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Original Article

The Effectiveness of Short-Term Cognitive Behavioral Group Therapy, Pharmaceutical Therapy, and Combined Treatment on the Mental Health of Drug Users at Harm Reduction Centers in Ahvaz

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Abstract

Background: Addiction is one of the most prevalent mental disorders. Epidemiological studies indicate that drug users often exhibit symptoms such as depression, anxiety, low self-esteem, nosophobia, and social dysfunction. In this study, the mental health of drug users in Ahvaz harm reduction facilities was evaluated through the effects of short-term cognitive-behavioral group therapy, medication therapy, and their combination.

Methods: This quasi-experimental study employed a pre-test, post-test, and follow-up design with a control group. The study population comprised male drug users aged 18–57 years undergoing treatment at harm reduction centers in Ahvaz in 2023. One center was selected from the two addiction reduction centers in Ahvaz, and 60 participants were purposively sampled and evenly assigned to three experimental groups and one control group. Data were collected using a demographic questionnaire and the General Health Questionnaire (GHQ-28) developed by Goldberg (1979). Statistical analyses were performed using multivariate analysis of covariance (MANCOVA) and repeated measures ANOVA in SPSS version 24.

Results: The findings revealed a significant reduction in mental health problems, including anxiety, depression, somatization, and social dysfunction, in the experimental groups following the interventions. However, no significant changes were observed in the control group. The effect size ($\eta^2 = 0.171$, $P = 0.002$) indicated a significant interaction between treatment type and mental health improvement, demonstrating the effectiveness of pharmaceutical, non-pharmaceutical, and combined treatments.

Conclusion: Short-term cognitive-behavioral therapy (CBT) combined with pharmaceutical therapy was found to be effective in improving mental health and its components. Based on these findings, integrating this treatment approach into harm reduction centers is recommended.

Keywords: Addiction, Cognitive-behavioral therapy, Pharmaceutical therapy, Mental health, Harm reduction centers

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Introduction

Addiction has become one of the top twenty causes of problems related to the mental health of people worldwide.[1] Addiction is one of the most common mental disorders. In general, opium use affects a person's mood. Epidemiological studies show that drug users have symptoms of depression, anxiety, low self-confidence, nosophobia, social dysfunction, and lower mental health scores. The mental health status, along with addiction, causes resistance to treatment and the return of the patient to addiction. Today, the effect of mental health on other aspects of health has been defined. According to this definition, achieving other aspects of health without achieving mental health will be impossible.[2] According to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), opioid-related disorders include ten separate classes of opioids: alcohol, caffeine, cannabis, hallucinogens (with separate classifications of phencyclidine and other hallucinogens, inhalants, opioids, sedatives, hypnotics or anti-anxiety drugs, stimulants (amphetamine-like substances, cocaine and other stimulants), tobacco, other substances (unknown substances).[3]

The high prevalence of drug use in the world and Iran highlights the importance of paying attention to this problem. According to the *World Drug Report by the United Nations Office on Drugs and Crime* (UNODC), about 275 million people aged 15–64 years have used

opium at least once in their lifetime, so in 2017 worldwide, approximately 5.6% of the world population was opium users.[4] Statistics show that the amount of opium use among different communities, especially among adolescents and young people, has increased significantly in the last decade. In addition, early adolescence (12 to 14 years) to late adolescence (15 to 17 years) is a basic risk period for starting opium use. There are many factors at the personal micro and macro levels of the economic, social, and physical environment, the interaction of which may make young people more vulnerable to opium use.[5] According to the *World Drug Report*, about 35 million people in the world suffer from substance use disorders.[4]

According to the latest national survey of mental health in Iran, the overall prevalence of drug use is 1.2%.[6]

Short-term cognitive-behavioral interventions focused on increasing clients' motivation and commitment play an important role in encouraging treatment programs.[7] This intervention is cost-effective and practical. Short-term intervention strengthens the relationship between psychiatric service, psychology, and specialized addiction treatment.[8] Methadone maintenance treatment has been able to partially overcome the physical problems faced by opioid-dependent patients.[9]

Therefore, pharmaceutical and non-pharmaceutical therapies and combined treatment are vital in improving mental health. The present study aimed to compare the pharmaceutical, non-pharmaceutical, and combined treatment methods among drug users under treatment at harm reduction centers in Ahvaz. The present research can provide basic knowledge for designing or applying prevention and treatment methods. Considering that there are few studies at the level of harm reduction centers to evaluate pharmaceutical and non-pharmaceutical treatments and compare them in the field of addiction in the country, this study can be effective in addiction treatment and its durability. Therefore, it is necessary to pay more attention to pharmaceutical and non-pharmaceutical treatments than ever. In other words, pharmaceutical and non-pharmaceutical treatment interventions help patients use their experiences to evaluate the correctness or incorrectness of their beliefs and opinions to identify and reconstruct irrational beliefs and schemas related to themselves, others, and the world. Creating emotional turmoil and maladaptive behaviors play a fundamental role.

Therefore, in this study, the mental health of drug users in Ahvaz harm reduction facilities was evaluated concerning the effects of short-term cognitive-behavioral group therapy, medication therapy, and their combination.

Methods

The present study is an applied quasi-experimental study with a pretest-posttest control group design with follow-up. The study population included all male drug users aged 18–57 years under treatment at harm reduction centers in Ahvaz in 2023. The total number of drug users under treatment at present in the center was 100 people who had active cases at the harm reduction center in Ahvaz. The inclusion criteria include having a history of using opioids for 6 months or more, being supported by an addiction reduction center, not having concomitant psychiatric disorders, and not being poisoned by drugs. The persons unwilling to attend therapy sessions and those who missed more than two sessions were excluded.

A psychiatrist's diagnosis at the Ahvaz Harm Reduction Center served as the criterion for opium use. One center was randomly selected from the two addiction harm reduction centers in Ahvaz, and the study population was selected using a purposive sampling method. Free and outpatient services are provided in drug use harm reduction centers under the supervision of the Ministry of Health and Medicine. Cohen's table (1988) can be used to determine the sample size of the research population in two or more group effectiveness studies. Therefore, in this study, using Cohen's table with an effect size of 0.5 and a test power of 0.75, it was estimated that 15 people would be necessary for each group. In other words, the sample for the present study was estimated at 60 people. These individuals were diagnosed by the center's psychiatrist and satisfied the DSM-5 criteria for opium use. Lastly, using a straightforward random sampling technique, they were divided into three case groups (Experimental 1: non-pharmaceutical interventions, Experimental 2: pharmacological therapy, and Experimental 3: combination treatment) and one control group.

In this study, in addition to the demographic characteristics questionnaire (including gender, age, literacy, marital status, occupation, imprisonment history, and HIV infection), the 28-question general health questionnaire (GHQ-28), which includes four components related to anxiety, depression, social dysfunction, and somatization, was also used to measure the studied variables.

The reliability and validity of the questionnaire have been evaluated in several studies in Iran. In the report of the National Social Health Research,[10] the general health questionnaire has been reported to correctly diagnose psychiatric disorders except for psychotic disorders, with a sensitivity of 82.8 and a specificity of 87.5%, and the test-retest reliability coefficient of the method was reported as 0.85. In this study, the reliability coefficient of the general health questionnaire was 0.87, 0.80, and 0.75 in the pre-test, post-test, and follow-up stages, respectively, which is satisfactory.

The study was conducted in four phases. In the first stage, all three case groups and one control group completed the GHQ-28 before the intervention began. In the second stage, short-term cognitive-behavioral

therapy[11] for case group I, pharmaceutical therapy following the methadone maintenance treatment protocol [12] for case group II, and combined treatment for case group III were performed according to the Ministry of Health and Medical Education protocols. In other words, to comply with the ethics of research, the importance and necessity of conducting interventions for this population were explained in the pre-treatment briefing session. The participants gave consent to participate in the meetings by completing and signing a written informed consent form.

In this study, the researcher conducted the pre-test, post-test, and follow-up phases, as well as the non-pharmaceutical interventions in the groups, and the center's psychiatrist conducted the pharmaceutical interventions.

The case groups underwent short-term cognitive-behavioral group therapy (case groups I and III) and pharmaceutical therapy (case groups II and III) for four 60-minute sessions. The control group did not receive any intervention. The research questionnaires were completed at the beginning and end of the sessions of short-term cognitive-behavioral interventions and pharmaceutical therapy. One day of the week was chosen with the coordination of the harm reduction center to hold the non-pharmaceutical therapy sessions for four weeks.

Results

Demographic characteristics of the studied subjects are presented in Table 1.

The frequency distribution according to the gender of the subjects in Table 1 shows that 60 people (100%) were male. Regarding age, the highest frequency was related to the age group of 38–47. The different educational levels of the subjects indicate that the highest frequency was reported in the middle school group (31.7%). Also, regarding marital status, the highest frequency was reported in the single group (50%). Regarding occupation status, the highest frequency was related to the unemployed group (68.3%). Moreover, 41.6% of the people under treatment at the harm reduction centers were HIV-positive. Regarding prison history, 55% had a prison history.

The summary of the one-way analysis of variance results in Table 2 shows that there was a significant difference in the mental health scores in the post-test stage between the intervention groups (cognitive-behavioral, pharmaceutical therapy, and combined treatment) and the control group ($P<0.0001$, $df=3$, $F=14.47$). Furthermore, the results of Tukey's test showed that mental health decreased in the post-test stage in the intervention groups compared to the control group.

The summary of the results of the one-way analysis of variance in Table 3 shows that the scores of mental health subscales for all intervention groups (cognitive-behavioral, pharmaceutical therapy, and combined treatment), including somatization ($P<0.0001$, $p<3$, $F=379.5$), anxiety ($P<0.0001$, $df=3$, $F=179.7$), social dysfunction ($P<0.0001$, $p<3$, $F=291.9$) and depression ($P<0.0001$, $P<3$, $F=145.8$) in the post-test stage were significantly different from their pre-test scores. Furthermore, the results of Tukey's test showed that the effect of cognitive-behavioral, pharmaceutical therapy, and combined treatment on somatization, anxiety, and depression was significantly different from the control group. Pharmaceutical therapy does not have a significant effect on social dysfunction, and the cognitive-behavioral intervention was more effective. Also, the cognitive-behavioral intervention had a more significant effect compared to pharmaceutical therapy on anxiety, social dysfunction, and depression.

Table 1. Demographic characteristics of the studied subjects

Variable		Frequency	Percentage
Gender	Male	60	100
Age (year)	18-27	13	21.6
	28-37	18	30
	38-47	24	40
	48-57	5	8.4
Marital status	Single	30	50
	Married	16	26.6
	Divorced	14	23.4
Educational status	Illiterate	15	25
	Elementary school	17	28.3
	Middle school	19	31.7
	High school	9	15
HIV infection	Positive	25	41.6
	Negative	35	58.4
Occupational status	Unemployed	41	68.3
	Self-employed	8	13.3
	Employed	11	18.4
Prison history	Yes	33	55
	No	27	45
Groups	Experimental (1)	15	25
	Experimental (2)	15	25
	Experimental (3)	15	25
	Control	15	25

As shown in Table 4, all the statistical tests with different corrections indicate that the interaction between the group and the repeated factor (mental health) is significant. This result indicates that there is a significant difference in the effectiveness of pharmaceutical and non-pharmaceutical therapy and combined treatment on mental health.

According to the η^2 (eta squared) for the group interaction factor and the repeated factor, it is clear that about 17.1% of the changes in mental health are explained by pharmaceutical and non-pharmaceutical and combined interventions. In other words, there was a significant difference in the effects of pharmaceutical and non-pharmaceutical therapy and combined treatment on mental health compared to the control group. Mental health scores in the pre-test, post-test, and follow-up of the experimental and control groups are presented in Figure 1.

Table 2. Mean and standard deviation of the research variables in the case and control groups in the pre-test, post-test, and follow-up stages

Variable	Group	Pre-test		Post-test		Follow up		*F*	*df*	*P*
		Mean	SD	Mean	SD	Mean	SD			
Mental health	Short-term cognitive-behavioral	38.93	18.52	18.06	4.62	12.66	12.90	14.47	3	<0.001
	Pharmaceutical therapy	53.53	12.25	23.20	7.19	37.33	17.13			
	Combined treatment	43.40	12.60	21.20	10.36	27.33	16.99			
	Control	42.26	18.36	35.66	8.13	44.73	19.31			

Table 3. Mean and standard deviation of mental health components in the case and control groups in pre-test, post-test, and follow-up stages.

Variable	Group	Pre-test		Post-test		Follow up		*F*	*df*	*P*
		Mean	SD	Mean	SD	Mean SD				
Somatization	Short-term cognitive-behavioral	8.53	5.40	4.86	1.30	3.86	3.58	379.5	3	<0.001
	Pharmaceutical therapy	13.33	3.67	6.06	2.86	9.33	5.03			
	Combined treatment	11.33	4.02	5.60	2.72	7.86	5.06			
	Control	11.66	5	9.46	3.06	11.53	4.53			
Anxiety	Short-term cognitive-behavioral	10.20	4.72	2.93	1.98	2.26	2.91	179.7	3	<0.001
	Pharmaceutical therapy	13.20	3.29	5.80	3.85	8.86	3.71			
	Combined treatment	10.86	3.02	4.93	4.33	6.26	3.99			
	Control	9.93	5.14	10	4.22	9.93	5.66			
Social dysfunction	Short-term cognitive-behavioral	10.06	3.69	8.80	3.68	4.46	3.52	291.9	3	<0.001
	Pharmaceutical therapy	13.40	2.99	6.26	3.34	10.73	4.52			
	Combined treatment	10.26	3.43	7.06	2.52	7.86	4.83			
	Control	12.20	4.16	4.73	2.43	13.33	5.06			
Depression	Short-term cognitive-behavioral	10.13	6.37	1.46	1.95	2.06	4.26	145.8	3	<0.001
	Pharmaceutical therapy	13.60	4.56	5.06	3.57	8.40	5.19			
	Combined treatment	10.93	4.13	3.60	3.41	5.33	4.79			
	Control	9.46	5.56	11.46	4.43	9.93	5.49			

According to Figure 1, mental health scores in the pre-test, post-test, and follow-up of the three experimental groups and the control group show that non-pharmaceutical therapy and combined treatment were effective compared to the control group. However, pharmaceutical therapy showed no significant difference compared to the control group, indicating that pharmaceutical therapy has no effect. There was a significant difference between non-pharmaceutical therapy and pharmaceutical therapy, indicating that non-pharmaceutical therapy increased mental health. Also, there was a significant difference between non-pharmaceutical therapy and combined treatment, indicating that non-pharmaceutical therapy increased mental health more than the combined treatment.

As shown in Table 5, all the statistical tests with different corrections indicate that the interaction between the group and the repeated factor (mental health components) is significant. This result indicates the effectiveness of pharmaceutical, non-pharmaceutical, and combined treatment on mental health components. According to η^2 for the group interaction factor and the repeated factor, it is clear that about 18% of the changes in the anxiety component, 29.8% of the changes in social dysfunction, and 21.1% of the changes in depression are explained by pharmaceutical and non-pharmaceutical and combined interventions. In other words, the research results indicate a significant difference between pharmaceutical and non-pharmaceutical interventions and combined interventions compared to the control group on mental health components.

Discussion

This study evaluated the effects of short-term cognitive-behavioral group therapy, medication therapy, and their combination on the mental health of drug users in Ahvaz harm reduction facilities. The findings indicated that the mental health of the cognitive-behavioral group therapy, pharmaceutical therapy, and combined therapy groups was significantly enhanced compared to the control group. Additionally, pharmaceutical and non-pharmaceutical interventions for the somatization subscale, anxiety subscale, social dysfunctioning subscale, and depression subscale elucidated differences between these interventions. Furthermore, the findings were consistent with other studies, such as Ray et al[13] and Aldridge et al[14] indicating the effectiveness of cognitive-behavioral therapy combined with pharmaceutical

Table 4. Comparative tests with greenhouse correction (mental health)

Source of variance		SS	*df*	MS	*F*	*P* value	η^2
The interaction of group and repeated factor	Bartlett's sphericity test	4640.9	6	773.49	3.847	0.002	0.171
	Greenhouse correction	4640.9	5.023	924.02	3.847	0.003	0.171
	Huynh-Feldt	4640.9	5.437	853.63	3.847	0.002	0.171
	Correction of the lowest range	4640.9	3	1546.9	3.847	0.014	0.171

Table 5. Comparative tests with greenhouse correction (mental health components)

Dependent Variable	Variance source	Sum of squares (SS)	Degree of freedom (*df*)	Mean of squares (MS)	*F*	*P* value	η^2
Somatization	Greenhouse correction	186.7	5.11	36.55	2.051	0.077	0.099
Anxiety	Sphericity	386.9	6	64.49	4.110	0.001	0.180
Social dysfunction	Sphericity	720.6	6	120.10	9.907	0.0001	0.298
Depression	Sphericity	651.8	6	108.64	4.984	0.0001	0.211

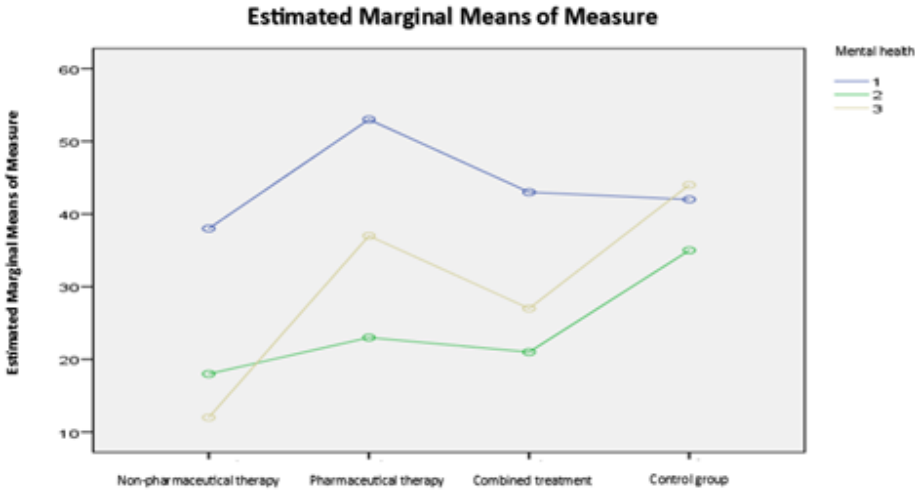

Figure 1. Mental health scores in experimental and control groups' pre-test, post-test, and follow-up.

therapy in improving mental health for substance use disorders. In other words, combining cognitive-behavioral therapy and pharmaceutical therapy is the best treatment approach compared to pharmaceutical therapy alone. Moreover, Esmaili et al[15] and Jarban and Najafianpour[16] confirmed the effectiveness of combined therapy using cognitive-behavioral therapy and pharmaceutical therapy for drug users. These findings suggest that cognitive-behavioral techniques alongside pharmaceutical therapy play a crucial role in managing anxiety, depression, and relationships with others, leading to increased satisfaction with life and improved mental health. Additionally, short-term cognitive-behavioral therapy assumes that learning processes substantially disrupt the perpetuation and fostering of drug addiction and dependence. Therefore, its principles can help reduce drug use.[17]

Cognitive-behavioral therapy facilitates recognition, avoidance, and coping in situations that may lead to drug use. It involves recognizing high-risk situations, timely avoidance of these situations, and effective coping with issues and problematic behaviors related to drug use. As a result, this therapeutic approach can substantially improve the mental health of drug users. Short-term cognitive-behavioral therapy is an organized and directional treatment that facilitates developing independent self-help skills. It is a logical method that teaches drug users to evaluate their thoughts and beliefs as hypotheses that should be tested for validity. Cognitive components are the most influential factors in enhancing mental health.[18]

Pharmaceutical treatments are beneficial in helping patients overcome somatic problems. The findings of the present study align with those of Jabal Zaijani et al[19] Zarei et al[20] and Fouladiyan et al[21] It appears that methadone maintenance treatments, alongside non-pharmaceutical treatments, improve mental health components, and combined treatment is more effective than using each treatment alone. Negative mood and anxiety affect the initiation and continuation of drug use. In explaining the effectiveness of cognitive-behavioral therapy, it can be stated that this therapeutic approach reduces the patient's exposure to unpleasant moods and anxiety. Therefore, anxiety treatment can indirectly contribute to reducing drug use.

Overall, there is a mutual relationship between

addiction and somatic symptoms, like weakness, fatigue, feeling unwell, and headaches, which can predispose individuals to addiction. Addiction, in turn, can manifest as somatic symptoms. The social functioning of drug users is lower than in normal individuals. The impaired social functioning of drug users reduces their coping skills against drug use, consequently increasing the tendency towards it. Job dissatisfaction, decision-making incapacity, lack of life enjoyment, and absence of social support make it easier for drug users to resort to drugs as a refuge. The cognitive-behavioral approach has helped solve addiction problems and dependencies.

The presented study was limited in its sample size, which consisted of non-randomly selected drug users of a harm reduction center in Ahvaz city; hence, caution must be exercised when generalizing the results. Furthermore, this research was conducted only on male drug users; therefore, the findings might not be generalizable to female users. In sum, it is recommended that these treatment strategies be provided for other groups and service centers for drug users, especially for women.

Conclusion

Short-term cognitive-behavioral therapy (CBT) combined with pharmaceutical therapy was found to be effective in improving mental health and its components. Based on these findings, integrating this combined treatment approach into harm reduction centers is recommended.

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Authors' Contribution

Conceptualization: Reza Davasaz Irani and Tayebeh Sharifi
Data curation: Tayebeh Sharifi
Formal analysis: Reza Davasaz Irani
Funding acquisition: Reza Davasaz Irani
Investigation: Reza Davasaz Irani and Tayebeh Sharifi
Methodology: Tayebeh Sharifi
Project administration: Reza Davasaz Irani
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Supervision: Reza Davasaz Irani
Validation: Reza Davasaz Irani
Visualization: Tayebeh Sharifi
Writing–original draft: Reza Davasaz Irani, Tayebeh Sharifi

Competing Interests

The authors declare that there is no conflict of interest.

Ethical Approval

This article is a part of the post-doctoral research thesis of the first author at the Islamic Azad University, Shahrekord Branch, which was approved by the ethics committee of this University (ethical code: IR.IAN.SHK.REC.1402.004).

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