

# Efficacy of Group Reality Therapy versus Desipramine Pharmacotherapy in Drug Craving and Relapse of Methamphetamine-Dependent Patients in Yazd

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Received Date: February 28, 2022; Accepted Date: March 10, 2022; Published Date: April 01, 2022

Citation: Hadi Ghazalbash, (2022) Efficacy of Group Reality Therapy versus Desipramine Pharmacotherapy in Drug Craving and Relapse of Methamphetamine-Dependent Patients in Yazd. *J Pharmaceutics and Pharmacology Research*. 5(4), DOI: 10.31579/2693-7247/073

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## Abstract

**Introduction:** In this comparative study, we aimed to investigate the effectiveness of group reality therapy versus desipramine pharmacotherapy in reducing the craving and relapse of methamphetamine-dependent patients.

**Materials and Methods:** This semi-experimental research was conducted using a control group and two experimental groups of reality therapy and desipramine pharmacotherapy. The statistical population of this study included all methamphetamine-dependent patients under methadone treatment who referred to the health clinics of Yazd city, Iran. We selected 30 patients using convenience sampling and then categorized them randomly into three groups of reality therapy, desipramine pharmacotherapy, and control. In the pre-test stage, the risk questionnaire was administered to evaluate the stimulants. The first experimental group attended 10 sessions of reality therapy once a week and were evaluated immediately after the treatment. The data were analyzed using the covariance analysis.

**Results:** The findings showed no significant difference between the total mean score of the reality therapy and desipramine pharmacotherapy groups ( $F= 3.289$ ,  $P= 0.087$ ). Hence, these two interventions had no effect on attenuating craving to use the drugs. To check the *homogeneity presumptions* of covariance matrix and variances of the two groups, the Box (6.241) and Levine (0.250) tests were applied, respectively. The results about experimental groups (Reality therapy and Desipramine group) in comparison with control group were meaningful.

**Conclusion:** No significant difference was observed between the reality therapy and desipramine pharmacotherapy groups in reducing craving to use the drugs. The scope of changes showed that craving for drug consumption reduced in reality therapy (51.0) and desipramine pharmacotherapy (36.0) groups.

**Keywords:** Craving; desipramine; methadone; methamphetamine; patients; reality therapy

## Introduction

Drug addiction is one of the most important problems of the present time with a global scope and burden. It has exceeded the medical boundaries and changed to a psychological, social, and family problem and challenge. The main characteristic of addictive behaviors is their relapsing nature and tendency. Since drug addiction is a recurrent chronic disorder, relapse or return to the pre-treatment conditions is one of the most important challenges throughout the herapeutic process of addiction [1]. The results of related studies showed that in the first year of treatment, more than 50 % of the patients had relapse [2]. The findings indicated that three to six months after treatment, 75% of the patients developed relapse [3]. Some

factors leading to relapse include cognitive and situational factors, self-efficacy, severity of stressors, and intense craving for consumption. Relapse phenomenon imposes large economic costs on the therapeutic system and can lead to frustration and disappointment in patients and their families towards treatment. So, appropriate interventions are required to reduce the relapse rate [4].

According to Wiliam study, the director of National Institution Drug Abuse in the United States, over 25% of mortalities in the American society are premature and drug-induced. Unfortunately, despite the great efforts of the scientific community, no appropriate treatment has been determined for this problem [3].

According to the World Health Organization (WHO), drug addiction is defined as the dependence syndrome. It is defined as a cluster of physiological, behavioral, and cognitive phenomena in which the use of a substance or a class of materials takes priority over the previously important behaviors. The belief that negative and undesirable emotions are unbearable and cannot be managed without reliance on materials leads the consumers to relapse and re-use of materials [6].

Craving is one of the most influential and popular topics in addictive disorders. Craving for drug use covers a wide range of phenomena, including the patients' expectation regarding the reinforcing effects of drugs and their intensive tendency for using them. This may be one of the most comprehensive and concise definitions of drug craving. Basically, craving is an uncontrollable desire for the consumption of substance, which leads to complicated psychological and physical suffering, such as weakness, indigestion, anxiety, insomnia, aggression, and depression if not controlled. In order to avoid or confrontation with temptation, most of the new psychosocial therapies recommend motivation enhancement methods as well as learning and practicing new strategies [7]. Nowadays, addiction to cocaine and heroin has shifted to other drugs and made the problem of drug addiction much harder to solve. In recent years, the simultaneous use of several substances has increased dramatically. According to the statistics, about 161-588 tons of stimulants group (amphetamine, methamphetamine, known as *Glass* in Iran, methacatinone, and related substances) were produced in Iran in 2008 [8].

Currently, the dramatic use of methamphetamine has caused widespread domestic and global problems. In 2015, the *National Survey on Drug Use and Health (NSDUH)* reported that approximately 897,000 12-year-old people were the consumers of methamphetamine, which showed a remarkable increase (Substance Abuse and Mental Health Services Administration, 2017). According to the United Nations' Counter Narcotics Report in 2017, more than 37 millions methamphetamine users existed with an annual prevalence of 77 % [9].

On the other hand, the production of artificial and laboratory high-risk materials have compounded the problems of drug-related interventions. Amphetamines and methamphetamine have a similar pharmacodynamic in human body [10]. Methyl amphetamine, known as a *Glass*, *Crystal*, and *Ice* in the black market, is a psychoactive substance and a highly potent addictive stimulant with a significant effect on the central nervous system. Methamphetamine has shiny transparent crystals in the form of powder [11]. Repeated use of these drugs leads to the stimulation of compromise mechanisms, short-term changes, and constant effects on the function of neurons and *opioid receptor sensitive* neurons. Consumers of such drugs are vulnerable and develop relapse because these substances create tolerance, dependence, and susceptibility, which are the compromise mechanisms and persist even years after the abandonment [12]. Endocrine disorders related hypothalamus-pituitary gonadal axis and spermatogenesis abnormalities are other complications of it [13].

In Iran, *Glass* consumption was very limited in 2007 and no cases of *Glass* use was reported in the quick survey of substance abuse in 2004; however, we can expect that a very small number of consumers existed. The same study was repeated in 2007 and the results showed existence of 3.5 % *Glass* consumers [14].

Resilience in people with methamphetamine abuse involves their field of attention and leads to severe rumination in them [16]. A study indicated that consumption of methamphetamine elevate the level of oxidative stress in the kidney tissues and prescription of cysteine decrease it [17].

Experts in the field of social and behavioral studies referred to *Glass* as the tsunami of the century. They also added that ease of availability of

drugs increased the number of consumers (18). According to the above mentioned information and lack of specific medical treatments considering this substance, the importance of psychotherapy and the role of psychotherapists are highlighted in this area. At present, Matrix psychological therapy is a known treatment for methamphetamine dependence. This treatment is specifically designed for patients with substance abuse and is a cognitive-behavioral therapy (CBT) approach that includes 48 sessions (19). A study showed that patients felt fatigue and dissatisfaction with the long duration of Matrix treatment method sessions (20). It is worth noting that outpatient treatment may be effective in dependence on other drugs, but regarding the treatment of methamphetamine abuse, residential rehabilitation is advised despite the lack of clear indicators for admission and detoxification conditions. These conditions include the presence of secondary disorders, addiction to poly substances that is consumption of other substances in methamphetamine use, and existence of serious social problems so that the patient does not show resistance to drug dependence in the outpatient treatment [21]. However, despite some limited effects on consumers, no definitive and special treatments were reported in the literature regarding the methamphetamine abuse.

William Glasser believed that the people must face the reality and the foundation of reality is based on the principle that human beings always choose their own behaviors. In other words, all the committed behaviors were selected to reduce the level of failure or to satisfy a particular need. Therefore, the purpose of reality approach is helping people to monitor their behaviors and to have good and appropriate choices in their lives [22]. According to this theory, humans have intrinsic motivation to fulfill their needs for love and sympathy, power, freedom, survival, health, and recreation. Studies showed that reality therapy reduced the anxiety and increased their responsibility and self-esteem. It also helped individuals to control temptation and created positive control feelings as well as satisfaction with life [23].

Considering the above mentioned issues, the fact that pharmacological and non-pharmacological treatments have not been successful in preventing relapse, and the benefits of reality therapy, we conducted this study. The aim of this research was to compare the outcomes of reality therapy method, as a relatively new treatment with the effects of desipramine intake, as an effective treatment for drugs such as cocaine in some studies.

## Materials and Methods

This semi-experimental study was conducted with a pre-test and post-test design using a control and two experimental groups. The statistical population consisted of all the methamphetamine-addicted patients, who were under treatment with methadone in clinics of Yazd city, Iran. To hit this target, 30 individuals were selected using random sampling method and assigned into groups of reality therapy (n=10), pharmacotherapy with desipramine (n=10), and control group (n=10) randomly. The pre-test was conducted before the intervention and the first experimental group was trained with the real therapy method. The second experimental group received desipramine and the control group did not undergo any treatments. In order to analyze the data, multivariate and one-way covariance analysis were applied. In order to collect the data, we used the Stimulant Relapse Risk Scale (SRRS) designed by Ogai et al. in 2007. The tool measures the relapse and temptation of patients regarding consumption of drugs and includes 35 items, which should be answered on a three-point likert scale containing *agree*, *no idea*, and *disagree* choices. The Cronbach's alpha was calculated as 0.69 in a study conducted over 35 participants [24]. The content of group reality therapy sessions was designed as the following.

The first session established for greeting and communication of participants with each other and their introduction to the course. Participants were welcomed and asked to introduce themselves. Later, we tried to raise their motivation for the treatment and explained about the structure of sessions, rules, and regulations during the group reality therapy sessions. The second session was initially devoted to the development of communication skills between the counselor and the group members. In the second part, we defined the concepts such as identity, identity of success, and nature of failure. The third session continued with some explanations about the concept of anxiety and mental illness from the perspective of reality therapy. In the fourth session, the overall goals of the treatment sessions were explained. Furthermore, the short-term and long-term objectives as well as the methods to reach them during the life were discussed. The fifth session included three subcategories: 1) An explanation on the concept of choice and responsibility in life; 2) Emphasis and concentration on the common behavior of patients; 3) Acceptance of responsibility for choices and behaviors. In the sixth session, we concentrated on the motivation of individuals to achieve the identity of success in life and helped them to develop their motivations according to their intrinsic talents and available facilities. The seventh session included three subcategories: 1) selection of criteria for appropriate behaviors to achieve the identity of success; 2) value judgments about the current behaviors of the individuals and selection of the best behaviors in line with their goals; 3) acceptance of responsibility regarding the consequences of their behavioral choices in

the future. In the eighth session, we dealt with three sub-categories of 1) helping patients to plan for their future and to achieve their goals; 2) setting the goals from the most minor up to the most major ones; 3) taking written commitments from the consultant and clients to carry out the appointed plans. The ninth session consisted of three subcategories: 1) follow up the settled plans and reconduct the value judgment in the case of a failure; 2) follow up on taking the responsibility; 3) follow up on the achievements regarding the appointed goals at the start of the course. In the tenth sessions, we assessed and evaluated the success of treatment by measuring the changes in patients' attitudes, practices, and feelings throughout the course.

**Results**

In Table 1, the mean and standard deviation of the participants' scores are presented. Box test was used to check the equality of covariance matrices and the results showed that the homogeneity assumption of covariance matrix was confirmed (box coefficient = 6.241). To test the equality of variances of the two studied groups, Levine test was used. The results indicated that the variance of the three groups (the experimental groups of reality therapy and pharmacological therapy and the control group) did not differ significantly (consumption temptation = 0.254). In order to compare the effectiveness of the reality and desipramine treatment methods on the temptation and relapse of methamphetamine patients, we used the covariance analysis.

Variables	Group	Pre-test		Post-test	
		Mean	Standard deviation	Mean	Standard deviation
Temptation for consumption	Experimental (Reality therapy)	75.01	14.60	62.40	13.15
	Experimental (Desipramine)	69.10	13.18	62.50	12.10
	Control	74.40	14.50	74.20	14.92

**Table 1:** Descriptive statistics of variables

As Table 2 shows, the difference between the total mean score of the reality therapy group and the desipramine therapy group was significance ( $F = 3.289$  and  $P = 0.087$ ). In other words, the reality therapy and desipramine therapy groups did not have a significant difference in reducing the temptation of consumption. The Eta square of 0.16 was explained by the total score variance using the difference between the two methods.

The source of changes	Sum of squares	Degree of freedom	Mean of squares	F	Sig	Eta coefficient
The effect of pre-test	4539.202	1	4539.202	117.686	0.0001	0.874
The effect of group	126.873	1	126.873	3.289	0.087	0.162
Error	655.698	17	38.570			
Total	83195.000	20				

**Table 2:** Summary of one-way covariance analysis for effects of intervention on the temptation of consumption

A. Effectiveness of the real-therapy method on the temptation and relapse of methamphetamine patients in Yazd city.

The source of changes	Sum of squares	Degree of freedom	Mean of squares	F	Sig	Eta coefficient
The effect of pre-test	2486.177	1	2486.177	68.710	0.0001	0.802
The effect of group	659.204	1	659.204	18.218	0.001	0.517
Error	615.123	17	36.184			
Total	95475.000	20				

**Table 3:** Summary of One-Way Covariance Analysis for Effects of Intervention (reality therapy) on the Temptation of Consumption

The results of Table 3 indicated that the reality therapy approach was significantly effective on the temptation and relapse of methamphetamine patients. This finding meant that the therapeutic intervention decreased the temptation of drug consumption. In other words, the results showed that by eliminating the effect of pre-test scores, the main effect of reality therapy on post-test was significant regarding the temptation and relapse

of methamphetamine patients. Furthermore, the intervention therapy in the experimental group decreased the temptation for consumption. On the other hand, the significance level, Eta square, and test power showed that the intervention was effective and significant in the experimental group; the effectiveness was practically equal to about 51 %. The results of the LSD follow-up test are presented in Table 4.

Dependent variable	Group (1)	Group (2)	Means difference	Standard deviation	Sig.	Confidence coefficient 95%	
						Lowest	Highest
Temptation of Consumption	Experimental	Control	-11.489*	2.692	0.001	-17.169	-5.810
	Control	Experimental	11.489*	2.692	0.0001	5.810	17.169

**Table 4. LSD Fisher**

**B. Effectiveness of the desipramine therapy method on the temptation and relapse of methamphetamine patients**

The source of changes	Sum of squares	Degree of freedom	Mean of squares	F	Sig	Eta coefficient
The effect of pre-test	4886.009	1	4886.009	283.111	0.0001	0.943
The effect of group	170.659	1	170.659	9.889	0.006	0.368
Error	293.391	17	17.258			
Total	97678.000	20				

**Table 5: Summary of one-way covariance analysis for effects of intervention (desipramine) on the temptation of consumption**

According to Table 5, desipramine treatment was significantly effective on the temptation and relapse of methamphetamine patients. This finding meant that therapeutic intervention reduced the temptation of consumption in participants. In other words, by eliminating the effects of pre-test scores, the effect of desipramine on the post-test scores of temptation and relapse of methamphetamine patients was significant. The

therapeutic intervention in the experimental group decreased the temptation rates. On the other hand, the level of significance, Eta square, and test power showed that therapeutic intervention in the experimental group was significantly effective and its effectiveness was about 36 % practically. The results of the LSD follow-up test are presented in Table 6.

Dependent variable	Group (1)	Group (2)	Means difference	Standard deviation	Sig.	Confidence coefficient 95%	
						Lowest	Highest
Temptation of Consumption	Experimental	Control	-5.908*	1.879	0.001	-9.871	-1.944
	Control	Experimental	5.908*	1.879	0.0001	1.994	9.871

**Table 6: LSD Fisher**

**Discussion**

The findings showed that by eliminating the effect of pre-test scores, reality therapy could be effective regarding the temptation and relapse of patients. Consequently, the reality therapy method was effective and its effectiveness was about 51%. In the second experimental group, the use of medication therapy (desipramine) was effective on the temptation and relapse of patients after eliminating the effect of pre-test scores, too. Based on the results, no significant difference was observed between the reality therapy group and the drug therapy group regarding the reduction of consumption temptation. However, both therapies effectively reduced the temptation and relapse in patients. According to the findings, the pre-test and post-test scores related to the temptation of consumption were significantly different in the reality therapy group. The medication therapy group had a weaker performance in comparison with the reality therapy group; the temptation and relapse scores of the medication therapy group were slightly lower. It is also noteworthy that the

effectiveness of treatment with reality therapy method was higher than the pharmacotherapy method with 95 % confidence. Consequently, the results obtained in this study suggested that the reality therapy method was effective on reducing the temptation and relapse of the patients. Therefore, we recommended other researchers and therapists of addiction centers to implement the group reality therapy to reduce the drug consumption of patients. By application of this method, we can reduce the risk of relapse and temptation among the users of methamphetamine. However, we can also benefit from prescription of desipramine and its effects.

Hokmabadi et al conducted a study on 40 patients of the Treatment-Focused Community Center in Mashhad city, Iran. They concluded that the group reality therapy based on the choice theory increased hope in drug-dependent people significantly. They concluded that addicts patients should receive love, attention, acceptance, and needed to learn the life skills, responsibility (26). In this regard, a negative attitude is created in

the patients considering the use of substances. Consequently, they change their vision, mood, and attitude towards life. In psychopathology view, William Glaser indicated that the patients' behaviors were not unhealthy or defective. He mentioned that such people act based on their own abilities and viewpoints. In other words, addicts need to turn their potential talents into perfection and self-fulfillment (21). Noroozi Madah et al., studied 20 smokers who referred to Negin Health Clinic in Mashhad, Iran. They reported that group-based reality therapy reduced the participants' positive attitudes towards smoking, empowered their source of internal control, and helped them to use coping strategies (27). Furthermore, Vafayi et al. investigated 30 under-treatment addicted patients in Mashhad city and showed that the enrichment training and improving life programs conducted on the basis of reality therapy method improved the addiction indicators. These training interventions increased happiness and negative control feelings, decreased drug intake, temptation, and relapse in patients [28]. Zandkarimi et al., studied 60 healthy participants and methamphetamine users. Their results indicated that the metacognitive dysfunction was the driving force for using the methamphetamine. In other words, the low levels of cognitive-emotional control led the patients to abuse drugs [29].

On the other hand, Alison Oliveto et al., investigated 21 drug addicts over a 12-week period and indicated that the inhibitory effect of desipramine on cocaine was higher than other drugs, such as Buprenorphine, Amantadine, etc. [30]. A study by Caminer in Bradley Hospital, Brown University in the United States showed that desipramine was a potentially effective drug in the onset of cocaine-dependent addiction in adolescents [31]. Moreover, Lyengar et al., carried out a study in the Indianapolis city of the United States. They found that specific noradrenaline reuptake inhibitor, such as desipramine, might have analgesic effects [32]. Vollbrecht et al. studied 70-90 days old mice in a *In vitro* at Michigan university and found that cocaine increased epinephrine in mice susceptible to obesity. In addition, they blocked the epinephrine pathway by injecting desipramine and reported that epinephrine plasma level was reduced in mice. Therefore, they concluded that treatment with desipramine reduced the physical activity and food intake in mice susceptible to obesity [33]. In a study by Docherty on rats, both cocaine and desipramine enhanced the contractile responses to nerve stimulation, but desipramine inhibited this response with higher concentrations. Furthermore, the strength of prazosin increased against norepinephrine in the presence of rare cocaine block. However, desipramine increased the strength of prazosin, because it acted as an adrenoceptor antagonist within the concentration range that blocked it [34].

### Limitations

Generalization of research results according to the type of substance used, age of onset, duration of use, gender and type of associated disorder should be considered.

Due to possible problems such as falling in treatment or not continuing treatment, further research in this field is recommended.

### Conclusion

Group reality therapy methods can be of particular importance in resolving this crisis. We found that this type of intervention was effective in reducing the rate of relapse and willingness to re-use in patients. Therefore, we suggest the researchers to train the addicts as well as their family members using this method. Furthermore, psychologists and counselors are recommended to rely on group reality therapy in preventing relapses among the patients. In addition, the analgesic effects of desipramine may be used to reduce the relapse and temptation in patients.

### Authors' contributions

Study concept and design: HGH and GH.D; Acquisition of data: H.GH; Analysis and interpretation of data: H.GH, GH.D; Drafting of the manuscript: H.GH, R.B; Administrative, technical, and material support: RB; Study supervision: RB, GH.D. Manuscript revision: RB. Submission of manuscript: HGH.

### Conflict of Interest

No conflict of interest has been expressed by the authors.

### Acknowledgements

Authors present their gratitude towards the participants and authorities who cooperated in this research.

### Financial Support: No

### References

- Rangé BP, Marlatt GA (2008). Cognitive-behavioral therapy for alcohol and drug use disorders. *Brazilian Journal of Psychiatry*.30:s88-95.
- Miller WR, Moyers TB(2015). The forest and the trees: relational and specific factors in addiction treatment. *Addiction*. Mar;110(3):401-13.
- Salemink E, Van Lier PA, Meeus W, Raaijmakers SF, Wiers RW(2015). Implicit alcohol-relaxation associations in frequently drinking adolescents with high levels of neuroticism. *Addictive behaviors*. Jun 1; 45:8-13.
- Moridi M, Khoshravesh S, Noori R, Pashaei T(2017). The survey of relapse's styles among drug users and stimulants. *Pajouhan Scientific Journal*. May 10;15(3):10-5.
- WHO. Dependence syndrome. Available from: <http://www.who.int/>;2018.
- Noroozi MR, Naderi SH, Binazadeh M, Sefatiyan S(2005). [A comprehensive guide to treat substance addiction]. 2nd ed. Tehran: Pishgamane Tosea; (Persian)
- Nemati, A; Akhundi, M; Mohammadloo, N(2017) Effectiveness of Motivational Interview and Drug Therapy on Drug Craving Compared to Drug Therapy. *Journal of Psychology and Psychology*.. 4.
- Williamson A, Darke S, Ross J, Teesson M(2006). The effect of persistence of cocaine use on 12-month outcomes for the treatment of heroin dependence. *Drug and Alcohol Dependence*. Feb 28;81(3):293-300.Merz F.
- United Nations Office on Drugs and Crime: World Drug Report. 2017.
- SIRIUS-Zeitschrift für Strategische Analysen. 2018 Mar 14;2(1):85-6. Breen C, Degenhardt L, Roxburgh A, Bruno RB, Fetherston J, Jenkinson R, Kinner S, Moon C, Proudfoot P, Ward J, Weekley J. *Australian Drug Trends* 2003.
- Findings of the Illicit Drug Reporting System (IDRS). Mehrjerdi ZA. Crystal in Iran: methamphetamine or heroin kerack. *DARU Journal of Pharmaceutical Sciences*. 2013 Dec;21(1):1-3.
- Panenka WJ, Procyshyn RM, Lecomte T, MacEwan GW, et al (2013). Methamphetamine use: a comprehensive review of molecular, preclinical and clinical findings. *Drug and alcohol dependence*. May 1;129(3):167-79.
- Heidari-Rarani M, Noori A, Ghodousi A(2014). Effects of methamphetamine on pituitary gonadal axis and spermatogenesis in mature male rats. *Zahedan Journal of Research in Medical Sciences*. Dec 28;16(12):37-42.
- Miri Ashtiani E, Tajik MR(2006). Sociology of addiction in in today's Iran. Tehran: Mohajer.

15. Mokri A, Ekhtiari H, Edalati H(2009). Substance abuse disorders and addiction. In: Mohammadi MR, Ekhtiari H, Gasemi M, editors. Iranian Textbook of Psychiatry for Medical Student. Tehran: Tehran University of Medical Sciences;. [in Persian]
16. Fusar-Poli P, Tantardini M, De Simone S, Ramella-Cravaro V, Oliver D, et al (2017). Deconstructing vulnerability for psychosis: meta-analysis of environmental risk factors for psychosis in subjects at ultra high-risk. *European Psychiatry*. Feb;40:65-75.
17. Zhang X, Tobwala S, Ercal N(2012). N-acetylcysteine amide protects against methamphetamine-induced tissue damage in CD-1 mice. *Human & experimental toxicology*. Sep;31(9):931-44.
18. Bahrami, H, Centre for Prevention and Prevention, University Press, Tehran 2011, pp. 69
19. Hill R(2015). Evidence-based practices for treatment of methamphetamine dependency: A review.
20. Rad S, Effatpanah M, Mahjoub A(2018). Matrix Model and Cognitive-Behavior Therapy for Methamphetamine Dependence: The Problems to Implementation in Four Cities of Iran. *Iranian Journal of Psychiatry and Behavioral Sciences*. Jun 30;12(2).
21. Taheri Nokhost, H(2010)Review of Psychological Interventions in the Treatment of Substance Abuse Substance with Emphasis on Stimulants. Hospitalized services in the treatment of addiction (from a collection of new books on prevention and treatment in the knowledge of addiction). Tehran: Mehr and New Moon Publications.
22. Shoaybi(2013), f; reality therapy Book, Green Book Publishing. pp 15
23. Mousavi Asl, J(2010.). The training effectiveness of group therapy on self responsibility and student teacher training center of Hazrat KhadijaZahra University. MA Counseling Thesis, Science and Research Branch of Khuzestan. [in Persian]
24. Soltani Harris, S(2014). Effectiveness of Inhibitory Control training on reducing the temptation and risk of recurrence in malnourished methamphetamine. Master's thesis in clinical psychology. Mashhad Ferdowsi University.
25. Hokm Abadi ME, Rezaei AM, Asghari Ebrahim Abad MJ, Salamat A(2014). The effect of group new reality therapy based on choice theory on hopefulness in drug abusers. *Studies in Medical Sciences*. Oct 10;25(8):752-9.
26. Shafi Abadi and Naseri, Theories of Psychotherapy and Consultation, Academic Publishing Center, 15th Edition, 2009
27. Norozi Madah, Mostafa; Agha Mohamadian sharbaf, Hamid reza; Mashhadi, Ali (2016). The effectiveness of group therapeutic reality focuses on changing coping strategies, a source of control and attitude to smoking in smokers.. [in Persian]
28. Vafayi Z; Sepehri shamlo Z; Salehi fardadi J . Comparison of the effectiveness of the enrichment program and the promotion of life and the therapeutic reality on improving the health indices of drug consumers. *Clinical psychology research and counseling*; year 3, Number 1: Spring and Summer.. [in Persian]
29. Zandkarimi G, Ramezan M(2018). Comparison the Meta-Cognition, Cognitive Flexibility and Focus Attention between Metamphetamine Addicted and Normal People. *Journal of Psychological Studies*. Feb 20;13(4):59-75.
30. Oliveto A, Kosten TR, Schottenfeld R, Falcioni J, Ziedonis D(1995). Desipramine, amantadine, or fluoxetine in buprenorphine-maintained cocaine users. *Journal of Substance Abuse Treatment*. Nov 1;12(6):423-8.
31. Kaminer Y(1992). Desipramine facilitation of cocaine abstinence in an adolescent. *Journal of the American Academy of Child & Adolescent Psychiatry*. Mar 1;31(2):312-7.
32. Iyengar S, Webster AA, Hemrick-Luecke SK, Xu JY, Simmons RM(2004). Efficacy of duloxetine, a potent and balanced serotonin-norepinephrine reuptake inhibitor in persistent pain models in rats. *Journal of Pharmacology and Experimental Therapeutics*. Nov 1;311(2):576-84.
33. Vollbrecht PJ, Nesbitt KM, Mabrouk OS, Chadderdon AM, Jutkiewicz EM, Kennedy RT, Ferrario CR(2018). Cocaine and desipramine elicit distinct striatal noradrenergic and behavioral responses in selectively bred obesity-resistant and obesity-prone rats. *Behavioural brain research*. Jul 2;346:137-43.
34. Docherty J(2014). Comparison of the norepinephrine transporter blockers cocaine and desipramine in  $\alpha$ 1-adrenoceptor studies of rat vas deferens (1145.5). *The FASEB Journal*. Apr;28:1145-5.



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