



THE EFFECTIVENESS OF COGNITIVE-BEHAVIOR THERAPY GROUP ON EXECUTIVE FUNCTIONS OF INDIVIDUALS DEPENDED TO DRUGS

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ABSTRACT

Purpose: drug dependency causes hurts to cognitive performance including problem solution, planning, organizing, subjective abilities of visual-spatial, cognitive flexibility, and memory skills. So the study mainly aimed to explore the effectiveness of cognitive-behavior therapy group on executive functions of individuals depended to drugs. Method: in a semi-experimental plan and by pretests-posttests with control group, 34 available patients were selected under methadone maintenance therapy and randomly divided into two groups of intervention and control with 17 patients. Then intervention group was participated in cognitive-behavior therapy group for nine sessions. Executive function scores were collected in both groups with London Tower test, subtests of Wechsler Digit Span, Wisconsin cards classification in two steps, before the sessions started and after the sessions finished, and they were analyzed by independent T-test. Results: findings showed that there is significant difference in variables (flexibility, problem solution, conquest ability to repetition tendency and shirking, sketching time) of individuals with drug dependency before and after participation in behavior-cognitive therapy group sessions and MMT plan. And the difference is significant between control and intervention group ($P > 0/05$). But there is no significant difference in variables (numbers of classification, reverse digit repetition and execution time) of behavior-cognitive therapy group in post-test than pre-test. Conclusion: behavior-cognitive therapy group can be effective to promote executive function scores but for more significant effects, factors including widespread volume sample and pursuit periods are needed to consider.

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Introduction

Therefore its treatment is so difficult and takes time. Treatment with Methadone is one of medical therapy methods which help addicts to control their drug dependencies [6]. Methadone is an artificial opium substance and hair receptor agonist, which causes spore, painless and other effects of drugs similar to morphine after consumption [7].

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Methadone maintenance treatment is one of important and key enterprises to decrease hurts and using illegal injecting substances [5]. A process which has spread out about addiction, considered it as a brain disease [8]. Cognitive-neurotic executive functions are important structures which play fundamental role to lead and control behavior [9] and implement a set of excellent abilities including independency, inhibition, self initiate, strategic planning, cognitive flexibility, impulse control [10]. If a behavior is more complicated especially in social behaviors, it will need executive function [11]. People, who have disorders in executive functions, usually suffer from disorders in flexibility, keeping attractions, organizing, planning and short time memory [12]. The concept of executive functions as a theoretical structure could make a strong relation between brain structures especially frontal and prefrontal Of brain and psychological functions such as problem solution skill and subjective thought, so it could help to have a better understanding of mental pathology [13]. also In drug dependency treatment, non-pharmacological treatments are so important to preserve results of drug Treatments [5] declared consuming Methadone and Heroin causes changes in structure and performance of brain areas especially frontal and prefrontal cortexes and eventually lead to defects in neuropsychology functions (executive functions) of these areas. Obeidzadegan et.al (2007), people who use Methadone suffer from obvious cognitive problems. [14], group cognitive-behavior treatment was effective on decreasing desire to use drugs. [15], recommended accompanying MMT (Methadone Maintenance Treatment) with cognitive-behavior treatment group due to more effectiveness. Cognitive-behavior treatment is a short time and intensive process to help people suffer from drug abuse. The fundamental theory of cognitive-behavior treatment is that learning processes play an important role to have and continue addiction and drug dependency, so the principle can be used to help people in decreasing drug consumption [15]. In this way technique of behavior includes methods avoiding stimulus situations and or changing responses to such stimulus and giving new responses. Also referral could identify thoughts lead to using drugs, recognize incomplete thoughts and try to replace suitable thoughts by using cognitive techniques [14]. According to serious need to addiction treatment centers for psychotherapy plans and especially group therapy and according to increasing development to opium in societies and its treatment and prevention, it is essential to study about retentive drugs and detoxification, So the purpose of this study is effect of cognitive-behavior treatment group on executive functions of people depended on drugs.

Methodology

Method, population, sample:

the present study was in a semi-experimental plan and by pretests –posttests with control group. Its Independent variable is training of cognitive-behavior treatment group which is done only in intervention group and its effect was evaluated with scores obtained from post tests of executive functions variable in intervention group and was compared with control group. The population consists of men suffer from drug dependency who have recourse to MMT clinics in Zahedan. According to incoming criteria (interested in participation in cognitive-behavior treatment groups' sessions, inhabitant in Zahedan, between 18-40 years old, gender (only male) , at least finished primary school, at least two months passed away in Methadone Maintenance Treatment and no serious psychiatric problems), 34 available examinees (male) were selected and randomly replaced in two groups of 17 people. At first in order to regard moral principles some explanations were presented in the study and examinees were satisfied with voluntary participation. Providing no incoming criteria of treatment (age, gender, education), any background of head injury or losing consciousness, disorders (bipolar, personality disorder, mental retardation) the participants were released from the study. The training was done during nine weekly sessions about one and half hour and in teams of intervention group, it includes treatment sessions to train special skills such as overcoming skills with temptation, saying no skills and revealing courage.

Tools

1-Wisconsin Cards Classification Test: it includes 64 cards with images in colors (red, yellow, blue and green) shapes (multiply, circle, triangle or star) and number [1,4] which are different from each other (these variables together make 64 different states). The study is applied to explore executive functions. Three main variables are used in the study assessment: A) the number of cards filled during the test (the most rate of the variable is six and the least is zero): the variable shows individuals' progress during the test and discovers sextet regulations. B) Insistence error: the error belongs to selections which are insisted by a person after they have been changed (after ten times correct answer). The error is the main indicator to show no cognitive flexibility which is characteristics of pre frontal cortex areas. C) General error: it shows mistake times (except insisting cases) to select correct cards. Justifiability of the test to assess cognitive defects for brain injuries in frontal lobe is higher than 86 percent [17].

3-Problem solution test of London Tower: It is a standardized test to evaluate executive functions of planning and organizing which is prepared for the first time by Shalis (1982). It is said to participant this is a problem solution test and they have to move colored beads (green, blue, red) and put them in suitable place and with t necessary moves make the sample shape. The participant has been allowed to solve problem tentatively based on instruction and with the least moves for three times. Then it is said to participant that they are given 12 problems as the example and they have to make the sample shape with the least essential moves.

They are allowed for three times to solve the problem and after succeed in each step they are given the next problem to solve. Test assignments are solved with 2,3,4,5 moves. The grading method is based on what attempt the problem is solved by participant. Therefore when the problem is solved at first try, 3 scores, and at second try, 2 scores, at third try, 1 score, is obtained by participant and no score if the participant loose the three tries and won't be able to continue the test. Justifiability of the test's structure to assess planning and organizing people is approved and 0/79 is reported for perpetuity [18].

2-Wechsler Digit Span subscales: it is a test to assess attention and short time memory and one of sub scales for revised test of Wechsler for intelligence quotient in adults in which he reported validity in both halves of test 0/97 for IQ in general scale and 0/97 for IQ in verbal scale and 0/93 for IQ in practical scale. Variance coefficients of retesting validity are reported partly high during one to seven weeks. Its correlation with Stanford Bine Test equals to 0/85, WRAT (Writing, Reading and Arithmetic), (0/76), intelligence test by Slocan (0/78) and it indicates justifiability of criterion in this scale.

Results

Table1. indexes of descriptive statistics in samples

Levels	education			Marital status	
Group	Primary school	Guidance school	High school	single	Married
intervention	9	3	5	11	6
Control	9	4	4	8	9

The study of descriptive situation of demography variables in both groups shows that participants were between 18 to 40 years old, their education were in primary schools level and most of them were single.

Table2. T- Test results for comparison of average scores in Wisconsin, Wechsler and London Tower tests of the study's variables at both groups and twice measurement

Test	variable	Group	Pre-test	Post-test	T	P
Wisconsin	preservation error	Control	± 16/450 31/88	±18/416 31/82	3/060	0/04
		Intervention	±14/916 25/12	±9/254 16/53		
	Other errors	Control	±27/567 36/94	±21/013 25/76	0/280	0/01
		Intervention	±22/380 30/59	±11/661 18/88		
	Total error	Control	±40/686 77/29	±40/263 72/47	-1/422	0/002
		Intervention	±35/084 95/82	±18/371 40/12		
Numbers of classification	Control	±19/480 8/71	±1/656 4/65	-0/352	0/727	
	Intervention	±1/983 2/94	±1/237 4/82			
Wechsler		Control	±1/200	±1/200	-3/649	0/001

	Direct digits repetition		7/24	7/24	-1/530	0/136
		Intervention	±0/870 6/59	±0/870 6/59		
	Reverse digits repetition	Control	±1/393 2/76	±1/393 2/76		
		Intervention	±1/121 3/41	±1/121 3/41		
London Tower	Planning time	Control	±108/050 159/82	±108/050 159/82	-2/370	0/024
		Intervention	±68/395 116/18	±65/385 140/35		
	Execution time	Control	±28/871 86/94	±35/578 87/47	1/320	0/196
		Intervention	±40/540 88/41	±24/451 73/65		
	Total	Control	±2/421 30/88	±3/001 31/59	-0/490	0/628
		Intervention	±3/092 30/06	±2/585 32/06		

Independent T-test results in table 2 shows that there is a significant difference between average scores of executive functions (flexibility, problem solution, ability to overcome the desire for repetition and shirking) in people with drug dependency before and after participation in sessions of cognitive-behavior treatment group and MMT plan. Average score in intervention group (cognitive-behavior treatment group) of variables including preservationerror, other error and the total errors or Wisconsin test is more after intervention than before intervention. Also there is a significant difference between average score of executive functions (short-time memory, attention) in people with drug dependency before and after participation in the sessions and MMT plan. Also there is a significant difference between intervention and control groups in direct digits repetition variable of Wechsler. There is a significant difference between average score of executive functions (planning, organizing) in people with drug dependency before and after participation in the cognitive-behavior treatment sessions and MMT plan. More studies showed that the average score of intervention group in executive functions (planning, organizing) is more after intervention than before intervention. After intervention participants in intervention group had better performance than participants in control group. However there is a significant difference between the two groups.

Conclusion:

The study aimed to explore the effectiveness of cognitive-behavior treatment group on executive functions in people with drug dependency in Zahedan and they were under training of cognitive-behavior treatment group. The data related to London Tower test, Wisconsin cards test and Wechsler Digit Span subtests were analyzed by T-test in pairs. The results imply that there is significant difference between average score of executive functions (flexibility, problem solution, ability to overcome the desire for repetition and shirking) in people with drug dependency before and after participation in the sessions of cognitive-behavior treatment group and MMT plan. The result is compatible with researches prepared by [4] reported significant disorder in cognitive flexibility, attention, mental processing speed among addicts, [5] reported significant effect of cognitive - behavior treatment group to increase cognitive-flexibility. But the result is not compatible with researches prepared by [19,20] which reported no significant effect of cognitive- behavior training on flexibility. Because adverse recognition and unreasonable beliefs will be changed, and through behavioral methods correct recognition will be reinforced and strengthened in cognitive behavior methods so consequently have more effect singularly on cognitive flexibility than other methods. The next result of the research explains that there is a significant difference between average scores of executive functions (short time memory, attention) in people with drug dependency and after participation in cognitive behavior treatment group and MMT plan. This result is compatible with researches prepared by [22], in which reported the significant effect of cognitive behavior treatment group on executive functions improvement. The researchers believe that the difference is related to consumption amount [23], addicts' personality [24], no ability to moderate attention processes In order to explain this result it can be said that cognitive-behavior treatment improves data processing, attention and executive functions amount because it leads to stress decline.

The next result showed that there is significant difference between average score of executive functions (planning & organizing) in people with drug dependency before and after participation in cognitive behavior treatment group sessions and MMT plan. However no significant difference was observed between the two groups. The result is compatible with researches prepared by [23] which reported significant effect of cognitive behavior treatment group on executive functions and insufficiency in cognitive disorder attention(attention, short time memory). But it is not compatible with researches prepared by [25] which reported no significant difference between addicts' executive functions and normal people. A few researches know the difference due to drug consumption, which leads to neurotic-chemical and functional interference in brain areas that includes prefrontal cortex, Amygdale, Accumbency cores, sideSegmental Areas. So the consumers have lots of problem with executive functions such as response avoiding, organizing, flexibility, emotional independency and also memory and attention [26]. At the end it can be declared that the relation between drug consumption and weak cognitive executive functions is not a cause and effect relationship but neurologic evidences illustrate that the problematic consumption of drugs and disorder in cognitive executive functions work

counteract. Considering that disorder in cognitive executive functions is relevant with problems to control itself and also drug consumers have problem to control themselves so that disorder in cognitive executive function which plays important role to have no control on drug consumption is possible. It means that weak cognitive executive function causes increasing drug consumption in people and it represents a chronic drug abuse pattern.

The present study like most of studies which are about behavior science, follows limitations that is essential to identify them to do next studies and decrease or even remove the limitations.

One of these limitations to do this study was that the participants were selected randomly without considering their family background and genetics talent to consume drug that is effective for the study's results. Another limitation to do the study is difficult access to drugs in people with drug dependency and their satisfaction. Consequently such studies need pursuit courses. The other limitation is methadone dosage and type of consuming drug. No control of methadone dosage (high or low dosage) and no comparison of consuming drug type with other drugs could be effective to generalize results in both groups (control and experiment).

Resources

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