

The Effect of Self-Healing Training on Prediction of Substance Use Relapse prediction in Patients Receiving Maintenance Treatment: A Quasi-Experimental Interventional Study

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Abstract

Background: Substance use disorder is a major mental health challenge, and relapse prediction after abstinence is the primary cause of failure in maintenance treatment. Self-healing training is an emerging approach that focuses on modifying maladaptive beliefs, improving emotion regulation, and strengthening self-care behaviors.

Aim: This study aimed to examine the effect of self-healing training on relapse prediction among patients undergoing maintenance treatment for substance use disorder.

Method: This quasi-experimental study employed a pretest–posttest design with a one-month follow-up and a control group. The study was conducted in 2025 among 35 patients (17 in the intervention group and 18 in the control group) attending Shush Clinic in Tehran. Participants were selected using simple random sampling. The intervention group received 14 sessions of group-based self-healing training. Data were collected using a demographic questionnaire and the Relapse prediction Scale (RPS), which includes two subscales: craving intensity and likelihood of substance use in high-risk situations. Data were analyzed using SPSS version 26 and repeated-measures analysis of covariance, controlling for age and number of hospitalizations.

Results: The time × group interaction effect was significant for the total RPS score and its subscales ($p < 0.001$). Mean scores in the intervention group significantly decreased from 258.35 at pretest to 95.29 at posttest and 86.76 at follow-up, with sustained effects, while no significant changes were observed in the control group.

Implications for Practice: Self-healing training is an effective complementary intervention for reducing relapse prediction in patients receiving maintenance treatment and can be integrated into routine clinical practice.

Keywords: Maintenance Treatment, Relapse Prediction, Self-Healing, Substance Use Disorder

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Introduction

Substance use disorder (SUD) is a major and growing global mental health challenge, associated with extensive individual, familial, and social consequences (1). This disorder typically manifests across three stages: substance use, abstinence, and relapse prediction. While physical withdrawal can often be managed through pharmacological treatments and detoxification, the principal challenge in treatment remains relapse prediction. Relapse prediction is a complex and multidimensional phenomenon that frequently occurs after detoxification and repeated attempts at abstinence and is recognized as one of the leading causes of treatment failure, as well as a source of frustration and despair for patients and their families (2).

According to reports from the United Nations, the prevalence of substance use and substance use disorders has increased substantially over the past decade. In 2021, approximately 296 million people worldwide used substances, and 39.5 million individuals were affected by substance use disorders, representing a 45% increase compared to the previous decade (3). Similarly, the 2020 report of the United Nations Office on Drugs and Crime (UNODC) indicated a 30% rise in the prevalence of substance use disorders since 2009. This upward trend is also evident in developing countries, including Iran, where nearly six million individuals are estimated to be affected by substance use disorders (4). The high prevalence of this condition underscores the urgent need to identify factors contributing to relapse prediction and to develop effective relapse prediction prevention strategies. Research suggests that relapse prediction in substance use disorder results from the interaction of individual, social, and economic factors. Individual factors include psychological characteristics and physical problems such as craving, sensation-seeking, pleasure-seeking behaviors, physical pain and illness, recreational lifestyles (5), referential thinking associated with personality disorders (6), depression, aggression (7), psychological stress, and feelings of loneliness (8), with depression exerting the strongest influence (6). Social factors encompass the loss of social support resources, diminished social relationships, family conflicts, stigmatization and labeling due to a history of substance use, social rejection, familial disputes (5, 9), and the presence of other individuals with substance use disorders within the family or among relatives (10). Economic factors include poverty and financial crises, residence in neighborhoods with easy access to substances, unemployment, lack of productive engagement, and low socioeconomic status (11).

The complexity of treating substance use disorder is further compounded by the fact that pharmacological maintenance treatments are costly and time-consuming and do not guarantee relapse prediction prevention. Moreover, treatment approaches that lack psychosocial interventions are often insufficient in achieving sustained recovery (12). In recent decades, various psychotherapeutic approaches—such as supportive group therapy, cognitive-behavioral therapy, interpersonal therapy, mindfulness-based interventions, and happiness-based programs—have been introduced as complementary treatments for substance use disorder (13). Among these approaches, self-healing has gained increasing attention as a novel method for managing psychological and physical stress (14). Self-healing is conceptualized as an innate human capacity that enables individuals to restore wholeness of mind and body and to actively engage in maintaining their health and independence (15). Initial studies on this approach emerged in 2001, and in 2016, Lloyd and Johnson formally introduced it in the United States under the term Healing Codes (16). Self-healing emphasizes the identification and modification of destructive memories, maladaptive beliefs, hidden fears, unhealthy personality traits, and lifestyle patterns (17), encompassing physical, psychological, social, relational, and spiritual-ethical dimensions (18). Through training in techniques such as memory retrieval, self-relaxation, and the reduction of harmful behaviors, this approach enhances individuals' active role in mitigating the effects of physiological and situational stressors (19). Lloyd (2018) argues that harmful behaviors, distorted beliefs, and negative emotions such as anxiety and fear, anger, hopelessness and impatience, rejection and violence, excessive control, and restriction constitute the roots of many psychological problems and destructive memories encountered throughout life (20). Given that many of these factors are also implicated in relapse prediction, and considering that patients undergoing maintenance treatment are at heightened risk of relapse prediction due to the chronic nature of the disorder and persistent psychosocial stressors, examining interventions that can improve the psychological mechanisms underlying relapse prediction is of particular importance. Given the high prevalence of relapse prediction in substance use disorder and the prominent role of psychological factors in its occurrence, investigating effective complementary interventions targeting relapse

prediction is essential. Although no study to date has directly examined the effect of self-healing training on relapse prediction in substance use disorder, existing evidence supports its role in enhancing psychological well-being and self-care (18). As self-healing training focuses on strengthening self-care capacity, it is expected to improve individuals' ability to manage relapse prediction-related factors and reduce the likelihood of substance use recurrence. Therefore, the present study aimed to investigate the effect of self-healing training on relapse prediction among patients undergoing maintenance treatment, with the goal of contributing to the development of complementary interventions and enhancing the role of psychiatric nurses in promoting sustained recovery.

Methods

This interventional quasi-experimental study was conducted with a pretest–posttest design, a one-month follow-up, and two groups (intervention and control) to examine the effect of self-healing training on relapse prediction among patients with substance use disorder receiving maintenance treatment. The intervention phase comprised 14 weekly sessions (approximately 14 weeks in total). Posttest assessment was administered immediately after completion of the final (14th) session, and the one-month follow-up assessment was conducted one month after posttest. The study population comprised all 230 patients attending the Shoush Clinic, affiliated with the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran, in 2025. Recruitment was completed by July 22, 2025. The intervention (14 weekly sessions) was implemented from July 29, 2025, to October 28, 2025. Posttest assessments were conducted immediately after completion of the final (14th) session, and the one-month follow-up assessment was conducted on November 27, 2025. The flow of participants through the study is presented in Figure 1.

The required sample size was calculated using the formula for comparing the means of two independent groups (21), based on data from a previous similar study (13). Assuming mean scores of 263.94 and 251.81 with a standard deviation of 10.7 for the two groups, a type I error of 0.05 ($Z_{1-\alpha/2} = 1.96$), and a power of 80% ($Z_{1-\beta} = 0.84$), the minimum required sample size was estimated at 14 participants per group. Using the standard formula for sample size adjustment for attrition ($n_{\text{adjusted}} = n / (1 - \text{attrition rate})$), and accounting for an anticipated 30% attrition rate during follow-up ($n_{\text{adjusted}} = 14 / 0.70 \approx 20$), the final sample size was set at 20 participants per group (40 in total). Eligible participants were selected from the study population using simple random sampling based on a random-number table. After confirming eligibility and obtaining written informed consent, the 40 selected participants were randomly allocated in a 1:1 ratio to either the intervention group ($n = 20$) or the control group ($n = 20$) using simple randomization based on a random number sequence. The randomization sequence was generated and implemented by a researcher who was independent of, and concealed from, the individual responsible for participant enrollment and eligibility assessment, ensuring allocation concealment. Inclusion criteria were: age between 45 and 64 years, diagnosis of substance use disorder, enrollment in maintenance treatment, minimum literacy (ability to read and write), absence of psychotic disorders, and willingness to participate in the study. Exclusion criteria included absence from more than two self-healing sessions, lack of cooperation during the intervention, failure to complete assigned tasks, and withdrawal of consent.

Data were collected at three time points pretest, posttest, and one-month follow-up using a demographic and clinical characteristics questionnaire, which included age, sex, marital status, education, occupation, income, type of substance, substance use history, number of previous hospitalizations, history of quit attempts, date of last abstinence, interval between last abstinence and relapse prediction, and type and dosage of prescribed maintenance medication; and the Relapse prediction Scale (RPS), developed by Wright (1993), containing 45 items measuring craving intensity and the likelihood of substance use in high-risk situations on a 5-point Likert scale (0 = none to 4 = very high). Total scores range from 0 to 180, with higher scores indicating higher relapse prediction probability: 0–60 = low, 61–90 = moderate, >90 = high. The Persian version has demonstrated high reliability, with Cronbach's alpha coefficients of 0.94 and 0.97 for the subscales (6). The content validity of the Persian version of the RPS was confirmed by Mehrabi et al. (22) through review by a panel of three experts a psychometrics specialist, a clinical psychologist, and an addiction psychiatrist who evaluated the consistency of the scale's items and content with its intended objectives.

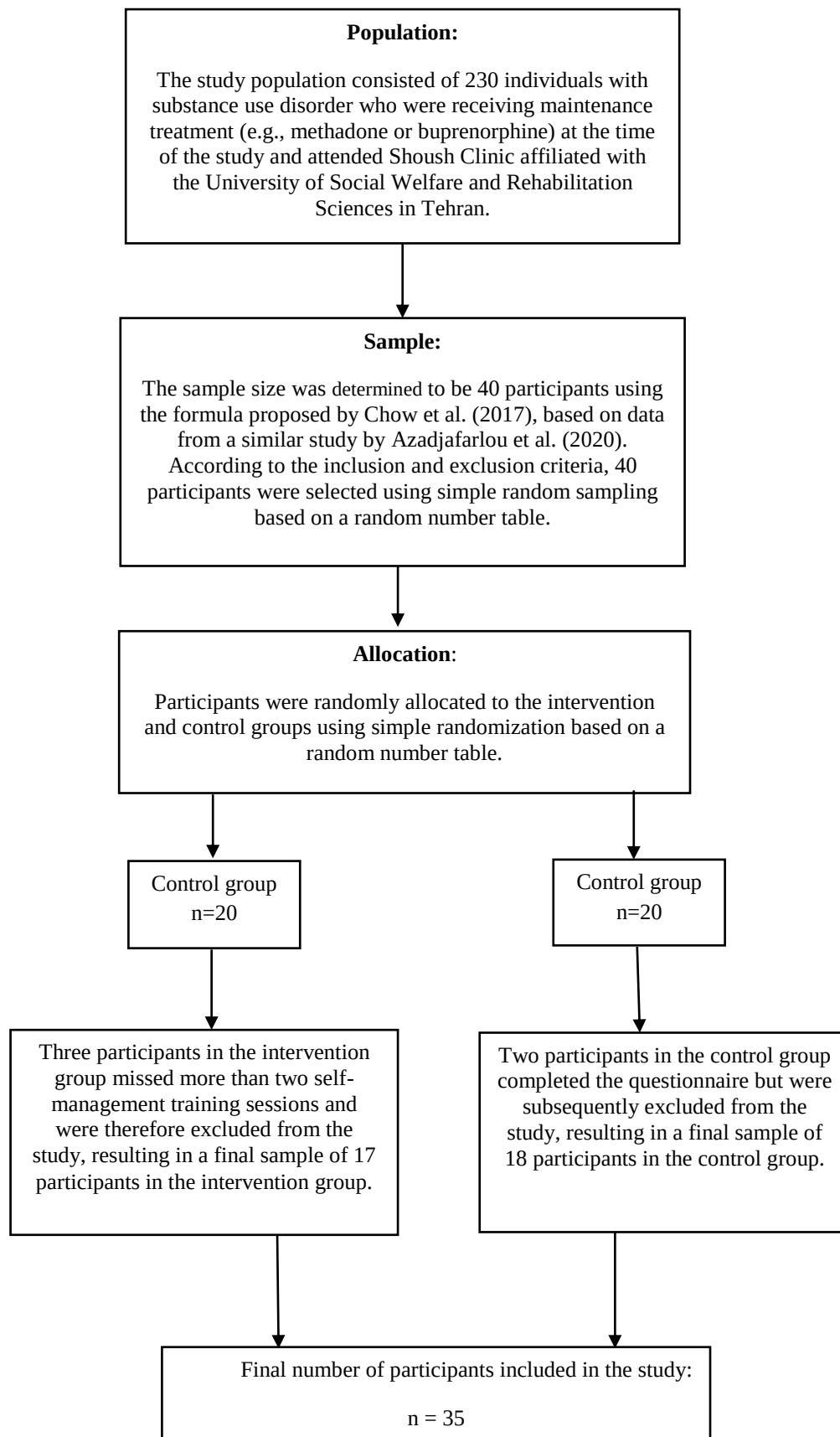


Figure 1. CONSORT flow diagram of participant recruitment, allocation, follow-up, and analysis

After completing a certified self-healing training course and obtaining ethical approval, the researcher invited eligible patients to an orientation session, explained the study objectives and procedures, emphasized confidentiality, and obtained written informed consent. Participants were randomly assigned to either the intervention or control group. The intervention group received 14 weekly face-to-face group sessions of 90 minutes each based on the self-healing program by Latifi and Marvi (2018) adapted from Lloyd and Johnson (2010) (23). Sessions were delivered by the principal researcher, an MSc student in psychiatric nursing, in an in-person format. Week 1 covered introductions, session goals/rules, and an overview of situational and systemic stressors; Week 2 addressed the physiological and cellular effects of stress and diaphragmatic breathing exercises; Week 3 focused on distinguishing real from false problems, paranoid thinking, and memory-retrieval techniques; Week 4 addressed identifying hidden destructive beliefs and introduced the healing codes; Week 5 covered destructive-memory review and the empty-chair and forgiveness techniques; Week 6 addressed positive/negative emotions, forgiveness skills, and body-scan relaxation; Week 7 focused on identifying and correcting destructive habits; Weeks 8–9 reinforced the healing codes through daily-life application exercises; Week 10 involved prayer/visualization exercises related to the healing codes; Week 11 addressed lifestyle correction (sleep, diet, exercise); Week 12 focused on improving quality of life across relational, financial, and social domains; Week 13 addressed correcting internal dialogue and self-monitoring; and Week 14 focused on consolidating spiritual-growth techniques, self-evaluation, and overall session review. Attendance was monitored throughout, and participants who missed more than two sessions were excluded per the study's exclusion criteria; three participants in the intervention group were excluded on this basis. The control group continued their routine pharmacological maintenance treatment (usual care, i.e., methadone maintenance therapy) throughout the study period and did not receive any additional psychological or educational intervention. Upon completion of the one-month follow-up assessment, the control group received the same self-healing training program.

Data were analyzed using SPSS version 26. Descriptive statistics included means and standard deviations for continuous variables and frequencies and percentages for categorical variables. Group comparisons of categorical variables were performed using chi-square tests or Fisher's exact tests, and continuous variables were compared using independent t-tests. To examine the effect of the intervention over time, repeated-measures analysis of covariance (ANCOVA) was conducted. Post hoc pairwise comparisons (within- and between-group) were adjusted using the Bonferroni correction to control for Type I error inflation. Normality of variables was assessed using skewness and kurtosis indices, confirming normal distribution. Statistical significance was set at $p < 0.05$.

Ethical Consideration

This study was approved by the Committee for Ethics in the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran (Ethical approval code: IR.USWR.REC.1404.007), and registered in the national research ethics system. Written informed consent was obtained from all participants after providing detailed information about the study objectives, procedures, benefits, and potential risks. Participation was voluntary, and participants had the right to withdraw from the study at any time without any consequences. Personal information and responses were kept confidential and reported anonymously and in aggregate form. No intervention caused physical or psychological harm, and referral to counseling services was provided if needed. All procedures were conducted in accordance with the principles of the Declaration of Helsinki (24).

Results

Initially, 40 participants (20 in each group) enrolled in the study; however, after attrition, 35 participants completed the study and were included in the final analysis (17 in the intervention group and 18 in the control group). Demographic characteristics of the participants are presented in Table 1. The mean age of participants was 50.76 ± 6.58 years in the intervention group and 47.56 ± 3.03 years in the control group, and 29 participants (82.9%) were male. Most participants in both groups had education below high school. Comparisons between the groups indicated no significant differences in gender, education level, marital status, or employment status ($p > 0.05$); however, mean age differed

significantly between the groups ($p < 0.05$) and was therefore included as a covariate in subsequent analyses.

Table 1. Demographic Characteristics of Participants in the Intervention and Control Groups

Variable	Intervention Group (n=17)	Control Group (n=18)	p-value
Age (years), mean $\pm$ SD	50.76 $\pm$ 6.58	47.56 $\pm$ 3.03	0.047*
Gender, n (%)			
Male	13 (76.5%)	16 (88.9%)	0.402**
Female	4 (23.5%)	2 (11.1%)	
Education, n (%)			
Below high school	10 (58.8%)	12 (66.7%)	0.318**
High school diploma	6 (35.3%)	3 (16.7%)	
Bachelor's degree	1 (5.9%)	3 (16.7%)	
Marital status, n (%)			
Single	8 (47.1%)	6 (33.3%)	0.231***
Married	6 (35.3%)	4 (22.2%)	
Divorced/Widowed	3 (17.6%)	8 (44.4%)	
Employment status, n (%)			
Unemployed	7 (41.2%)	8 (44.4%)	>0.99**
Freelance/Informal	10 (58.8%)	9 (50%)	
Governmental	0 (0%)	1 (5.6%)	

*Independent t-test, **Fisher's Exact Test, ***Chi-square

Table 2. Clinical Characteristics of Substance Use in the Intervention and Control Groups

Variable	Intervention Group (n=17)	Control Group (n=18)	p-value
Number of previous hospitalizations , mean $\pm$ SD	2.53 $\pm$ 2.12	5.94 $\pm$ 4.43	0.007*
Number of detoxification attempts , mean $\pm$ SD	7.53 $\pm$ 3.37	8.11 $\pm$ 4.77	0.682*
Maintenance medication dose , mean $\pm$ SD	19.82 $\pm$ 7.24	19.94 $\pm$ 5.35	0.955*
Type of substance used, n (%)			
Opioids	12 (70.6%)	9 (50%)	0.266**
Non-opioids	3 (17.6%)	1 (5.6%)	
Both	2 (11.8%)	8 (44.4%)	
Duration of substance use, n (%)			
>2 (years)	0 (0%)	0 (0%)	>0.99**
2-5 (years)	0 (0%)	1 (5.6%)	
<5 (years)	17 (100%)	17 (94.4%)	
History of detoxification attempts, n (%)			
Yes	17 (100%)	18 (100%)	-
No	0 (0%)	0 (0%)	
Interval between last detoxification and last relapse prediction, n (%)			
>6 (month)	6 (35.3%)	7 (38.9%)	>0.99**
6-12 (month)	6 (35.3%)	7 (38.9%)	
<12 (month)	5 (29.4%)	4 (22.2%)	
Maintenance medication, n (%)			
Methadone	16 (94.1%)	17 (94.4%)	>0.99**
Buprenorphine	1 (5.9%)	1 (5.6%)	

*Independent t-test, **Fisher's Exact Test

As indicated in Table 2 regarding clinical characteristics related to substance use disorder, most participants in both groups primarily used opioids, mostly opium (intervention: 12 participants, 64.8%; control: 9 participants, 50%), with no significant difference between groups ($p>0.05$). All participants in the intervention group had a history of substance use longer than five years, while 17 participants (94.4%) in the control group reported a similar history. Most participants in both groups were receiving methadone as maintenance therapy (intervention: 16, 94.1%; control: 17, 94.4%), and the mean methadone dose was comparable between groups (19.82 mg in the intervention group vs. 19.94 mg in the control group; $p>0.05$). All participants in both groups had a history of previous quit attempts. A significant difference was observed between the groups regarding the number of hospitalizations ($p=0.007$).

To examine the effect of self-healing training on relapse prediction, repeated-measures analysis of covariance (ANCOVA) was conducted, controlling for age and number of previous hospitalizations. Assumptions of the analysis, including homogeneity of regression slopes and variances, were met ($p>0.05$). Because the sphericity assumption was violated ($p<0.001$), Greenhouse–Geisser corrections were applied. No significant interactions were observed between time $\times$ age or time $\times$ number of hospitalizations on total or subscale scores ($p>0.05$). A significant main effect of group was found, indicating that the intervention group had lower total and subscale scores than the control group ($p<0.001$); craving intensity: $F = 141.09$, partial $\eta^2 = .82$; likelihood of use: $F = 101.03$, partial $\eta^2 = .76$; total score: $F = 187.11$, partial $\eta^2 = .65$.

A significant main effect of time was observed for the likelihood of substance use in high-risk situations, indicating a reduction in scores over the study period regardless of group ($p=0.002$). Importantly, a significant time $\times$ group interaction was detected for total RPS scores and both subscales of craving intensity and likelihood of use (craving intensity: $F = 276.18$, partial $\eta^2 = .89$; likelihood of use: $F = 517.87$, partial $\eta^2 = .94$; total score: $F = 380.50$, partial $\eta^2 = .92$) (all $p<0.001$), indicating that changes in relapse prediction differed between the two groups over time. Given this significant interaction, between-group comparisons were conducted at each time point using estimated marginal means with Bonferroni adjustment for multiple comparisons, controlling for age and number of previous hospitalizations.

Table 3. Means Relapse Prediction and Subscales in the Intervention and Control Groups

Variable	Subscale	Group	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Follow-up Mean $\pm$ SD	Effect of Time (p)	Effect of Group (p)	Time $\times$ Group (p)
Relapse prediction of substance use disorder	Craving Intensity	Intervention	140.29 $\pm$ 10.88 ^{a*}	63.82 $\pm$ 11.05 ^{b*}	58.94 $\pm$ 11.37 ^{c*}	0.138	<0.001	<0.001
		Control	134.39 $\pm$ 9.36 ^a	130.94 $\pm$ 9.08 ^a	131.44 $\pm$ 11.14 ^a			
	Probability of Use	Intervention	118.06 $\pm$ 11.90 ^{a*}	34.00 $\pm$ 8.00 ^{b*}	31.41 $\pm$ 7.75 ^{b*}	0.002	<0.001	<0.001
		Control	112.83 $\pm$ 9.17 ^a	110.94 $\pm$ 7.50 ^a	111.72 $\pm$ 6.07 ^a			
	Total	Intervention	258.35 $\pm$ 21.83 ^{a*}	95.29 $\pm$ 23.10 ^{b*}	86.76 $\pm$ 23.96 ^{c*}	0.100	<0.001	<0.001
		Control	247.11 $\pm$ 18.00 ^a	241.89 $\pm$ 15.46 ^a	243.17 $\pm$ 16.07 ^a			

Within each row/group, means sharing the same superscript letter (a, b, c) do not differ significantly across time points (Bonferroni-adjusted pairwise comparisons, $p>0.05$); means with different superscript letters differ significantly ($p<0.05$). Asterisks (*) indicate a significant between-group difference (Intervention vs. Control) at that time point (Bonferroni-adjusted, $p<0.05$, controlling for age and number of previous hospitalizations). All post hoc pairwise comparisons used the Bonferroni correction for multiple comparisons.

At pretest, the intervention group showed slightly higher adjusted total scores than the control group (mean difference = 19.94, $p=0.014$). However, at posttest and follow-up, the intervention group's adjusted scores were substantially lower than the control group's (mean difference = -140.95, 95% CI [-156.58, -125.32], $p<0.001$, and -152.51, 95% CI [-168.92, -136.09], $p<0.001$, respectively; Table

3). Within-group comparisons showed that this reduction occurred exclusively in the intervention group, from pretest to posttest and maintained at follow-up, whereas the control group's scores did not change significantly across any of the three time points (all $p=1.00$; Table 3).

Overall, the findings indicate that self-healing training resulted in a significant and sustained reduction in relapse prediction among patients receiving maintenance treatment for substance use disorder.

Discussion

The descriptive findings of this study indicated that the intervention and control groups were largely comparable in terms of demographic characteristics and were homogeneous across most indicators. A total of 35 participants completed the study (17 in the intervention group and 18 in the control group). Although a significant difference in mean age was observed (approximately 51 years in the intervention group vs. 48 years in the control group), both groups were predominantly in middle adulthood. Gender distribution was similar, with males constituting the majority in both groups, and Fisher's exact test revealed no significant differences. Regarding education, most participants in both groups had less than a high school diploma, with no significant differences observed. Marital status also did not differ significantly, although a slightly higher proportion of single participants was observed in the intervention group and divorced participants in the control group. Employment and income were similar across groups, with most participants working in the informal sector and earning less than five million Iranian tomans monthly.

In terms of substance use characteristics, opioids were the most commonly used substances in both groups, with no significant differences. The majority of participants had a history of substance use exceeding five years, and almost all were receiving methadone as maintenance therapy, with comparable doses. While the control group had a higher frequency of previous quit attempts, the mean number of attempts did not differ significantly. The number of prior hospitalizations was significantly higher in the control group, but the duration between the last quit attempt and the most recent relapse prediction was generally less than one year in both groups, with no significant differences.

Regarding the study hypothesis that self-healing training reduces relapse prediction in patients receiving maintenance therapy the results clearly supported this proposition. Across pretest, posttest, and one-month follow-up assessments, participants who received the self-healing intervention demonstrated significant reductions in total relapse prediction, craving intensity, and likelihood of use in high-risk situations compared to the control group. These effects were sustained at follow-up, indicating not only immediate but also enduring benefits of the intervention.

The findings of the present study indicate that self-healing training, grounded in well-established theoretical frameworks-including structural-functional theory (25), social control theory (26), symbolic interactionism (27), and labeling theory (28) effectively reduces vulnerability arising from structural and social factors by strengthening cognitive-emotional skills, enhancing self-control, modifying maladaptive beliefs, and reconstructing personal identity, thereby significantly attenuating relapse prediction/risk scores in substance use disorder. These findings are consistent with national evidence, as previous studies have emphasized the effectiveness of self-healing and skill-based interventions in reducing psychological distress, correcting cognitive distortions, enhancing self-monitoring, and decreasing high-risk behaviors (29-31), while also highlighting the predictive role of variables such as rumination, worry, and self-control in relapse prediction risk (32). Moreover, the present results align with studies demonstrating the impact of cognitive-, emotional-, and hope-based interventions on relapse prediction reduction (13, 33). At the international level, evidence suggests that factors such as self-efficacy, coping styles, resilience, and psychological skills play a critical role in reducing relapse prediction propensity, and that interventions focused on increasing awareness and improving emotion regulation can support sustained abstinence (34, 35). Furthermore, meta-analyses have identified the type of intervention as a key determinant of abstinence duration and relapse prediction rates (36). Collectively, the theoretical and empirical convergence of these findings supports the effectiveness of self-healing training as a multidimensional intervention for reducing relapse prediction risk in substance use disorder.

This study has several limitations. First, the final sample size ($n = 35$; 17 in the intervention group and 18 in the control group) was relatively small for a repeated-measures ANCOVA design, which may

reduce the stability of the estimated effects and increase the risk of overestimating effect sizes; these findings should therefore be interpreted with caution and considered preliminary pending replication in larger samples. Second, the single-center design and reliance on self-report measures, which may be subject to response bias, further limit generalizability. Third, although participants were randomly allocated to groups, the intervention and control groups differed significantly at baseline in age and number of previous hospitalizations; while these variables were statistically controlled for as covariates in the ANCOVA models, their baseline imbalance may indicate limitations in the effectiveness of randomization given the relatively small sample size, and residual or unmeasured confounding cannot be entirely ruled out despite covariate adjustment. Additionally, due to the nature of the intervention, blinding of participants and the intervention provider was not feasible, which may have introduced expectancy or performance bias, particularly given the use of a self-report outcome measure. Finally, this study assessed relapse prediction risk using the RPS rather than actual relapse prediction events; findings should therefore be interpreted as changes in relapse prediction risk rather than confirmed reductions in actual relapse prediction. Future research is recommended with larger, multi-center samples, using diverse methodological approaches, including qualitative methods, blinded outcome assessment, and objective measures such as biochemical verification of abstinence, to enhance the accuracy and generalizability of results.

Implications for practice

Overall, the findings indicate that self-healing training is a feasible and effective intervention for reducing relapse prediction/prediction risk scores among individuals receiving maintenance therapy. By targeting cognitive, emotional, and behavioral skills, this approach empowers participants to manage high-risk situations more effectively and strengthens their capacity to control cravings and urges. The study highlights the importance of integrating skill-based psychological interventions alongside pharmacological maintenance treatments and underscores self-management abilities as a crucial predictor of long-term abstinence.

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Conflicts of interest

The authors declare that there are no competing interests.

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Authors' Contributions

All the authors contributed to the concept and design of the study. N.F.M contributed to conceptualization, data management, formal analysis, investigation, methodology, and drafting of the original manuscript. M.F.KH supervised the study and was responsible for validation, project management, resources, and reviewing/editing the manuscript. A.R assisted with methodology, visualization, and manuscript revisions. M.V conducted the statistical analysis, data validation, and formal analysis. All the authors reviewed and approved the final version.

Artificial Intelligence statement

We have not used any AI tools or technologies to prepare this manuscript.

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