The Effectiveness of CBT on Methadone Consumption and General Health in Opium Addicts

Hamid Kamarzarin[1*], Ehsan Golestani[2]

Abstract

Objective: The present study was conducted with the aim of investigating the effect of CBT therapy on methadone consumption and general health of opium addicts before and after the intervention.

Methods: The study population included all men aged 20 to 40 who were addicted to drugs and used the counseling services of addiction treatment centers in Tehran. The study sample included 30 addicted men who were selected through available sampling method and were counseled at Mofarrah addiction treatment center every day for six months. Subjects were divided into two experimental and control groups randomly and each group included 15 subjects. In this study, the Opiate Treatment Index (OTI) and the Goldberg's General Health Questionnaires (GHQ) were used to collect data. Descriptive, univariate covariance and multivariate covariance tests were used to analyze the collected data.

Results: The results showed that cognitive-behavioral therapy had a significant effect on increasing general health characteristics ($P<0/05$) in addition to reducing the desire to use drugs in patients undergoing methadone treatment ($P<0/05$).

Conclusions: According to the findings, it can be concluded that the cognitive-behavioral therapy has therapeutic benefits for addicts that can lead to a reduction in drug use and temptation to consume. Besides, CBT by increasing appropriate coping strategies, improves their general and mental health.

Keywords: CBT, Addiction, Methadone, Opium, mental health

Introduction

Addiction to substances such as alcohol, cocaine, opioids, and methamphetamine poses a continuing clinical and public challenge globally. Despite progress in understanding substance use disorders, challenges remain in their treatment. During past centuries, increased narcotic consumption has been seen as an increasing concern for the societies. It is a problem that has destroyed the lives of many people and has caused too much costs to be incurred for fighting, treatment and losses emanating thereof.

The side effects of addiction, which comprise all aspects of disorders including physical, mental, familial, cultural, economic and social disorders, have endangered the economic and mental health of the society. Researches indicate that the highest growth rate of opioid abuse occurred during the years 1352 to 1356 and since then started to decline until 1366, and it has risen again since 1367. Over the two decades from 1357 to 1377, the average annual drug consumption grew about 8 percent (Dehghani & Mesrabadi, 2018).

The fight against drugs has a long history in Iran from the past to the present. Up today, various laws have been passed and implemented in the area of prohibition of cultivation, distribution and consumption of drugs. However, a look at the

1. Assistant professer department of psychology, University of Payamenoor, Karaj, Alborz, Iran
2. M.A. in Clinical Psychology, university of mohaghegh ardabili, Ardabil, iran
* Corresponding author, Email: Hkamarzarin2002@yahoo.com

ascending trend of such cases as fatality resulting from drug abuse, affliction with illnesses of AIDS, hepatitis, transmitted diseases through sexual intercourse and transmitted diseases through blood and blood products, social delinquency, weakening family foundations and the increase in the number of the prisoners related with drugs indicate that the implementation of such laws and programs have not seen a big success in fight against addiction and its side effects. In recent years, an increase in the number of drug users, as well as a decrease in their average age, has caused concern among sociologists and policy makers (Mahdavian far, Masoud-nia & Yazdani-zazarani, 2018).

Excessive spread of this global phenomenon has been unprecedented. About 3.4 billion people in the world use drugs and more than 12% of deaths are related to addiction (Jupp & Dalley, 2014). Estimation of the Presidential Anti-Narcotics Headquarters in April 2013 on the prevalence of addiction in Iran claims 1,325,000 addicts and 700,000 people who use drugs for entertainment purposes. The damage caused by addiction and the cost of health care and the inefficiency of human resources following the disease are billions of dollars (National Institute on Drug Abuse, 2014). One of the main problems we are facing right now is what types of treatments are available for addiction. Due to the multifactorial nature of addiction and different perspectives on the etiology and processes of formation of this disorder, different treatments have been proposed for it. Some experts have divided these treatments into two major groups of drug and non-drug treatments. In drug related treatments, drug prescription is used for drug abandonment where the drug prescribed itself is addictive and has unwanted side effects. Because non- drug treatments are permanently effective and have no danger, they are well used. There are two famous maintenance treatments that include methadone and buprenorphine. Maintenance treatment with methadone is carried

out when the physician commences the treatment by giving methadone as symptoms of deprivation begin to appear in initial stages. Methadone is long lasting drug used to treating drug related deprivation of people addicted to morphine and heroin. Methadone is given through mouth every 4-6 hours until the symptoms of addiction begin, and while they are medically controlled, they usually stop taking the medication within 5-10 days. People with strong addiction could remain in the methadone treatment program for several months. Although, methadone is addictive and some people change addiction to heroin and behavior of seeking the drug towards addiction to methadone and seeking it, methadone related control of addiction will be easier. The reason why drug treatment is prescribed is that medication-assisted therapies in general, and MMT in particular, are positively associated with better health and social outcomes across groups, including a decreased frequency of injecting opioids, less involvement in criminal activity, a decrease in infectious disease exposure, improved work productivity and employment, and other functional outcomes (Maglione, Raaen, Chen, Azhar, Shahidinia, Shen, et al., 2018).

Due to the embarrassment of addiction, prevalence research on drug use is scant, although use of stimulants and injection drugs appears to have increased over time. Relapse means an initial consumption of drug substance when the person commits to quit. Amin-Esmaeli, Rahimi-movaghar, Sharifi, Hajebi, Radgoodarzi, Mojtabai, and colleagues (2016) studied prevalence of substance use disorders in Iran ($N = 7841$; N, women = 4475). Prevalence of 12-month use disorder for any drug was (44.2%) with opioid use disorder most common (23.2%) followed by cannabis (56%) and amphetamines (39%) (Amin-Esmaeli, Rahimi-movaghar, Sharifi, Hajebi, Radgoodarzi, Mojtabai, et al., 2016). Thus, to help the addicts, besides detoxification, psychotherapy and rehabilitation phases sound more important. In psychotherapy,

according to reliable theoretical models, psychotherapists use different treatments. Personal psychology, cognitive treatments, behavioral treatments, behavioral- cognitive treatments, family therapy, and group therapy are various types of treatments that psychologists would apply in their work (Howton & Ghasemzade, 2008). Counseling for reducing the danger of substances and HIV is an integrated intervention for drug abuse that is based on the principles of behavioral and cognitive therapies prescribed. This intervention is counseling based approach supported by health and cognitive psychotherapy research findings and is influential in effective changing the behavior.

Due to the lack of specialized medical staff, addiction treatment counseling by non-specialists can cause confusion and misguidance in addition to the initial problems of patients. Counseling to reduce substance related dangers is direct and prescriptive. The intervention uses short term appointments directed at improving the treatments and persuades patients to make primary changes to their life styles as including severing/reducing drugs, severing/reducing pernicious behaviors related to substances and sexual affairs. Counselors are committed to immediate feedback and positive enhancement regarding the progress made by patients and apply the method of establishing an especially positive communication in a profit framework.

Current research indicating messages of promoting health will positively be in a profit frame and increase the likelihood of patients' obedience to treatment orders and involvement in the behavioral changes. The primary stages of counseling concentrate on the behavioral changes necessary to avoid drugs and maintain it while later stages of the treatment link patients' progress in the treatment with the goals of long term improvements. A pilot study recently conducted in Behshahr camps suggested that the patients who received cognitive-behavioral therapy were more resistant to drug use (Abdi zarin & Mahdavi, 2018). Another pilot study showed that Cognitive-behavioral group therapy, along with mindfulness, in Kermanshah has had a significant effect on reducing craving for consumption of opioid addicts (Sedaghat zade, Imani & Shokri, 2018).

Therefore, the aim of the present study was to investigate the effect of CBT therapy on methadone consumption and mental health of opium addicts before and after the intervention.

Method

Participants and Procedure

The present study is applied in terms of purpose and semi-experimental in terms of method in which pre-test-post-test design with control group was used. Table 1 demonstrates the design of study.

The population under study was all men aged 20-40 who were addicted to drugs and were under the consultation in addiction treatment centers in Tehran. Since the minimum sample size in experimental studies should be 30 subjects (Delavar, 2010), the study sample included 30 addicted men who were selected using the available sampling method and were counseled at Mofarrah addiction treatment center every day for six months. Subjects were divided into two experimental and control groups randomly and each group included 15 subjects. The included criteria were living in Tehran, having normal intelligence, being literate (5th primary school degree and higher) to be able to complete the questionnaire, and being involved

Table 1. Research project design

Group	Pretest	Independent variable	Posttest
Experimental	X_1	T	X_2
Control	X_1'	-	X_2'

in drug at least for 5 years. The exclusion criteria included the subject's lack of tendency to participate in the research, suffering from any type of illnesses or hard mental disorder and being under another treatment for drug addiction.

In this research, various statistical methods were used to analyze data in proportionate with the data intended. Demographic data were described using the statistical indices of percentage, frequency, and average. To test the research hypotheses, the statistical test of univariate covariance analysis and multivariate covariance analysis were employed.

Ethical consideration

In order to observe the ethical principles of experimental studies, patient's satisfaction was obtained for participation in the study. They were reassured that patients' information, including name, details, address, etc., would be kept confidential. It was also explained that if they are reluctant to continue, they can stop taking part in the study at any time. A summary of the content of the sessions and the results of the study were also provided to patients at the end.

Instruments

The index of Opiate Treatment (OTI) (Darke, Ward, Hall, Heather, & Wodak, 1991): The OTI consists of six independent outcome domains. The domains chosen to reflect the dimensions of treatment outcome were: Drug Use, HIV Risk-taking Behavior, Social Functioning, Criminality, Health Status, and Psychological Adjustment. In all of these scales, the higher the obtained score is, the greater the degree of dysfunction is. In this study, the research only used the substance abuse

part. In this part, consuming all types of narcotics like heroin, opium, poppy, sedatives cigarettes and etc. were under investigation.

The Goldberg's General Health (GHQ) (Goldberg & Hiller,1979): The 28-item General Health Questionnaire was presented by Goldberg and Hiller in 1979 and has four sub-scales, each with 7 questions. These scales include: 1- Physical symptom scale, 2- anxiety symptoms and sleep disorders scale, 3- Social function scale, and 4- Depression scale. From 28 phrases in questionnaires, items 1 to 7 are related physical symptom scale. Items 8 to 14 investigatie anxiety symptoms and sleep disorders, items 15 to 21 are related to evaluation of social function symptom, and finally items 22 to 28 investigate depression symptom. To sum up the scores, A is given a score of 0, B is given a score of 1, C is given a score of 2, and D is given a score of 3. At any scale, a score of 6 or higher and a total score of 22 or higher indicate incompatible symptoms.

Results

The descriptive results of the present study, including mean and standard deviation, are shown in Table 2 & 3.

Table 2 shows the mean and standard deviation of the drug consumption component in the two experimental and control groups and in the pre-test and post-test.

Table 3 shows the mean and standard deviation of the general health and its subscales in the two experimental and control groups and in the pre-test and post-test.

According to the results of Table 4, after adjusting the pre-test scores, the difference between

Table 2. The experimental and control groups' scores in the OTI questionnaire

Stage	Group	Average	Std. Deviation
Pre test	Experiment	22.86	2.26
	control	22.93	1.94
Post test	Experiment	19.25	1.94
	control	22.64	2.06

Table 3. The experimental and control groups' scores in the GHQ questionnaire

	Stage	Group	Average	Std. Deviation
Physical symptom	Pre test	Experiment	11.20	3.93
		control	12.00	2.47
	Post test	Experiment	9.80	3.27
		control	11.46	2.35
Anxiety symptoms and sleep disorders	Pre test	Experiment	8.06	3.01
		control	10.13	1.68
	Post test	Experiment	6.46	1.99
		control	10.00	1.36
Social function	Pre test	Experiment	9.06	2.46
		control	8.80	2.07
	Post test	Experiment	7.00	2.07
		control	8.40	2.47
Depression	Pre test	Experiment	12.93	3.39
		control	12.21	4.63
	Post test	Experiment	10.20	3.82
		control	11.93	4.35
GHQ	Pre test	Experiment	41.26	6.23
		control	43.13	7.06
	Post test	Experiment	34.40	6.40
		Control	41.86	7.21

Table 4. Results of univariate covariance to analysis the effect of CBT in reducing drug use

Source	Type III Sum of Squares	Df	Mean Square	F	Sig
Intercept	6.823	1	6.823	9.338	0.005
Group	80.941	1	80.941	110.772	0.001
Error	19.729	27	0.731		
Total	13286.136	30			

Table 5. Results of multivariate analysis of variance to compare patient General health and its subscales in pre-test and post-test

Test	Value	F	Hypothesis df	Error df	Sig
Pillai's Trace	0.817	17.802	5	20	0.001
Wilk's Lambda	0.183	17.802	5	20	0.001
Hotelling's Trace	4.451	17.802	5	20	0.001
Roy's Largest Root	4.451	17.802	5	20	0.001

the experimental and control groups is significant and shows that cognitive-behavioral therapy has an effect on reducing drug use in patients treated by addiction treatment centers ($p < 0.05$).

As shown in Table 5, there is a significant difference between physical symptom, anxiety symptoms and sleep disorders, social function, depression and total general health between the experimental and control groups (F=17.820 and Sig=0.001).

The results of Table 6 show that there is a significant difference between the average scores of the Experiment and control groups in terms of physical symptom (F=8.884 and Sig=0.006), anxiety symptoms and sleep disorders (F=36.352

Table 6. Pre-test and post-test comparison results in General health and its subscales

Variable	Source	Type III Sum of Squares	df	Mean Square	F	Sig
Physical symptom	Intercept	0.228	1	0.228	0.407	0.529
	Group	4.968	1	4.968	8.884	0.006
	Error	13.421	24	0.559		
	Total	3641.000	30			
Anxiety symptoms and sleep disorders	Intercept	2.933	1	2.933	3.030	0.095
	Group	35.196	1	35.196	36.352	0.001
	Error	23.237	24	0.968		
	Total	2209.000	30			
Social function	Intercept	1.375	1	1.375	0.500	0.486
	Group	12.487	1	12.487	4.537	0.044
	Error	66.058	24	2.752		
	Total	1939.000	30			
Depression	Intercept	0.002	1	0.002	0.001	0.978
	Group	27.302	1	27.302	11.607	0.002
	Error	56.455	24	2.352		
	Total	4166.000	30			
GHQ	Intercept	1.831	1	1.831	0.209	0.652
	Group	168.526	1	168.526	19.217	0.001
	Error	210.467	24	8.769		
	Total	44597.000	30			

and Sig=0.001), social function (F=4.537 and Sig=0.044), depression (F=11.607 and Sig=0.002) and total general health (F=19.217 and Sig=0.001).

Discussion and Conclusion

Historical background on addiction in Iran, as well as its proximity to the drug transit route, has made addiction one of the main social problems in the country, and this has led to many strategies and treatments to improve the situation of addicts. So, the present study was conducted with the aim of investigating the effect of CBT therapy on methadone consumption and general health of opium addicts before and after the intervention. Based on the results of Table 4, the results showed that CBT therapy could significantly reduce consumption in drug dependent individuals. This conclusion is consistent with previous studies (Magill, et al., 2009; Carroll et al., 2017; Magill,

et al., 2019; Kiluk., 2019; Abdi-zarin et al., 2018). In one studyو Computerized Cognitive Behavioral Therapy adjusted for substance use disorders and resulted indicated that computerized delivery is a strategy for enhancing individuals' learning of cognitive and behavioral skills for successfully avoiding substance use (Kiluk., 2019). Also a meta-analysis examined 30 randomized controlled trials about effectiveness of CBT treatment for alcohol or other drug use disorders found that CBT in contrast to minimal treatment showed a moderate and significant effect size that was consistent across outcome and follow-up. When CBT was contrasted with a nonspecific therapy or treatment as usual, treatment effect was statistically significant for consumption frequency and quantity (Magil et al., 2019).

In explaining the results, it can be stated that Cognitive-behavioral therapy has been able to change the attitudes and thoughts of

drug-dependent patients participating in the experimental group towards drug use and various physical and mental complications, as well as the risks and ongoing problems for themselves and their families, and teaching temptation control skills. In addition, knowing the tempting situations will keep them away from drugs and prevent them from being overused. Accordingly, on the role of temptation in reducing or increasing the tendency to narcotics, cognitive and behavioral intervention could undermine these roles and the addict will be enabled to identify the harmful effects of substances. Following the same token, the addict could utilize thoughts and opinions and through his thoughts identify conflicting opinions in order to avoid drug consumption by facilitating thoughts and contemplations. Based on the cognitive – behavioral approach, one can say that dependence on drugs that are thought to be in adaptive means to confront problems will increase the problem solving in the addict and tendency to narcotics as well as temptation through applying cognitive behavioral techniques.

Moreover, another result of this research was that cognitive-behavioral therapy can reduce physical symptom, anxiety symptoms and sleep disorders, social function, and depression, and totally can improve general health. This finding is in line with those of House (2013), Golshani et al. (۲۰۲۰), Liu et al. (2019), Abolghasemi et al. (2018), which indicates the importance of Cognitive-behavioral therapy in reducing anxiety and depression symptoms. A meta-analysis examined 15 randomized controlled trials and about 1671 patient about the presentation of cognitive-behavioral therapy on somatic disorders showed that treatment reduced the symptoms of anxiety and depression and improved physical performance in the experimental group compared to the control group.

In explaining the findings, it can be stated that Cognitive-behavioral therapy makes patients become more aware of themselves, their abilities, talents, and power to change things, and as a result, they can avoid negative thoughts and indoctrination. Therefore, their motivation to work and strive in various aspects of life should be increased, which in turn helps them to take important steps to get rid of symptoms of anxiety and depression. On the other hand, the results show that cognitive-behavioral therapy increases self-efficacy and adaptation to the stress of addicts being treated, which allows them to cope better with adverse life changes (Abdizarin et al., 2018). Also, inspired by the behavioral-cognitive approach, we can say that dependency on substance which are incompatible coping mechanisms for confronting problems, the addict will be able to increase his abilities of solving problems via the therapy under consideration, thereby his social functions will improve and in this way, his physical, anxiety, stress, and depression problems will decrease.

This study also had limitations, such as the impossibility of measuring the samples in the follow-up phase. Also in this research, only male patients were included in the experimental group and the effectiveness of this approach on women has not been studied. On the other hand, due to the limitations of this study, patients received cognitive-behavioral counseling that was treated with methadone and no other drugs or narcotics were examined. Accordingly, it is suggested that the follow-up phase be included in the research plan in future studies. This study could also be performed on methadone-treated women. Men treated with another drug or other drug-dependent may also be the next trials subject.

References

Abdi zarin, S., Mahdavi, H. (2018). The effectiveness of cognitive-behavioral therapy on self-efficacy and resilience of addicts referring to Behshahr addiction treatment camps. *Journal of Addiction Research on Substance Abuse*, 12(49): 39-56.

Abolghasemi, A., Mikaeili, N., Khoshnoodnia Chomachaei, B., & Karimi Yousefi, S. H. (2017). Effectiveness of Cognitive Therapy on Emotional Distress and Stress Coping Strategies in Patients with Multiple Sclerosis. *Biquarterly Iranian Journal of Health Psychology*, *1*(1), 29-36.

Amin-Esmaeili, M., Rahimi-Movaghar, A., Sharifi, V., Hajebi, A., Radgoodarzi, R., Mojtabai, R., ... & Motevalian, A. (2016). Epidemiology of illicit drug use disorders in Iran: prevalence, correlates, comorbidity and service utilization results from the Iranian Mental Health Survey. *Addiction*, *111*(10), 1836-1847.

Carroll, K. M., & Kiluk, B. D. (2017). Cognitive behavioral interventions for alcohol and drug use disorders: Through the stage model and back again. *Psychology of Addictive Behaviors, 31*(8), 847–861

Darke, S., Ward, J., Hall, W., Heather, N., & Wodak, A. (1991). *The opiate treatment index (oti) manual*. Technical Report 11). Sydney, Australia: National Drug and Alcohol Research Centre.

Dehghani, S., Mosr Abadi, J. (2018). The meta-analysis of The effectiveness of social-emotional skills training on reducing the addiction talent of learners. *Journal of Addiction Research on Substance Abuse*, 12(48): 119-136.

Goldberg, D. P., & Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological medicine*, *9*(1), 139-145.

Golshani, F., Mirghafourvand, M., Hasanpour, S., & Seiiedi Biarag, L. The Effect of Cognitive Behavioral Therapy on Anxiety and Depression in Iranian Infertile Women: A Systematic and Meta-Analytical Review. *Iranian Journal of Psychiatry and Behavioral Sciences*, *14*(1).

House, S. H. (2013). Epigenetics in adaptive evolution and development: The interplay between evolving species and epigenetic mechanisms: Extract from Trygve Tollefsbol (ed.)(2011) Handbook of Epigenetics–The New Molecular and Medical Genetics. Chapter 26. Amsterdam, USA: Elsevier, pp. 423–446. *Nutrition and health*, *22*(2), 105-131.

Jupp, B., & Dalley, J. W. (2014). Behavioral endophenotypes of drug addiction: etiological insights from neuroimaging studies. *Neuropharmacology*, *76*, 487-497.

Kiluk, B. D. (2019). Computerized Cognitive Behavioral Therapy for Substance Use Disorders: A Summary of the Evidence and Potential Mechanisms of Behavior Change. *Perspectives on Behavior Science*, *42*(3), 465-478.

Liu, J., Gill, N. S., Teodorczuk, A., Li, Z. J., & Sun, J. (2019). The efficacy of cognitive behavioural therapy in somatoform disorders and medically unexplained physical symptoms: a meta-analysis of randomized controlled trials. *Journal of affective disorders*, *245*, 98-112.

Magill, M., & Ray, L. A. (2009). Cognitive-behavioral treatment with adult alcohol and illicit drug users: a meta-analysis of randomized controlled trials. *Journal of studies on alcohol and drugs*, *70*(4), 516-527.

Magill, M., Ray, L., Kiluk, B., Hoadley, A., Bernstein, M., Tonigan, J. S., & Carroll, K. (2019). A meta-analysis of cognitive-behavioral therapy for alcohol or other drug use disorders: Treatment efficacy by contrast condition. *Journal of Consulting and Clinical Psychology, 87*(12), 1093–1105.

Maglione, M. A., Raaen, L., Chen, C., Azhar, G., Shahidinia, N., Shen, M., ... & Hempel, S. (2018). Effects of medication assisted treatment (MAT) for opioid use disorder on functional outcomes: a systematic review. *Journal of substance abuse treatment, 89, 28-51.*

Mahdavian far, M., Masoud nia, H., Yazdani zazarani, M. (2018). Implementing barriers to policy-making in the Islamic Republic of Iran in the primary prevention of addiction (1375-1395). *Journal of Addiction Research on Substance Abuse, 13(51): 55-70.*

National Institute on Drug Abuse Addiction Science: From Molecules to Managed Careseries (2014). Drug abuse costs the United States economy hundreds of billions ofdollars in increased health care costs, crime and lost productivity.

Sedaghat zade, A., Imani, S., Shokri, O. (2018). Comparison of the effectiveness of cognitive-behavioral therapy and mindfulness-based cognitive therapy on reducing cravings in opioid addicts. *Journal of Addiction Research on Substance Abuse, 12(49): 243-268.*