IJBMC
International Journal of Body, Mind and Culture

Volume 13, Issue 2, pp 222-229
DOI: 10.61838/ijbmc.v13i2.821

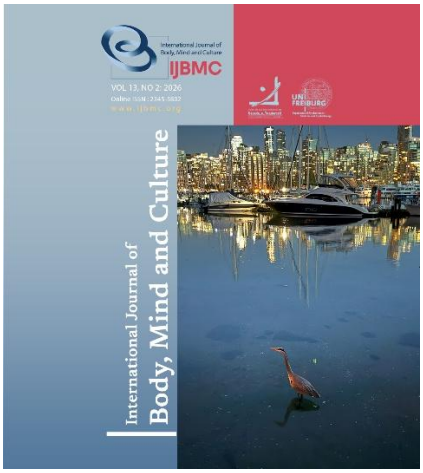
Article type:
Original Research

Comparative Effects of Intensive Short-Term Dynamic Psychotherapy and Narcotics Anonymous Participation on Craving Among Men with Opioid Use Disorders

Bita. Bavadi[1], Malek. Mirhashemi[2*], Mina. Mojtabaei[3]

1 Department of Clinical Psychology, Ro.c, Islamic Azad University, Roudehen, Iran.
2 Department of Psychology, Ro.c, Islamic Azad University, Roudehen, Iran.
3 Department of Psychology, Ro.c, Islamic Azad University, Roudehen, Iran.

Corresponding author email address:
mirhashemimalek@iau.ac.ir



Article history:

Received 11 Oct 2025
Revised 27 Dec 2025
Accepted 30 Jan 2026
Published online 01 Feb 2026

How to cite this article:
Bavadi, B., Mirhashemi, M., & Mojtabaei, M. (2026). Comparative Effects of Intensive Short-Term Dynamic Psychotherapy and Narcotics Anonymous Participation on Craving Among Men with Opioid Use Disorders. International Journal of Body, Mind and Culture, 13(2), 222-229.

ABSTRACT

Objective: This study compared the effectiveness of Intensive Short-Term Dynamic Psychotherapy and Narcotics Anonymous participation in reducing craving among men with opioid use disorders.

Methods and Materials: This quasi-experimental study used a pretest–posttest control-group design with a three-month follow-up. Participants were men with opioid use disorders referred to addiction treatment camps supervised by the Tehran Province Welfare Organization and Narcotics Anonymous groups in Tehran. Participants were assigned to an Intensive Short-Term Dynamic Psychotherapy group, a Narcotics Anonymous group, or a control group. Craving was assessed using the Momentary Craving Questionnaire at pretest, posttest, and follow-up. Data were analyzed using mixed repeated-measures ANOVA and Bonferroni post hoc tests in SPSS.

Findings: Craving scores showed little change in the control group from pretest to follow-up. In contrast, craving decreased from 74.40 ± 16.21 to 60.33 ± 15.80 at posttest and 60.13 ± 15.70 at follow-up in the Narcotics Anonymous group, and from 73.27 ± 13.45 to 66.93 ± 19.34 at posttest and 67.87 ± 19.78 at follow-up in the Intensive Short-Term Dynamic Psychotherapy group. The time × group interaction was significant ($F = 4.55$, $p = 0.01$, $\eta^2 = 0.19$), and the between-group effect was also significant ($F = 4.95$, $p = 0.01$, $\eta^2 = 0.21$).

Conclusion: Both Intensive Short-Term Dynamic Psychotherapy and Narcotics Anonymous participation significantly reduced craving compared with no intervention. These approaches may be useful components of addiction treatment programs for men with opioid use disorders.

Keywords: Substance-Related Disorders, Opioid-Related Disorders, Craving, Psychotherapy, Psychodynamic.

Introduction

Substance addiction is one of the most complex and multidimensional mental–social health challenges in the contemporary world, with far-reaching consequences across biological, psychological, familial, and social domains. As a chronic and relapsing condition, addiction not only affects physical health but also disrupts interpersonal relationships, contributes to family breakdown, impairs occupational and academic functioning, and threatens the human capital of societies (Association, 2024). Addiction is typically accompanied by psychological and physiological dependence on one or more substances, and an intense, compulsive, and uncontrollable desire to use the substance weakens an individual's willpower and decision-making capacity (Frederickson et al., 2018). With repeated use, a cycle of tolerance, dependence, withdrawal, and relapse emerges, leaving destructive physical, psychological, and social consequences.

From a psychological perspective, a key variable in the development, maintenance, and relapse of addiction is craving. Studies indicate that individuals with substance use problems often struggle with emotion regulation and the management of internal anxiety, and they use substances as a strategy to obtain temporary relief from painful emotions or to avoid anxiety (Khantzian, 2015). In this view, substance use functions as a maladaptive form of self-medication that, rather than resolving the underlying issue, sustains a cycle of avoidance and dependence (Khantzian, 2015). Craving—defined in DSM-5-TR as a strong and uncontrollable urge to use—plays a decisive role in the initiation, continuation, and relapse of substance use (Frederickson et al., 2018). The interaction between anxiety and craving activates maladaptive psychological defenses, reduces self-regulatory capacity, and increases the risk of relapse.

From a psychodynamic standpoint, addiction is not merely a behavioral disorder but a manifestation of disturbances in personality structure, attachment, and emotion regulation. Classical psychodynamic theories conceptualized addiction as a pursuit of pleasure, a form of self-punishment, or unconscious self-destructiveness (Flores, 2007). Contemporary psychodynamic approaches—such as post-Freudian perspectives and object relations theory—emphasize deficits in early relationships, failures in internalizing supportive objects, and weaknesses in the ego's capacity for self-care (Khantzian, 2015). Within this framework, substance use represents an attempt to reconstruct a lost bond with soothing objects and to compensate for an impaired internalization of belonging and psychological safety. In addition, defense mechanisms play a fundamental role in individuals with substance dependence. Research suggests that people with substance use disorders rely more heavily on primitive and less mature defenses such as denial, projection, splitting, and repression (Moss, 2009). Although these defenses may reduce anxiety in the short term, they can, over time, perpetuate emotional immaturity, avoidance of reality, and self-destructive behaviors. The analysis and restructuring of maladaptive defenses is therefore considered a central focus of modern psychodynamic treatments for addiction.

In this context, Intensive Short-Term Dynamic Psychotherapy (ISTDP) has been introduced as a relatively new and effective approach for treating emotion-related problems and addiction (Frederickson et al., 2018). By focusing on the direct experience of repressed emotions—such as anger, guilt, shame, and fear—and by increasing awareness of defenses and resistance, ISTDP helps patients regulate anxiety, relinquish maladaptive defenses, and enhance self-regulation. Empirical findings suggest that short-term psychodynamic interventions can significantly reduce anxiety, improve ego functioning, and decrease the urge to use substances (Frederickson et al., 2018).

Alongside individual-focused approaches, self-help groups such as Narcotics Anonymous Mousavi & Naji (2022) occupy a key place in community-based addiction treatment (Kelly & Myers, 2007). NA's Twelve-Step program emphasizes mutual support, coping with craving, spiritual growth, and personal responsibility. By increasing a sense of belonging, self-esteem, and connectedness, it can play an important role in reducing anxiety and craving (Moss, 2009). Participation in NA meetings provides a nonjudgmental, peer-supportive environment that enables individuals to share common experiences, reduce feelings of isolation, and strengthen hope for recovery (Kelly & Myers, 2007).

Despite the effectiveness of both approaches—psychodynamic therapy and Narcotics Anonymous—

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when considered independently, relatively few studies have directly compared their effectiveness in reducing craving. ISTDP primarily targets intrapsychic, emotional, and structural change, whereas NA is grounded in social, spiritual, and supportive transformation. The shortage of comparative research in this area represents a significant gap in the addiction treatment literature. Accordingly, the present study was designed to compare the effectiveness of Intensive Short-Term Dynamic Psychotherapy and Narcotics Anonymous in reducing craving among individuals with substance dependence. The findings may provide an evidence-based foundation for selecting and optimally integrating therapeutic interventions in addiction treatment and may contribute to improving both individual and collective mental health.

Methods and Materials

Study Design

The study employed an experimental design using a pretest–posttest control-group format with a three-month follow-up. The statistical population consisted of individuals who misuse substances and who, during the winter of 2023, presented (via convenience access) to addiction treatment camps supervised by the Tehran Province Welfare Organization and to Narcotics Anonymous Mousavi & Naji (2022) groups in Tehran.

Based on Cohen (1988) for experimental research with three groups (two experimental groups and one control group), assuming a significance level of 0.05 and an effect size of 0.50, selecting 15 participants per group yields a statistical power of 0.84 (Sarmad et al., 2004). Accordingly, 45 men residing in camps supervised by the Tehran Province Welfare Organization were selected through non-random, voluntary sampling. Individuals whose scores on the craving measure differed by one standard deviation from the mean were identified, and from these, 45 participants were retained in the sample. Participants were then randomly assigned to two experimental groups and one control group (15 per group).

Inclusion criteria were: age 20–45 years; duration of substance use more than one year; use of opioid substances (e.g., opium, morphine, heroin, codeine, methadone, tramadol, etc.); male gender; completion of informed consent; diagnosis of substance misuse by a psychiatrist; and having at least minimal physical and cognitive capacity. Exclusion criteria included: a history of psychotherapy and participation in NA/self-help groups; history of traumatic brain injury or seizures; presence of psychiatric disorder symptoms; and a history of physical illnesses.

Instruments

Momentary Craving Questionnaire: This questionnaire, centered on craving as a motivational state, was developed by ha Franken (2015) and assesses craving in the present moment. It consists of 14 items encompassing three factors: Factor 1 (Desire and intention to use substances): Items 1, 2, 12, 14; Factor 2 (Desire to use and negative reinforcement): the belief that substance use relieves life problems and simultaneously produces pleasure; Items 4, 5, 7, 9, 11; and Factor 3 (Pleasure and intensity of loss of control): Items 3, 6, 8, 10, 13. Items are scored on a Likert-type scale. Notably, these three components are highly intercorrelated. For amphetamine misuse, the corresponding coefficients were 0.78, 0.65, and 0.81. In another study by Mousavi & Naji (2022), Cronbach's alpha for internal consistency was reported as 0.96 for crack, 0.90 for methamphetamines, and 0.94 for heroin.

2) NA Session Protocol

A summary of the sessions based on Davanloo (2001) Intensive Short-Term Dynamic Psychotherapy protocol is presented in Table 1. This intervention is implemented in 15 sessions, each lasting 90 minutes.

Table 1

Sessions based on Davanloo's ISTDP protocol (summary)

Session	Treatment Content
1	Explanation of session rules and initial interview using the psychodynamic sequence ("trial therapy") for preliminary assessment of the individual's problems.
2	If the participant responds adequately to the trial therapy, follow-up is conducted. From session 2 onward, based on movement among the triangles of conflict/person and the individual's 11 defense types, appropriate interventions are implemented; this continues through the final sessions depending on the defenses used.

3	Work with tactical defenses: "closed-ended language" (speaking indirectly), global/cover terms. Effective interventions: questioning, challenging, and challenging the defense.
4	Examination of specialized terms used by participants; tactical defenses of indirect speech and pathological/probable thoughts. Effective intervention: challenging defenses and fostering doubt regarding the defense.
5	Rumination and rationalization. Effective interventions (in order): clarification, requesting a definitive response, fostering doubt about the defense, challenging the defense, and blocking the defense.
6	Intellectualization, overgeneralization, and excessive generalizing. Effective interventions: clarification, blocking, challenge and specification, and challenging the defense.
7	Diversion tactics and forgetting. Effective interventions: blocking the defense, fostering doubt about the defense, and challenging the defense.
8	Denial and disavowal. Effective interventions: clarification, fostering doubt about the defense, and challenging the defense. Preparation for termination / focus on loss feelings related to termination / termination and administration of the posttest.

Procedure

After obtaining legal approvals from the Tehran Province Welfare Organization and coordinating with NA self-help groups, eligible individuals with substance misuse were selected as the target population. Following an explanation of the study objectives, the treatment protocols (Intensive Short-Term Dynamic Psychotherapy and the NA Twelve-Step intervention) and the procedure for completing the Momentary Craving questionnaire were introduced, and informed consent was obtained. Throughout the study, ethical principles were observed, including confidentiality of information, the right to withdraw without consequences, and protection of participants' rights. Participants were randomly allocated to three groups (two experimental groups and one control group).

At the pretest stage, the anxiety questionnaire and the Momentary Craving questionnaire were administered to all three groups. In Experimental Group 1, Intensive Short-Term Dynamic Psychotherapy (ISTDP) was delivered in 30 sessions, conducted as three 60-minute sessions per week. In Experimental Group 2, the NA Twelve-Step program was delivered as three 90-minute sessions, held in the addiction camp and the self-help group in western Tehran Province. The control group received no specific treatment program until the end of the intervention phase.

Ethical Considerations

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki for research involving human participants. Prior to participation, all eligible individuals were informed about the objectives of the study, the intervention procedures, the assessment stages, and their right to withdraw from the study at any time without any negative consequences. Written informed consent was obtained from all participants before data collection. Participants were assured that their information would remain confidential and would be used only for research purposes. To protect participants' rights and ensure fairness, individuals in the control group were offered the intervention after completion of the posttest and follow-up assessments. Participation in the study was entirely voluntary, and all procedures were implemented with respect for participants' dignity, privacy, and psychological well-being.

Data Analysis

Data were analyzed using IBM SPSS Statistics. Descriptive statistics, including mean and standard deviation, were used to summarize participants' demographic characteristics and craving scores across the pretest, posttest, and three-month follow-up stages. Prior to inferential analysis, the assumptions of normality, homogeneity of variances, equality of covariance matrices, and sphericity were examined using the Kolmogorov–Smirnov test, Levene's test, Box's M test, and Mauchly's test, respectively. Since the assumption of sphericity was violated, the Greenhouse–Geisser correction was applied. To examine changes in craving over time and compare the effectiveness of Intensive Short-Term Dynamic Psychotherapy, Narcotics Anonymous participation, and the control condition, a mixed repeated-measures analysis of variance was conducted. Bonferroni post hoc tests were used to compare pairwise differences between groups at each measurement point. The level of statistical significance was set at $p < .05$.

Findings and Results

Descriptive results for demographic information indicated that 48 participants were included (16 in the NA sessions group, 16 in the short-term psychodynamic therapy group, and 16 in the control group). The mean age and standard deviation were 15.43 ± 0.05 years for the NA sessions group, 35.63 ± 3.12 years for the short-term psychodynamic therapy group, and 35.47 ± 2.04

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years for the control group. All participants were male. Descriptive statistics for the study variables are presented below. Means were used as indices of central tendency and standard deviations as indices of dispersion.

Table 2

Mean and standard deviation of craving and its components at pretest, posttest, and follow-up

Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Follow-up Mean	Follow-up SD
Control	73.13	14.93	74.47	14.72	74.87	14.28
NA sessions	74.40	16.21	60.33	15.80	60.13	15.70
Short-term psychodynamic therapy	73.27	13.45	66.93	19.34	67.87	19.78

As shown in Table 2, craving scores for the three groups (control, NA sessions, and short-term psychodynamic therapy) are presented across the three measurement points (pretest, posttest, and follow-up). In the control group, the mean total craving score showed little change at posttest and follow-up compared with pretest. In contrast, both intervention groups (NA sessions and short-term psychodynamic therapy) demonstrated a substantial reduction in craving at posttest and follow-up relative to pretest. The significance of these changes was evaluated using a mixed (split-plot) ANOVA.

Prior to conducting the mixed ANOVA, the Kolmogorov–Smirnov test was used to assess normality of craving scores across the three measurement occasions ($p > 0.05$). The Levene's test was used to evaluate homogeneity of variances for craving at pretest ($F = 0.186$, $p = 0.20$), posttest ($F = 1.105$, $p = 0.123$), and follow-up ($F = 1.33$, $p = 0.263$). In addition, Box's M test was used to examine equality of covariance matrices for the craving variable (Box's $M = 29.73$, $F = 1.04$, $p = 0.32$). The results of these tests were not significant, indicating that the relevant assumptions were met. The Mauchly's test of sphericity indicated that the sphericity assumption for craving was violated; therefore, the Greenhouse–Geisser correction was applied when interpreting the results.

Table 3

Mixed ANOVA results for within-group and between-group effects

Variable	Effects	Source	Sum of Squares	df	Mean Square	F	p	Effect size
Craving	Within-subjects	Time	292.98	1.33	220.53	0.46	0.56	0.01
		Time × Group	5812.20	2.66	2187.50	4.55	0.01	0.19
		Error	24283.19	50.48	481.02	—	—	—
	Between-subjects	Group	2255.22	2.00	1127.61	4.95	0.01	0.21
		Error	8656.41	38.002	227.80	—	—	—

As shown in Table 3, there was a significant Time × Group interaction for craving, indicating that changes over time differed across the groups. There was also a significant main effect of Group, suggesting differences among the NA sessions group, the short-term psychodynamic therapy group, and the control group in craving scores. To examine pairwise group differences at each measurement point, Bonferroni post hoc tests were conducted. The results are presented in Table 4

Table 4

Bonferroni post hoc comparisons for group differences in craving

Time	Comparison	Mean Difference	Test Statistic	p
Pretest	NA sessions vs. Control	−1.27	1.235	0.231
	Short-term psychodynamic vs. Control	1.13	1.36	0.37
Posttest	NA sessions vs. Control	−5.86	9.06	0.01
	Short-term psychodynamic vs. Control	−12.60	10.13	0.01
Follow-up	NA sessions vs. Control	−15.26	13.92	0.01

Short-term psychodynamic vs. Control	−3.74	5.79	0.02

As shown in Table 4, there were significant differences between the NA sessions and control groups and between the short-term psychodynamic therapy and control groups in craving ($p < 0.05$). In addition, the results indicated a significant difference between the NA sessions and short-term psychodynamic therapy interventions at the 0.05 level. Specifically, as reported in Table 5, the mean difference between NA sessions and short-term psychodynamic therapy for craving became significant at posttest and follow-up, indicating that short-term psychodynamic therapy was more effective than NA sessions in reducing craving ($p < 0.05$).

Discussion and Conclusion

The results indicated a difference between the effectiveness of Intensive Short-Term Dynamic Psychotherapy (ISTDP) and the Twelve-Step approach Mousavi & Naji (2022) across all components of substance craving. Specifically, compared with the Twelve-Step approach, ISTDP produced a greater reduction in the craving components of desire and intention, loss of control, and urge to use. Accordingly, it was concluded that ISTDP is a more effective method than the Twelve-Step approach for reducing craving among individuals who misuse substances. Because no closely comparable prior study was found that directly examined this specific comparison, interpretation is necessarily based primarily on the present findings.

With respect to the effect of participation in NA meetings on substance craving, the current results can be considered consistent with earlier findings e.g., Fathi et al. (2020); Galanter (2006, 2014); Galanter et al. (2024); Gossop et al. (2008); Kelly (2003); Salehi & Tabatabaeinejad (2022); Sayette (2016). Review of these interventions suggests that participation in Narcotics Anonymous self-help groups has been widely used for individuals with substance use problems, and most of the cited studies report convergent outcomes. In this regard, Kelly (2003) examined the impact of attending self-help groups on addiction treatment outcomes and, based on a review of randomized controlled interventions indexed in PubMed and PsycINFO up to early 2025, reported that participation in NA-type self-help groups can contribute to reducing craving and maintaining abstinence. Similarly, Salehi & Tabatabaeinejad (2022) evaluated the effectiveness of Twelve-Step training in NA on social acceptance, psychological well-being, quality of life, and craving among individuals dependent on substances, and found that Twelve-Step training significantly increased social acceptance, improved psychological well-being, enhanced quality of life, and had a significant effect on reducing craving.

To explain why ISTDP may have yielded stronger effects than the Twelve-Step approach in the present study, it can be argued that ISTDP interventions can directly target defenses, emotion, and anxiety. For example, an individual who denies craving may be using denial as a defense to escape the anxiety and unpleasant affect associated with craving and addiction. Such affects may include sadness, guilt, or anger. When the individual accepts the presence of craving, they may then experience sadness about opportunities lost in the struggle with craving, anger toward the substance for evoking craving, and guilt related to self-harm that may activate a sense of responsibility. Experiencing mixed emotions and making meaning of them can, in itself, facilitate emotion regulation and reduce the need to regulate affect through substance use. In other words, psychodynamic therapy can reduce the individual's reliance on an external source (i.e., substances) for emotion regulation—an unhealthy dependency—by helping the person develop more autonomous, independent, and flexible capacities for experiencing and regulating affect.

Moreover, the activation of previously repressed emotions within the therapeutic relationship can help patients identify destructive emotion-regulation patterns that have been internalized through culture, family, and parental figures. Through therapist interventions that focus on transference dynamics, these patterns can be repaired and modified, enabling the patient to build a more adaptive personal style of emotion regulation rather than repeating dysfunctional family patterns. In this sense, intensive short-term dynamic psychotherapy may foster a level of self-knowledge and intrapsychic change that is not fully addressed in Twelve-Step sessions (Kafee Hernashki et al., 2021). For instance, anxiety regulation, work on narcissistic and immature defenses, examination of self-punitive processes rooted in guilt, emotion-regulation

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training, and emotion identification may collectively compensate for limitations of the Twelve-Step approach. Additionally, increased self-awareness through making unconscious processes conscious may create a form of psychological reward that can surpass the hedonic pull of substance use. When individuals become aware of self-destructive patterns, interrupting these patterns can generate vitality and well-being, thereby markedly reducing craving and transforming it into motivation for self-understanding and insight. Therefore, it is reasonable to conclude that ISTDP was more effective than the Twelve-Step approach in reducing craving components in the present sample.

Data from two participants were excluded from analysis due to outlier values; Because the study took place during the COVID-19 pandemic, some participants attended psychotherapy sessions with heightened concern about infection, which could have influenced participation and responses to the questionnaires; Type of substance used may function as a moderating variable in the relationship between the intervention and outcomes, but it was not controlled in this study. Future studies are recommended to include both genders (mixed-gender samples); Future research should consider type of substance used as a moderating variable; It is recommended to replicate this study at the national level; For individuals with alcohol misuse, it is recommended to consider ISTDP as a treatment approach; and addiction treatment settings (e.g., outpatient clinics and residential camps) are encouraged to incorporate this ISTDP protocol within their treatment processes.

Acknowledgments

The authors express their gratitude and appreciation to all participants.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Ethical considerations in this study were that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contribute to this study.

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