Psychiatry*, 14(4), 283-290. <https://doi.org/10.18502/ijps.v14i4.1978>