Effectiveness of Cognitive-behavioral Therapy in the Treatment of Iranian Male Drug Addicts at a State Rehabilitation Center

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Abstract

Introduction: The present study aimed at examining the effectiveness of cognitive-behavioral therapy (CBT) group intervention on measures of self-efficacy and level of relapse for abstinence among Iranian male drug addicts.

Methods: An experimental research design was adopted in the current study in which the participants consisted of 75 male drug addicts who were consecutively admitted as outpatients at a state rehabilitation center. They were randomly allocated to experimental (N=37) and control (N=38) groups. They completed the Iranian version of Drug Taking Confidence Questionnaire (DTCQ-IV) and took urine test as pre-test and post-test. The CBT group intervention was conducted at 12 sessions, one session per week. It was hypothesized that there were significant differences between the experimental and control groups regarding self-efficacy and level of relapse.

Result: The results of ANCOVA showed there were significant differences in pleasant emotion and testing control between the two groups on measures of self-efficacy. The results of McNemar test indicated level of relapse in the experimental group significantly declined from pre-test to post-test. Furthermore, using Chi-square analysis, a significant difference (with a moderate effect size) was found in the levels of relapse.

Conclusion: The present study provides strong support for CBT group intervention as an effective treatment for Iranian male drug addicts. Therefore, CBT group intervention can be considered as a practical approach in the treatment of people with SUDs.

Keywords: substance use disorders, treatment, relapse, cognitive-behavioral therapy, self-efficacy, Iran

1. Introduction

Substance use disorders (SUDs) increasingly viewed as a chronic health problem all over the world (Marlatt & Donovan, 2005). According to the diagnostic and statistical manual of mental disorders (DSM-5), SUDs are the most common forms of mental disorders frequently occurring in association with anxiety, depression, and virtually all other forms of mental disease (Association, 2013). Opiate dependence and abuse lead to social problems. Iranian drug addicts are mostly male, married and employed. Studies in different provinces of Iran showed more than 90% of drug abusers were male (Mokri, 2002). Drug addiction treatment in Iran is mostly based on detoxification and methadone maintenance treatment (Shirinbayan, Rafiey, Vejdani Roshan, Narenjiha, & Farhoudian, 2010) and psycho-educational interventions are disregarded. Research has shown that the current drug treatment programs in Iran did not attain successful results (Golestan, Namayandeh, & Anjomshoa, 2011; Razzaghi, Movaghar, Green, & Khoshnood, 2006; Shirinbayan et al., 2010). Previous studies also have revealed that attrition and level of relapse (up to 95%) were high among Iranian drug addicts (Jafari, Shahidi, & Abedin, 2009; Mokri, 2002; Vosooghi, 2005). A study conducted by Welfare Organization in Bandar-Abbas (a city in south of Iran) showed 6-month relapse rates increased to 95%. Such high relapse percentages have also been reported in Tehran and other main cities of Iran (Mokri, 2002). Studies have shown that drug addicts in rehabilitation centers represent poor compliance with treatment, leading to a high rate of relapse (Vosooghi,

2005). However, the high rates of relapse among Iranian drug addicts have a negative impression on the effectiveness of drug treatment programs provided by the government. Some researchers have identified various factors relating to relapse among Iranian drug addicts. For instance, the main reason for the failure of the current Iranian drug treatment programs could be the lack of psycho-educational interventions in such programs (Vosooghi, 2005). There have been many factors contributing to level of relapse in people with substance use disorders. These factors include low quality of drug rehabilitation programs, lack of family and community support, mood and anxiety disorders, peer pressures and psychological variables (Fauziah et al., 2010). Apart from these factors, self-efficacy is another important factor for individual addicts to remain drug-free and to prevent relapse.

Previous studies have shown that drug addicts with low self-efficacy would be back to addiction after their release from treatment and rehabilitation (Allsop, Saunders, & Phillips, 2000; Ibrahim & Kumar, 2009). Over the past years, significant advances have been made in developing effective treatments for substance use disorders (Marlatt & Donovan, 2005; Mokri, 2002). According to meta-analyses and quantitative reviews, CBT proved to be an effective treatment for SUDs (Dutra et al., 2008; Magill & Ray, 2009; McHugh, Hearon, & Otto, 2010).

Despite the high rates of relapse among the Iranian drug addicts, only a few studies have been conducted in Iran to evaluate the effectiveness of CBT in treating opiate addicts (Jafari et al., 2009; Molaie, Shahidi, Vazifeh, & Bagherian, 2010; Shirinbayan et al., 2010; Yassami, 2002). With respect to the reasons mentioned above, the main purpose of the present study was to determine the effectiveness of CBT group intervention in the treatment of Iranian male drug addicts. The main hypothesis was formulated to be that CBT group intervention significantly increases self-efficacy scores. The study also hypothesized that the CBT group intervention significantly reduces the level of relapse.

2. Methods

2.1 Participants

The participants of the study included 75 male drug addicts consecutively admitted as outpatients at an Iranian state rehabilitation center. Participants were assessed based on the diagnostic and statistical manual of mental disorders (Association & DSM-IV., 2000).

In addition to the structured interview conducted, participants were selected based on the some inclusion and exclusion criteria. It was ensured that the participants met the DSM-IV criteria for substance abuse or dependence as assessed by the SCID-IV: showing evidence of substance use by positive urine samples at pre-test, willingness to participate in the study, being able to understand Persian language, having no physical limitations (such as audio or visual disabilities**)**, having no co-morbidity with other psychotic disorders, and having not received any psycho-educational services or any treatment similar to CBT treatment in the period of 6 months before this study. The participants were selected and randomly assigned (by drawing) to experimental (N=37) and control groups (N=38). The experimental group received CBT group intervention consisting of one session per week for 12 weeks. The control group was placed in a waiting list.

2.2 Measures

2.2.1 The Iranian Version of the Structured Clinical Interview Diagnostic (SCID-IV)

The SCID-IV is a semi-structured clinical interview which provides current and lifetime diagnostic evaluations based on the DSM-IV for many psychiatric disorders, including substance use disorders. Studies have shown that the SCID-IV kappa coefficient was .6 and general agreement (kappa total) for all current diagnosis was .52%. Specificity values for most psychiatric disorders were high (> .85). It can be used to screen the substance use disorders among Iranian population (Sharifi et al., 2009).

2.2.2 The Iranian Version of the Drug Taking Confidence Questionnaire (DTCQ-IV)

This instrument is a 50-item self-report questionnaire designed to assess self-efficacy in relation to an individual's perceived ability to effectively cope with high risk for relapse situations. Participants are asked to rate their confidence that they can resist the urge to use drug in 50 different situations, on a 6-points scale ranging from 0 (= not at all confident) to 5 (= very confident). The DTCQ-IV has a possible score range from 0 to 250. The results of the pilot study revealed DTCQ-IV enjoyed a high inter-rater reliability, that is, a high correlation (p=.81) between the scores assigned by two experts. Also, test-retest reliability for the DTCQ-IV was .89 over four weeks using the Cronbach's alpha coefficients.

2.2.3 Urine Test

Urine test was applied for assessing levels of relapse as measured by frequency of positive urine samples at

pre-test and post-test.

2.3 Sampling Procedures

The study was first approved by Ethical Committee of Kermanshah University of Medical Sciences. The objectives and procedures of the study were then explained to the participants from whom written consent conveying willingness to participate in the CBT group intervention was taken. They were randomly assigned to the experimental and the control groups and were already given a pre-test to make sure about the equality of participants with regard to the dependent variable. They were required to take urine test on one weekday at pre-test and post-test. Urine specimens were collected under the supervision of laboratory technicians.

2.3.1 Experimental Interventions

The participants took part in a 12-week therapy and the therapist was an experienced clinical psychologist. The content of sessions of CBT group intervention was skill training, role-play, giving and receiving feedback to and from other participants, and giving assignments. Each session focused on gaining of different skills. Each session was guided according a step-by-step manual of protocol treatment based on strategies and methods described by Bieling, McCabe, and Antony (2013) and Carroll et al. (2004). The main objective of the first session was to establish relationship with the participants and determine the group structure. The second session emphasized on basic concepts of the CBT group intervention in the treatment and prevention of drug addiction. The third session focused on the pros and cons of changing substance use. The fourth session was to help the participants identify situations in which they are at increased risk for drug use. In the fifth session, they were helped identify the cravings or urges and also recognize the triggers. The session then focused on learning and practicing the techniques of coping with cravings. The sixth session was to help the participants identify their negative thought patterns and cope with thoughts of drug use. The seventh session focused on the process of safe decision-making through the risk potential of various decisions. The eighth session was to help the participants how to improve their ability to refuse the offers of drug use through utilizing refusal skills. The main purpose of the ninth session was to teach the basic steps of problem-solving skills. The main purpose of the tenth session was to help the participants manage their anger episodes and identify the cues and events showing an increase of anger. The eleventh session focused on identifying safe, pleasurable activities and enhancing the social support systems that can provide a substitute for substance use. The final session focused on reviewing CBT group intervention and also receiving the feedbacks of the participants with regard to the program conducted.

2.4 Data Analysis

The data were coded, entered into SPSS (v18), and analyzed using ANCOVA, Paired-Samples and Independent-Samples t-test, McNemar test, and Chi-square analysis.

3. Results

The participants' mean score of age was 34.04±6.47 years (range: 24-45) and more than half of them (53.33 %) were married. Most of them (60 %) held primary school degree and more than half of them (58.7 %) were employed. Statistical analyses showed no significant differences between the experimental and the control groups in terms of age, marriage status, drug use history, and level of education. Their average of drug use history was 11±7.5 years. As for the types of drugs used, opiate (*Tariak*, *Shireh* and *Sukhteh*) was the most common drug (54.7 %). The main route of administration of drug use was smoking (53.33 %), as indicated in Table 1 below.

Table 1. Socio-demographic characteristics of the participants

Variables	Groups		P-value
	Experimental	**Control**	
	N (%)	**N (%)**	
Age Range (25-45)	37	38	0.38
	34.70±6.83	33.39±6.12	
Marital status			
Single	11(29.7)	14(36.8)	
Married	22(59.5)	18(47.4)	0.88

Divorced	4(10.8)	6(15.8)	
Education			
Primary school	25(67.6)	20(52.6)	
High school	10(27)	15(39.5)	0.22
College	3(5.4)	2(7.9)	
Occupation			
Employment	24(64.9)	25(52.6)	0.28
Unemployment	13(35.1)	17(47.4)	
Types of drug used			
Opiate (Tariak, Shireh & Sukhteh)	19(51.4)	22(57.9)	
Heroin	8(26.6)	10(27.3)	0.34
Hashish	9(27)	6(15.8)	
Drug history			
Yes	28(75.7)	25(65.8)	0.35
No	9(24.3)	13(34.2)	
Administration of drug used			
Smoke	25(67.6)	15(39.5)	
Oral	9(24.3)	14(36.8)	0.01
Inject	3(8.1)	9(23.7)	

Table 2. Descriptive statistics and ANCOVA for effectiveness of CBT on self-efficacy

Scale	Group	Pre-test		Post-test		P-value	MS	F	*P-value
		M	SD	M	SD				
The total DTCQ-IV	Experimental	116.78	11.12	137.70	35.78	0.001			
	Control	109.52	13.99	123.80	28.04	0.004	1782.15	1.85	0.177
	p-value	0.014		0.054					
Unpleasant emotion	Experimental	22.83	4.40	28.81	9.02	0.015			
	Control	20.12	5.12	23.45	7	0.019	158.23	2.43	0.123
	p-value	0.015		0.071					
Physical discomfort	Experimental	11.05	3.09	13.72	5.08	0.001			
	Control	10.32	3.11	12.52	4.20	0.003	11.19	0.609	0.438
	p-value	0.307		0.259					
Pleasant emotion	Experimental	12.43	2.19	15.43	3.92	0.001			
	Control	11.45	2.61	13.15	2.90	0.001	36.36	5.04	0.028
	p-value	0.079		0.005					
Testingpersonal control	Experimental	12	2.71	14.5	4.78	0.010			
	Control	11	3.09	11.42	3.76	0.543	93.63	5.41	0.023
	p-value	0.138		0.009					
Urges/temptations	Experimental	11.62	3.17	13.72	4.99	0.007			
	Control	11.27	2.96	12.47	4.42	115.0	21.54	1.10	0.296

	p-value	0.622		0.246					
Conflict with others	Experimental	24.13	4.30	27.70	8.24	0.006			
	Control	22.30	4.15	26.15	6.71	0.002	5.45	0.106	0.746
	p-value	0.061		0.367					
Social pressure to use	Experimental	10.54	3.54	12.67	5.50	0.013			
	Control	11.47	3.03	11.85	4.70	0.607	39.22	1.81	0.182
	p-value	0.217		0.481					
Pleasure times	Experimental	12.16	3.38	13.81	4.55	0.013			
	Control	11.57	3.31	12.58	4.12	0.063	6.96	0.469	0.495
	p-value	0.445		0.334					

* *P-value of ANCOVA to assess differences between pretest and posttest scores for self-efficacy.*

The results of Paired-Samples t-test showed there was a significant difference between total scores for the DTCQ-IV and the subscales in the experimental group at pretest and posttest (t=3.84, df=36, *p* < .001). Higher mean values in posttest indicated CBT group intervention led to the promotion of self-efficacy scores in the experimental group (Table 2).

An Independent-Samples t-test was conducted to compare the difference in the self-efficacy scores between the two groups at the posttest. In other words, the experimental group reported more increase in their self-efficacy scores than the control group. We run an ANCOVA to assess any difference between pretest and posttest scores of self-efficacy in the experimental and control groups. The results showed there was a statistically significant increased scores for pleasant emotion (F=5.04, *p* < .028) and testing personal control (F=5.41, *p* < .023) during performing CBT intervention.

Table 3. The results of McNemar test for level of relapse in the experimental group

Urinalysis	**Pre-test**		**Post-test**		**McNemar**	**P**
	f	%	f	%		
Positive	37	100	18	48.65		
Negative	0	0	19	51.35	Exact	0.002
Total	37	100	37	100		

The level of relapse was defined by comparing the decrease in the drug use of the experimental group as measured by the frequency of positive urine samples at the pretest and posttest. The results of McNemar test indicated that level of relapse in the experimental group significantly declined from pretest to posttest assessment (N=37, Exact *p* <.05).

Table 4. The results of Chi-square analysis for level of relapse between the groups at posttest

	The experiment (N=37)		**The control** (N=38)			
Urinalysis	f	%	F	%	χ^2	p
Positive	18	48.65	31	81.58		
Negative	19	51.35	7	18.42	6.784	.009
Total	37	100	38	100		

The results of Chi-square analysis showed there was a significant difference with moderate effect size (d=.78) in

the level of relapse between the two groups ($\chi^{2=}$6.784, $p < .05$).

4. Discussion

As stated earlier, the main purpose of this study was to determine the effectiveness of CBT group intervention in the treatment of Iranian male drug addicts. The study showed that after the experimental group received the CBT group intervention, their self-efficacy mean scores significantly increased from 116.78 at the pretest to 137.70 at the posttest. Moreover, the experimental group in the posttest reported a significant increase in mean scores of self-efficacy compared to that of control group. These findings indicate that participants in the experimental group increased their self-efficacy to refuse drug use in high-risk situations at posttest assessment, suggesting that the CBT group intervention was effective in arming the participants of experimental group with skills to reduce drug use in high-risk situations, but this difference is not statistically significant in all components, except pleasant emotion and testing personal control, compared to control group, which was in line with Bandura's theory. One of the core concepts is self-efficacy which is defined as the individuals' personal belief that s/he can manage a situation and bring about a preferred change. From a theoretical perspective, CBT group intervention allows substance abusers to develop a well-established sense of mastery and confidence in their coping skills (Carroll et al., 2004).

The changes in the control group can be attributed to this reason that they referred to treatment, and a sense of self-efficacy led to feel able to exercise control over life events. In Bandura's system, self-efficacy refers to feelings of adequacy, efficiency, and competence in coping with life. When they encounter obstacles, they quickly give up if their initial attempt to deal with a problem is ineffective. People with extremely low self-efficacy will not even attempt to cope, because they have been convinced that whatever they do will not make a difference (D. Schultz & S. Schultz, 2012).

However, the results of the present study revealed that the participants of the experimental group found CBT group intervention effective in high- risks situations. Also, statistical analyses of the frequency and percentage of positive urine samples from the urine drug screenings indicated that the experimental group increased by the percentage of negative urine samples from 0 % at the pretest to 51.35 % at the posttest. Furthermore, the study showed that the experimental group demonstrated a notable increase (51.35 %) in the percentage of drug-free urine screens compared to that of control group (18.42 %). From a clinical perspective, the results of the study show CBT group intervention was effective in reducing the level of relapse and improving self-efficacy in the experimental group, and that it led to a high rate of treatment attendance and completion in the experimental group. The findings of the study are consistent with those of other studies (e.g., Avants et al., 1999; Azizi, Borjali, & Golzari, 2010; Molaie et al., 2010; O'Neill et al., 1996; Pollack et al., 2002; Speckaa, Mergeta, & Gastparb, 2005b; Tucker, Ritter, Maher, & Jackson, 2004; Woody, McLellan, Luborsky, & O'Brien, 1987), which indicated the effectiveness of the CBT program intervention in improving retention in treatment, improving drug abstinence, and decreasing drug use in opiate-dependent patients.

5. Conclusion

The results of the present study shows CBT group intervention is an effective approach for drug addicts who lack particular coping skills either in direct relation to substance use or in circumstances that may trigger substance use. Although this research was a small feasible study, there was a significant reduction in the level of relapse at the posttest in the experimental group who had completed CBT group intervention. The results of the study show that CBT group intervention applied to the participants of the experimental group was effective and led to significant positive changes in the participants. This implies that CBT group intervention can be considered as an effective approach to the treatment of Iranian drug addicts. The present study supports the application of CBT group intervention for treatment of drug abusers in a different cultural setting, like Iran.

Strengths and Limitations

To the best of our knowledge, only a few studies have been conducted in Iran to evaluate the effectiveness of CBT for treatment of opiate addicts. However, in the current study, weekly urine tests during the 12-week treatment were not feasible.

Competing Interests Statement

The authors declare that there is no conflict of interests regarding the publication of this paper.

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