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Effectiveness of Matrix Treatment on Depression and Temptation in Consumption in Amphetamine Dependent Individuals

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Abstract: A varied range of psychological interventions has been suggested to treat substance use disorders, particularly for amphetamine users. The purpose of psychological treatments are to help drug dependents understand the detrimental effects of drug use, recognize their personal values and strengths, and overwhelm social stigma and self-stigma to involve in specialized individual or group interventions. The current study aimed to investigate the effectiveness of matrix treatment on depression and the temptation to use in amphetamine dependent individuals. The research method was quasi-experimental with a pre-test-post-test design with a control group. The statistical population of the research consists of 1,400 men dependent to amphetamines, self-referred to addiction treatment centers in Tehran. Participants were 40 people whom selected by accessible sampling method and randomly assigned to control and experimental groups (20 people in each group). Consumption temptation scale and Beck depression inventory were used for collecting data. Results revealed that the matrix treatment had a significant effect on depression and temptation in consumption. According to our results, it can be concluded that matrix treatment can be used as a complementary drug treatment in amphetamine dependent individuals.

Keywords: Matrix treatment, depression, amphetamine dependent individuals, temptation in consumption

Introduction

The high prevalence of amphetamine and methamphetamine use and the extremely high death rate of its users in recent years can be seen in many studies (Maxwell & Rutkowski, 2008). From 2006 to 2015, about 23% have been added to the statistics of drug users in the world, and the estimated global prevalence rate in 2006 was about 9.4% and in 2015 it reached 29.5% (Richards et al., 2018). In Iran, deaths due to the consumption of stimulants and narcotics in 2015 compared to 2014 increased by 8.6 percent, in other words, more than three thousand one hundred and ninety addicts died due to abuse. Among all drugs, in addition to the consequences and side effects it has directly on the user, amphetamine has secondary social costs such as disruption in the family, school and children's education and work life, and the occurrence of all kinds of violence and hallucinations (Bramness et al., 2015). Substance abuse and dependence on narcotic stimulants is a chronic and recurring disorder that is characterized by periods of recovery and return. Currently, the treatment of stimulants, including amphetamine, is one of the most difficult drug abuse treatments (Godino et al., 2015). For treatment, based on the duration, quantity, type and method of consumption, a person may need inpatient or outpatient drug treatment (Haile et al., 2009). After the patient's psychiatric disorders are

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investigated and treated, family education, early recovery skills training and relapse prevention and therapeutic behavior should be done (Vocci & Montoya, 2009). Since coping skills can be taught and learned, in cognitive-behavioral therapy, the assumption of social learning theory is emphasized that people who abuse substances need to learn adaptive skills and substitute adaptive methods to deal with their problems and find solutions (Reback & Shoptaw, 2014). Therefore, cognitive-behavioral intervention by teaching the necessary and needed skills of these people changes people's lives and teaches them to live without drugs (Lee & Rawson, 2008). Therefore, considering that other traditional methods do not solve this problem and important social problem, matrix treatment is one of the best options to give people who are leaving to have the strength to live and fight against temptation (Cretzmeyer et al., 2003).

Drug addiction is related to a wide range of diseases, disorders and disabilities (Pickering et al., 2011). In many studies, a high degree of coexistence between mental disorders and personality traits with substance dependence has been reported (Grilo et al., 1997). Among these disorders, the depression coexist with substance abuse disorders (Aakre et al., 2014). Depressed mood along with lack of interest and enjoyment are among the key symptoms of depression. The patient may feel sadness, despair, emptiness and worthlessness. Depression may be a sign of helplessness in addicts, which is considered as an obstacle to perform effective behaviors to fight addiction or take advantage of coping resources available in substance abusers (Baker et al., 2010). Therefore, especially substance abuse or dependence may be the cause of depression during the addiction period or after it, or it may be considered as a consequence of depression. Undoubtedly, all available treatments for addiction are not equally effective; because there are many addictive drugs and the treatment plan for specific drugs can be different. In addition, the characteristics of addicts as well as accompanying disorders and severity of addiction can affect the effectiveness of treatment (Schulte et al., 2014). Therefore, it is necessary to consider these factors in choosing treatment.

A promising therapeutic approach in recent years is the matrix model. The main interventions in the matrix treatment are in axes such as increasing the information of the patient and those around him about the disease of addiction and its related behaviors, relapse prevention skills and management of possible temptation, healthy life skills such as planning, communication with others, correction of mental and spiritual problems and stress associated with addiction and management of physical disorders (Hser et al., 2007). Due to the effectiveness of non-pharmacological interventions, the absence of side effects, and economic efficiency, these types of interventions are more common nowadays (Vocci & Montoya, 2009). Therefore, considering the importance of amphetamine addiction treatment, the effect of depression and temptation variables, and the effectiveness of intervention approaches, the current study aimed to investigate the effectiveness of matrix treatment on depression and the temptation to use in amphetamine dependent individuals.

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Material and Methods

The present research method was a semi-experimental type with experimental and control groups. The statistical population of the study consisted of 1,400 men addicted to amphetamines, self-referred to addiction treatment centers in Tehran. For sampling, considering the sample dropout, 40 people from were selected by accessible sampling method and were randomly assigned into control and experimental groups (20 people in each group). Consumption temptation scale and Beck depression inventory were used for collecting data in pre-test and post-test phases. Participants were selected by accessible sampling from the selected addiction treatment clinics and centers in Tehran. To analyze the data, multivariate analysis of covariance (MANCOVA) was used. Also, for the homogeneity of variance, Levene's test and for normality, the Shapiro-Wilk test was used as well.

Tools

Beck Depression Inventory: Depression is a state of mood that is associated with a decrease in self-esteem, a feeling of inadequacy, and an unfavorable perception of oneself. Among the tests and questionnaires that have been prepared to measure depression, the Beck Depression Inventory (BDI) is one of the most suitable tools for assessing depression. This questionnaire has 21 items that measure the physical, behavioral and cognitive symptoms of depression. Each item has a set of at least four possible answer choices, ranging in intensity. A value of 0 to 3 is assigned for each answer and then the total score is compared to a key to determine the depression's severity and higher total scores indicate more severe depressive symptoms.. Krefetz et al. (2002) reported the internal consistency of this instrument as 0.73 to 0.92 with an average of 0.86 and alpha coefficient for the patient group as 0.86 and 0.81 for the non-patient group. Also, (Mohammadkhani et al., 2010) obtained alpha coefficient of 0.92 for outpatients and 0.93 for students, and test-retest coefficient at one week interval was 0.93. In addition, in a study on 125 students of Tehran University and Allameh Tabatabai University, which was conducted to check the reliability and validity of BDI-II on the Iranian population, the results showed Cronbach's alpha was 0.78 and the test-retest reliability was 0.73 after two weeks (Gharaei et al., 2019).

Consumption Temptation Scale: The questionnaire measuring the temptation to use drugs after withdrawal was developed by Fadardi et al. (2008), which consists of 20 items that are used to measure the amount of thoughts and fantasies related to drugs and the temptation to use them. The scoring of the questionnaire is on a 6-point Likert scale (completely true = 5 and not true at all = 0) and the obtained Cronbach's alpha is above 70%. The reliability of this questionnaire was obtained according to Cronbach's alpha. To measure the validity of it, the situational confidence questionnaire (Annis & Graham, 1988), was used ($p = 0.001$, $r = 0.53$). in the present work, the reliability of this questionnaire was obtained by Cronbach's alpha as 0.78.

Matrix treatment plan: The implementation of the matrix, which is carried out two to three sessions a week with the presence of the therapist and the patient, the number of sessions is 22-24 sessions, the

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localized form of which is a three-month schedule, in which all sessions have a clearly developed program. The presence of at least one member of the patient's family in one meeting per week is necessary. The duration of each session per day will be half an hour, during the session, there will be special topics for that session, the assignments of the previous session, training for the next week. It includes checking the behavioral situation during the week and so on. The matrix treatment method will rely on the following interventions: familiarization of the patient and his family about addiction, stimulants and how to treat, identifying the problematic situations of each patient, teaching skills to prevent temptations, cravings and control them, teaching skills for managing possible slips , increasing strength in dealing with stress, teaching healthy life skills without substances such as planning, communication with others, healthy recreation, etc.

Results

The main hypothesis states that matrix treatment has an effect on depression and the temptation to use in amphetamine addicts. In Table 1, the adjusted means of the two groups in the post-test after controlling the effect of the covariate variable. According to the results of data analysis, the effect of matrix treatment on the linear combination of dependent variables, i.e., depression and temptation to consume, was significant (Wilks Lambda = 0.101; F = (35, 2) 156.37, $p < 0.01$). The results released that there is a statistically significant difference between the post-test scores of the two groups, at least in terms of one of the two dependent variables. Therefore, the main hypothesis of the research is confirmed. Also, the parametric eta square or the effect size shows that it is 89.9 percentage of variance in dependent variables was accounted by the effect of the intervention. In order to accurate examining the effect of the intervention on each of the dependent variables, one-way analysis of covariance embedded in MANCOVA was performed (tables 2 and 3).

Table 1. The adjusted means of the two groups in the post-test controlling the effect of the covariate variable

Variables	Experimental group		Control group	
	Adjusted mean	SD	Adjusted mean	SD
Depression	23.84	0.78	34.66	0.75
consumption temptation	40.43	1.60	70.52	1.60

Table 2. The results of covariance analysis on the depression scores

Variable	Source	SS	DF	MS	F	p	ETA
Depression	Between group	1150.39	1	1150.39	101.08	0.001	0.73
	Within group	409.70	36	11.38			
	Total	4645.50	39				

According to Table 2, after removing the effects of the covariate variable (pre-test), there is a statistically significant difference between the adjusted scores in the depression post-test (F = (101.08,

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P < 0.01) of the experimental and control groups. Based on this, the effect of matrix treatment on the depression of amphetamine addicts has been significant. In other words, matrix treatment has reduced the depression. Therefore, the first sub-hypothesis of the research is confirmed. The eta square or the effect size shows that 73.7% of the changes (reduction) in the depression is caused by the intervention effect of matrix therapy.

Table 3. The results of covariance analysis on the consumption temptation scores

Variable	Source	SS	DF	MS	F	p	ETA
consumption temptation	Between group	9489.71	1	9489.71	189.93	0.001	0.84
	Within group	1798.67	36	49.96			
	Total	12282.97	39				

According to Table 3, after removing the effects of the covariate variable (pre-test), there is a statistically significant difference between the adjusted scores in the post-test of consumption temptation ($F=189.93_{36, 1}$, P < 0.01) between the experimental and control groups This means that the effect of matrix treatment on the temptation to use amphetamines was significant. In other words, matrix treatment has reduced the temptation to use. Therefore, the second sub-hypothesis of the research is also confirmed. The square of the parametric eta or the effect size shows that 84% of the changes (reduction) in the temptation to consume are caused by the intervention effect of matrix treatment.

Discussion

The present study was conducted with the aim of the effectiveness of matrix therapy on depression and temptation of consumption in amphetamine users. The results indicated that the matrix treatment had a significant difference in the variable of depression and consumption temptation. The research results were in line with the past studies (Fattahi Shengelabad & Mirhashemi, 2018, 2019; Kamarzarin & Golestani, 2019; Peymannia et al., 2018).

In explaining the effectiveness of Matrix treatment on depression, it can be stated that some teenagers and young people who turned to continuous drug use, state that there is nothing to deal with feelings such as anxiety, depression, fear of failure and purposelessness in life. They don't know any other way than drugs. The matrix method increases control over negative emotions. This plan includes a series of coherent programs to learn tolerance against other strong emotions such as depression. In the Matrix therapy sessions, in addition to teaching that addiction is a kind of disease, the person should be gradually taught to accept the realities of today's life, problems, inadequacies and abilities, and a positive attitude towards his personality and acceptance of both positive and negative aspects of life.

In explaining the effectiveness of the matrix on consumption temptation, it can be said that in this educational model, man is considered the most noble and sacred creature in the universe and it is not permissible to take authority and the right to determine his destiny from him and for anyone at any

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level and position. Therefore, a person will be faced with a kind of freedom and acceptance, the result of which is an increase in self-respect and a decrease in temptation and the ability to leave tempting situations.

In addition to the achieved findings, the present study has some limitations. Due to the type of situation of participants, it was not possible to randomly select the research sample and the sample was selected as accessible. It is recommended that researchers compare the effectiveness of matrix method with other cognitive and emotional treatments in the future studies. Also, it is suggested that in future studies, researchers investigate the effectiveness of matrix treatment on anxiety, stress and hopelessness of amphetamine users. Treatment clinics and centers can use the matrix treatment for decreasing the depression and consumption temptation in drug dependent patients.

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