



Comparing the Effectiveness of Cognitive-Behavioral Therapy and Brief Intervention on Relapse Prevention among Drug Users

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Abstract

Background: This study aimed to compare the effectiveness and stability of group cognitive-behavioral therapy (CBT) and brief intervention (BI) for relapse prevention (RP) among drug users of drop-in-centers (DICs) in Ahvaz, Iran.

Methods: The present study was a quasi-experimental one with a pretest-posttest design, a follow-up phase, and a control group. The statistical population included all drug users of drop-in-centers of Ahvaz in 2021. The sample of the study included 78 drug users selected randomly and assigned to two experimental groups and one control group (each 26 members). A morphine test (special kits) that detects the presence of morphine in urine was used to check the relapse. Data were analyzed using repeated measures ANOVA with SPSS (version 24).

Findings: The results showed BI and CBT had a significant effect on reducing RP in drug users ($P < 0.001$). The BI was more effective than CBT for RP.

Conclusion: It can be concluded that both BI and CBT can be effective in reducing the likelihood of relapse among drug users but BI is more effective than CBT for RP.

Keywords: Brief intervention, Relapse prevention, Drug users, Cognitive-behavioral therapy

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Introduction

Alcohol, caffeine, cannabis, hallucinogens (phencyclidine or similarly acting arylcyclohexylamines and other hallucinogens such as LSD), inhalants, opioids, sedatives, hypnotics, anxiolytics, stimulants (including amphetamine-type substances, cocaine, etc), tobacco, and other obnoxious substances are all recognized as drugs in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).¹ According to Choudhury et al,² drug addiction is prevalent among 20.3% of people aged 18 to 40 (male and female, with an average age of twenty-two years old). The United Nations Office on Drugs and Crime (UNODC) annually reports on the current state of drug use in the world, by continent, region, and country. As reported in 2017, 5.3% of the population aged 15-64 years has used drugs at least once. According to the same report, 183 million people use cannabis, 37 million use amphetamines and amphetamine-like compounds, 45 million use opioids, 22 million use ecstasy, and 17 million use cocaine as the predominant substance.³

Relapse to substance use after successful detoxification

and rehabilitation is a serious concern all over the world.² Return to drug abuse is conceptualized as a global problem and an integral part of the recovery process. Global statistics on relapse are critically concerning since the average rate of relapse was 0.75 for 3 to 6 months after the treatment. Therefore, the importance of identifying relapse-related factors is considered in all treatment models. Recognition of risk factors enables the patient to prevent a catastrophic relapse to substance use. For this purpose, addiction treatment should be approached with a multifaceted perspective.⁴

In this regard, various external and internal stimuli can be referred to. External stimuli for drug relapse and memorable life events that support drug users in preventing drug use include family, religion, government policy, police arrest, and drug outbreak. Therefore, internal and external factors and the protecting role of self-awareness in drug prevention measures are defined as the critical items in the life of a former drug user.⁵

As a result of such inference, the researchers referred to addiction, etiology, and treatment to analyze the



causes of addiction and relapse after treatment from a psychological perspective.⁶ Studies have shown that cognitive-behavioral therapy (CBT) is one of the most effective psychological interventions playing a significant role in relapse prevention (RP) by reducing anxiety and depression, improving relationships with others, increasing self-esteem, and enhancing the overall quality of life. Accordingly, drug dependence is seen as a learned behavior that is acquired through experience, based on wrong attitudes and beliefs.⁶ Short-term cognitive-behavioral therapy is a summary of CBT-related content, with 4 to 8 therapy sessions focusing on a specific treatment for a limited range of patients' problems.⁷ However, the effectiveness of the two approaches relies on different behavior dimensions specific to those with drug abuse, including reduced tendency to drink alcohol⁸ and reuse of drugs.⁹⁻¹⁴

Addiction to drugs is one of the main health problems of Iran and the world. It affects the physical, mental, social, and spiritual dimensions of health, causes misbehavior in personal and social life, and endangers the health of the society.¹⁵

Due to the serious need for drop-in-centers (DICs) for psychotherapy programs, especially group therapy, and due to the lack of research on the effectiveness of CBT in controlling addiction at the centers that adopt non-drug programs, the present study investigated the effectiveness and stability of short-term CBT and brief intervention (BI) for RP among drug users of DICs in Ahvaz. Therefore, according to research objectives, this study sought to answer the following question: "Are short-term cognitive CBT and BI effective in RP among drug users of DICs in Ahvaz?"

Methods

This study was a quasi-experimental one with two experimental groups and one control group as well as a pretest-posttest design and a follow-up phase. Accordingly, the statistical population included all drug users of DICs in Ahvaz, Iran; i.e. 100 males with active files in each center. The participants met the criteria for substance abuse based on DSM-5 and with the diagnosis of the center's psychiatrist. They were randomly divided into two experimental groups and a control group.

Instruments

A morphine test (special kits) that detects the presence of morphine in urine was used to check the relapse. The test was performed by one of the nurses of the DIC based on the laboratory diagnosis standards of the Ministry of Health and Medical Education. The test results were presented to the researcher for recording in a research questionnaire.

Procedure

Once the research ethics approval was obtained from

the University Vice-Chancellor for Research, a DIC was randomly selected out of the two centers in Ahvaz. Each center has 100 opioid drug users. Followed by sampling and estimating the sample size ($n = 78$), the study groups were randomly divided into three groups, two experimental groups and one control group (each 26 members). The research procedure consisted of four stages. In the first stage, before the intervention, the experimental and control groups were evaluated and interviewed, and the informed consent form was obtained once the objectives of the research were explained to the participants. In the second stage, short-term CBT and BI were run for the experimental groups. In the third stage, the experimental and control groups underwent morphine testing. In the fourth stage, after the interventions and post-test, the experimental and control groups were followed up for three months without any intervention. After the follow-up stage, the participants' morphine level was retested.

Both CBT and BI were implemented in four sessions in DICs of Ahvaz. According to the Ministry of Health and Medical Education protocols,¹⁶ short-term CBT¹⁷ and BI were adopted as the treatment. Due to the importance of research ethics, the significance of implementing intervention techniques was explained to the participants, and their consent to participate in the treatment sessions was obtained by completing and signing the relevant form. The short-term CBT and BI were implemented for the experimental groups during four 60-minute sessions. The control group did not receive any intervention. Morphine test was performed at the beginning and end of the intervention sessions. Three months after the end of non-drug interventions, the participants were retested for morphine. Therapeutic interventions were implemented once a week for four weeks. The protocols of BI and short-term CBT are presented in [Tables 1 and 2](#).

Statistical analysis

Mean and standard deviation indices were utilized for descriptive statistics and repeated measures ANOVA was used for inferential statistics. To evaluate the assumptions of the inferential test, Leven's test (for variance homogeneity), Kolmogorov-Smirnov test (for data distribution normality), Box's M test, and Mauchly's sphericity test were utilized. The aforementioned statistical analysis was conducted using SPSS 24. The tests had a significance level of 0.05.

Results

The mean age of participants was 39.46 (6.70) years in the CBT group, 38.71 (6.11) years in the brief treatment group, and 39.97 (6.84) years in the control group. Moreover, 38 (46.9%) participants were single, 12 (14.8%) were married, and 31 (38.3%) were divorced. Besides, 32 (39.5%) participants were unemployed, 38 (46.9%) were self-employed, and 11 (13.6%) were unemployed.

Table 1. Brief intervention protocols for substance users

Sessions	Title	Subject
1	Behavioral change model 1	Not thinking about change (pre-reflection), thinking about reducing or stopping substance use (reflection)
2	Behavioral change model 2	Doing something to change behavior (action), persistence in serious behavior (maintenance)
3	Brief intervention components	Feedback, responsibility, advice, change options menu, empathy, self-efficacy
4	ASSIST screening	Providing feedback based on ASSIST scores at three levels of low risk, medium risk, and high risk

Abbreviation: ASSIST, Alcohol, Smoking, and Substance Involvement Screening Test.

Table 2. Short-term CBT protocols for substance users

Sessions	Title	Subject
1	Motivational interviewing	Motivating to change, strengthening commitment, monitoring the behavior
2	Resisting temptation	Introducing resisting temptation, techniques for coping with temptation, developing a temptation plan—how to deal with slipping
3	Controlling substance use thoughts	The link between the thoughts and behaviors, initiators, irrelevant decisions, planning for activities, unpleasant events
4	Relapse prevention	Drug use rejection, relapse prevention, end of the session

Concerning the level of education, 12 (14.8%) participants were illiterate, 29 (35.8%) had primary education, 37 (33.4%) had secondary education, and 13 (16%) had a high school diploma. In terms of HIV status, 35 (43.3%) participants were HIV positive and 46 (56.7%) were HIV negative. Regarding the history of imprisonment, 33 individuals (40.7%) had a history of imprisonment and 48 (59.3%) had no history of imprisonment.

According to Table 3, there is a difference in the mean of RP in posttest and follow-up between the experimental groups (CBT and BI groups) and the control group. The mean RP decreased in CBT and BI groups compared to the control group. The non-significant z-value in the Kolmogorov-Smirnov test showed the distribution of RP data ($P=0.257$) was normal. In addition, Leven’s test was used to examine the assumption of variance homogeneity. Non-significant statistics for RP ($F=3.248$ and $P=0.053$) demonstrated homogeneity of variances ($P>0.05$). Furthermore, the results of Box’s M test ($P=0.106$, $F=1.745$, $Box=11.204$) confirmed variance-covariance homogeneity ($P>0.05$). The statistical assumptions allowed the use of ANOVA with repeated measures.

According to Table 4, at least one of the interventions affected the RP score in the posttest. It explained 25.1% of the variance in RP score after the interventions.

Table 5 shows the computed F-value for the influence of stages (pretest, posttest, and follow-up) at the level of 0.05 was significant for RP ($P<0.05$) for the within-subject component. As a consequence, there was a significant difference between the mean scores of the RP in the three pretest, posttest, and follow-up stages. To analyze the difference between the mean values in the treatment stages, the Bonferroni post hoc test results were generated.

Table 6 shows the effectiveness of BI for the experimental groups. However, CBT is not as effective as BI in preventing relapse.

Table 3. The mean and standard deviation of relapse prevention in pretest, posttest, and follow-up

Variable	Group	Pretest		Posttest		Follow-up	
		Mean	SD	Mean	SD	Mean	SD
Relapse prevention	CBT (1)	0.73	0.45	0.15	0.36	0.12	0.32
	BI (2)	0.04	0.19	0.04	0.9	0.04	0.19
	Control	0.54	0.50	0.42	0.50	0.46	0.50

Abbreviation: CBT, cognitive-behavioral therapy; BI, brief intervention.

Table 4. Covariance analysis of the difference between the experimental and control groups

Statistics	Value	Hypothesis df	Error df	F	P	Eta	Test power
Pillai’s trace	0.25	2	74	12.41	0.001	0.25	0.99
Wilks’ lambda	0.74	2	41	12.41	0.001	0.25	0.99
Hotelling’s trace	0.33	2	41	12.41	0.001	0.25	0.99
Roy’s largest root	0.33	2	41	12.41	0.001	0.25	0.99

Table 5. Multivariate analysis of variance for relapse prevention

Variable	Source	SS	df	MS	F	P	Partial Eta squared
Relapse prevention	Time	936.69	1.36	686.65	35.97	0.001	0.56
	Time *Group	431.27	1.18	367.04	16.92	0.001	0.38
	Group	36.10	1.00	36.10	0.92	0.347	0.03

Abbreviations: SS, sum of squares; MS, mean squares.

Table 6. Follow-up test to compare the effect of interventions on paired relapse prevention

Measurement	I	J	Mean difference	Standard error	P
Relapse prevention	CBT	BI	0.29	0.07	0.001
		Control	0.14	0.07	0.20
	BI	Control	0.43	0.70	0.001

Abbreviation: CBT, cognitive-behavioral therapy; BI, brief intervention.

Discussion

This study compared the effectiveness and stability of short-term CBT and BI in RP among the drug users of DICs in Ahvaz. The results showed that BI and CBT can be effective in reducing the likelihood of relapse among drug users but BI was more effective than CBT for RP.

The findings of the present study are in line with those of the studies by D'Amico et al,⁸ Rasekh et al,⁹ Alavi¹⁰, Pak Seresht and Alavi,¹¹ Shahrajabian et al,¹⁴ Watkins et al,¹⁶ Mahmoud et al,¹⁷ and Alavi Langroodi and Nikzad Moghadam¹⁸ which also investigated the effectiveness of CBT and BI in RP.

CBT decreases unwanted behaviors and significantly increases adaptive behaviors by reducing the frequency and severity of clients' uncompromising responses and teaching them new cognitive-behavioral skills. Accordingly, clients notice that the first response should not be the most incompatible and the quickest solution in the face of environmental stressors. In fact, by focusing on the problems caused by external conditions, CBT helps the clients notice the amount of personal and internal control over themselves. As a result, by focusing on themselves, the clients accept an active role in their destiny and face acute external problems instead of using immature and emotional mechanisms like tendency to drug, problematic behaviors, or reuse of drugs. In this regard, D'Amico et al⁸ acknowledged that by emphasizing one's role and individual independence, cognitive-behavioral strategies somehow assign life responsibilities to the individual him/herself and in this way help him/her realize where the problem is, why it is caused, and what the logical solution is to deal with the problem. They believe that such intervention not only increases the level of individual mastery but also affects the desire and tendency to use immediate and effective strategies.

Alavi Langroodi and Nikzad Moghadam¹⁸ reported that through the elimination of negative spontaneous thoughts, CBT boosts the feelings of happiness and joy as well as positive behavioral effects (e.g., less anger, aggressive behaviors, tendency to problematic strategies, and mood strategies). The researchers showed that CBT increased courage and self-acceptance, reduced emotion-oriented behaviors, and strongly justified effective and consistent behaviors. BI, in turn, leads to more lasting effects compared to CBT. Though BI is based on CBT, it performs better because of the focus on current complicated problems that seem to be the underlying cause of the tendency to reuse drugs.^{19,20} By BI, the participants are actively involved in the problemsolving process. Shahrajabian et al¹⁴ acknowledged that brief treatment, with emphasis on urgent issues, determines the clients' current needs and trains problemsolving techniques. It should be noted that although the techniques are instantaneous, they do not disturb the therapeutic goal. Alirezai and Khalil Beigi²¹ indicated BIs

help people to understand how substance use exposes them to risk, leading to less abuse or drug withdrawal. BIs are effective particularly for people with less severe or short-term substance use, though they suffer from impulsive, problematic, or dangerous patterns of use.^{22,23}

As the statistical population included male drug users of only DICs in Ahvaz, generalization of the results requires extra caution. Moreover, BI is a new therapeutic approach with limitations for research and intervention explanation. Therefore, it is recommended that other centers, especially the centers providing services for female drug users, implement the treatment techniques of the present study.

Conclusion

The results of this study indicated that both BI and CBT can be effective in reducing the likelihood of relapse among drug users but BI is more effective than CBT for RP.

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Author Contributions

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Conflict of Interests

The authors declare that they have no conflict of interest.

Ethics Approval

This research was approved under the code of ethics IR.IAU.SHK.REC.1400.004 by the Islamic Azad University, Shahrekord Branch.

References

- Cooper R. Diagnostic and statistical manual of mental disorders (DSM). Knowl Organ. 2018;44(8):668-76. doi: 10.5771/0943-7444-2017-8-668.
- Choudhury R, Shakya S, Yadav PK, Kumar H. Prevalence of addiction among tuberculosis patients. Medico-Legal Update. 2020;20(3):198.
- United Nations Office on Drugs and Crime. World Drug Report. United Nations Publications; 2017.

4. Sobell LC, Sobell MB, Ward E. Evaluating Alcohol and Drug Abuse Treatment Effectiveness: Recent Advances. Elsevier; 2013.
5. Fahrizal Y, Hamid A, Daulima N. Drug abuse and mechanisms: a phenomenological study on the lived experiences of former drug users in Yogyakarta Indonesia. In: Proceedings of the Third International Conference on Sustainable Innovation 2019-Health Science and Nursing (IcoSIHSN 2019). Atlantis Press; 2019. p. 107-10. doi: [10.2991/icosihsn-19.2019.25](https://doi.org/10.2991/icosihsn-19.2019.25).
6. Saqebi Saeedi K, Davaran M. The effectiveness of stress management skills training in the mental health of addicts referred to an addiction treatment center. *J Addict Res*. 2017;11(43):276-80.
7. Barati Sedeh F, Mousavi N. Short-Term Cognitive-Behavioral Therapy. Tehran: Roshd Publications; 2015. [Persian].
8. D'Amico EJ, Parast L, Shadel WG, Meredith LS, Seelam R, Stein BD. Brief motivational interviewing intervention to reduce alcohol and marijuana use for at-risk adolescents in primary care. *J Consult Clin Psychol*. 2018;86(9):775-86. doi: [10.1037/ccp0000332](https://doi.org/10.1037/ccp0000332).
9. Rasekh B, Saw YM, Azimi S, Kariya T, Yamamoto E, Hamajima N. Associations of treatment completion against drug addiction with motivational interviewing and related factors in Afghanistan. *Nagoya J Med Sci*. 2018;80(3):329-40. doi: [10.18999/nagjms.80.3.329](https://doi.org/10.18999/nagjms.80.3.329).
10. Alavi S. Determining the Effectiveness of Group Cognitive-Behavioral Therapy in Anxiety, Depression, Social and Physical Functioning, and Relapse Prevention Among Opioid Addicts of Drop-in-Centers in Ahvaz [thesis]. Ahvaz: Ahvaz Jondishapur University of Medical Sciences; 2017. [Persian].
11. Pak Seresht S, Alavi SMA. The effectiveness of short-term cognitive-behavioral therapy in the mental health of drug-users in Ahvaz. In: 4th International Congress on Addiction Knowledge; 2020; Tehran, Tehran University of Medical Sciences.
12. Asadi A, Farajzadeh Z. The effect of cognitive-behavioral therapy on reducing depression among opioid addicts. In: Sixth International Congress on Addiction Science; 2015; Tehran, Iran University of Medical Sciences.
13. Karami J, Abbariki A, Jashnpour M. The effectiveness of cognitive rehabilitation on improving response inhibition in men with heroin abuse. *Research on Addiction*. 2020;14(56):267-86. doi: [10.29252/etiadjpajohi.14.56.267](https://doi.org/10.29252/etiadjpajohi.14.56.267). [Persian].
14. Shahrajabian F, Emadi Chashmi SJ, Rezaei P, Ghayerin E. A review of the screening approach, brief intervention and referral in alcohol dependent patients referred to hospital emergency department with alcohol poisoning. *Rooyesh-e-Ravanshenasi Journal (RRJ)*. 2021;10(5):151-62. [Persian].
15. Noorbala A. National Survey of Mental Health and Social Capital for Iranians of 15 Years Old and Older. Tehran: Tehran University of Medical Sciences Publications; 2019. [Persian].
16. Watkins KE, Hunter SB, Hepner KA, Paddock SM, de la Cruz E, Zhou AJ, et al. An effectiveness trial of group cognitive behavioral therapy for patients with persistent depressive symptoms in substance abuse treatment. *Arch Gen Psychiatry*. 2011;68(6):577-84. doi: [10.1001/archgenpsychiatry.2011.53](https://doi.org/10.1001/archgenpsychiatry.2011.53).
17. Mahmoud KF, Finnell D, Lindsay D, MacFarland C, Marze HD, Scolieri BB, et al. Can screening, brief intervention, and referral to treatment education and clinical exposure affect nursing students' stigma perception toward alcohol and opioid use? *J Am Psychiatr Nurses Assoc*. 2019;25(6):467-75. doi: [10.1177/1078390318811570](https://doi.org/10.1177/1078390318811570).
18. Alavi Langroodi SK, Nikzad Moghadam M. Effectiveness of cognitive-behavioral therapy on the decreasing of relapse of addiction to narcotic in the collegian students and its influence on the increasing of their achievement motivation. *Toloo-e-Behdasht*. 2015;14(1):1-11. [Persian].
19. Yaghubi M, Zargar F. Effectiveness of mindfulness-based relapse prevention on quality of life and craving in methadone-treated patients: a randomized clinical trial. *Addict Health*. 2018;10(4):250-9. doi: [10.22122/ahj.v10i4.573](https://doi.org/10.22122/ahj.v10i4.573).
20. Yaghubi M, Zargar F, Akbari H. Comparing effectiveness of mindfulness-based relapse prevention with treatment as usual on impulsivity and relapse for methadone-treated patients: a randomized clinical trial. *Addict Health*. 2017;9(3):156-65.
21. Alirezai Z, Khalil Beigi K. The effectiveness of group cognitive-behavior therapy in self-esteem and mental health of methadone addicts. In: 9th International Congress of Psychotherapy; 2016; Tehran, Iran.
22. Bador K, Kerekes N. Evaluation of an integrated intensive cognitive behavioral therapy treatment within addiction care. *J Behav Health Serv Res*. 2020;47(1):102-12. doi: [10.1007/s11414-019-09657-5](https://doi.org/10.1007/s11414-019-09657-5).
23. Zhang YY, Chen JJ, Ye H, Volantin L. Psychological effects of cognitive behavioral therapy on internet addiction in adolescents: a systematic review protocol. *Medicine (Baltimore)*. 2020;99(4):e18456. doi: [10.1097/md.00000000000018456](https://doi.org/10.1097/md.00000000000018456).

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