

Original Article

The comparison of the problem solving style and abstract thinking between men undergoing methadone maintenance treatment (MMT) and men without addiction

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Abstract

Introduction: According to projects, substance addicts have deficits in thinking and cognitive. These findings support the assumption that there are differences between two groups in abstract thinking and problem solving style.

Methods: This study aimed to the problem solving style and abstract thinking in men undergoing methadone maintenance treatment (MMT) and men without addiction. By using Ex post facto method, 60 men undergoing methadone maintenance treatment (MMT) and 60 men without addiction were selected through judgmental convenient sampling. They were examined via the problem solving style questionnaire and the Wisconsin Card Sorting Test.

Results: Results showed a significant difference between two groups in approach style and creative problem-solving style, sorting piles and preservative errors ($P < 0.001$). No significant difference between two groups shown in helplessness, problem solving control, problem-solving confidence and avoidance style.

Conclusion: Data analysis showed that men undergoing methadone maintenance treatment (MMT) have deficits in problem solving and the abstract thinking. Therefore, clinical psychologists that are interested in addiction and treatment addiction should pay attention cognitive factors in treatment of addicts.

Declaration of Interest: None.

Keywords: Problem solving style, Abstract thinking, Addiction, Methadone maintenance treatment.

Introduction

Health-threatening behavior is one of the most challenges of social and mental health issues most countries are somehow involved, and that imposes extended and severe problems in communities (1). Addiction is a phenomenon that has existed since long time ago in human society (2).

According to diagnostic and statistical manual of mental disorders-edition 5 (DSM-5), the diagnosis of a substance use disorder is based on a pathological pattern of behaviors related to use of the substance (3). Criteria can be considered to fit within overall groupings of

impaired control, social impairment, risky use, and pharmacological criteria. Impaired control over substance use is the first criteria of grouping. Important social, occupational, or recreational activities may be given up or reduced because of substance use. The individual may withdraw from family activities and hobbies in order to use the substance (3).

This is of significant importance, as methadone therapy is becoming a long-term treatment modality in light of the increasing understanding of neurobiology of opioid use disorder. With repeated opioid use, long term

changes in brain circuits occur, resulting in a risk of relapse of opioid use even after abstinence (4). It is a problem with psychological and behavioral syndrome with an intense desire to consume drugs and substances and using it again after quitting (5). The number of addicts in Iran reaches to two million people with a mean age of 18 years (7). The overall trend shows an increase in the number of addicts over the past 40 years (8). Hence, the growth rate of drug abuse was three times more than the population growth rate over the past 20 years in Iran (9).

Methadone Maintenance Therapy (MMT) is the choice treatment for addicts using opioids. Indeed, methadone is a lower potential opioid helping patients reduce their use of drugs. The effectiveness of methadone maintenance therapy (MMT) in reducing illicit opiate use, human immunodeficiency virus (HIV) risk behaviors, criminal behaviors, viral transmission of human immunodeficiency virus (HIV), hepatitis and mortality has been well documented. In addition, methadone therapy was found to improve treatment retention, employment and family relationship as well as quality of life (10).

Abstract thinking can be defined as thoughts generated simultaneously and independent of stimulus compared with dependent of stimulus. Therefore, there are two important areas in this definitions (11). Abstract thinking are related to long-term goals, past or future events and can be defined as thoughts that focus on the relationships between representations rather simple stimulus features. It is a part of cognitive processes to manipulate, either within a single temporal or relational domain, or across both. Therefore, this process needs past thoughts and memories, relevant and irrelevant task, problem solving, future thinking and goals (12). Folkman and Lazarus defined "coping" in their study as "an attempt for decreasing the stress in situation. "Coping" is a cognitive and behavioral process in the body based on individual's perception (13). They had the classification for "coping" in their project: problem-focused (the skill people use for in order to control the stress between people and situation) and emotion-focused (the skill that

people use for confronting acute situations or emotions) (13). Adults are effective problem solvers throughout their lifespan (13-14). However, aged people or older adults decrease their ability for solving problem in their lifespan (16).

Despite many efforts in the past two decades raising awareness of substance related prejudicial and high-risk behaviors, drug and substance abuse has been increasing especially among young people. According to the studies, substance addicts suffer from deficits in thinking. Problem solving skills help addicts against substance abuse side effects. (17). Many studies emphasizes the role of damage on abstract thinking (18- 22) and problem solving deficits (23, 24, 25, 26, 27, 28) in men undergoing methadone maintenance (MMT) compared to men without addiction and men undergoing methadone maintenance.

Addiction is an important and even lethal issue in society and health administrations must consider a serious attention for both treatment and prevention. We can use methadone for treatment. Warning and informing about dimensions of substance abuse and addiction may help improve society and treat this people. The Current study aimed to compare the problem solving style and abstract thinking in men undergoing methadone maintenance treatment (MMT) and men without addiction.

Methods

This study is a comparative research study. The study population consisted of individuals referred to addiction treatment centers in Shiraz. At first, we chose 3 addiction treatment clinics according to random sampling, and then we chose a number of 60 participants from among the clients who referred to the clinics, were selected using convenient sampling procedure.

The participants of the study consisted of 60 men undergoing methadone maintenance treatment (MMT) with regard to inclusion criteria (just men, at least literate, using methadone for less than a year, lack of chronic and cognitive problems, severe mental disorders), we attend entry criteria according to interview, mental examination, medical

records and based on the guidelines of Diagnostic and Statistical Manual of Mental Disorders. Exclusion criteria in addict samples were using substances except methadone, people with severe psychiatric disorders, people with chronic and cognitive problems, current use of antipsychotic, without literate. 60 participants without addiction were selected through judgmental convenient sampling procedure. We used family and patients' attendants who accompanied with addicts in clinic as control group. Inclusion criteria for control group consists:

individual should be without addiction and history of mental illness, at least literate. Moreover, individuals who suffer from a psychiatric disorder, substance abuse, and general medical disorder, be illiterate or be not able to fulfill the asked tasks excluded from the experiment. They were asked to participate voluntarily due to moral considerations. Also we promised them to keep their mystery and problems due to moral considerations. Two experiment and control group were matched through the similar characteristics such as gender, education, psychiatric disorders, age, and lack of chronic and cognitive problems.

In order to collect data, the following instruments were administered:

Wisconsin Sorting Card Test The WCST was conducted by an experienced clinical neuropsychologist (22). Berg in 1948 created the WCST and Heaton and colleagues in 1993 reviewed this test (29). Exer et al., (1992) examined test-retest and internal consistency methods, reported the reliability of the test to be between 0.29 and 0.94 (30). Naderi (1994) examined Wisconsin Sorting Card test in Iranian population, reported test-retest reliability to be 0.85 (31).

Problem solving style questionnaire: This 6 scale and 24 item questionnaire measures labeled helplessness, problem-solving control, creative problem-solving style, problem-solving confidence, avoidance style and approach style and it should be answered through three choices (Yes/No/No idea). Cassidy and long (1996) created this questionnaire (32).

Mohamadi & Sahebi (2001) used intra-rater reliability method and reported the reliability of the test to be 0.60 in Iranian samples (27).

At the first step selecting sample groups, 3 addiction treatment clinics according to random sampling. 60 men undergoing methadone maintenance treatment (MMT) were assigned as experiment group and 60 men without addiction were assigned to the 4 control group. In order to examine the instruments on the participants, they were asked to fulfill the questionnaires and sort the Wisconsin sorting card test.

Results

Mean and standard deviation of age of addict group are respectively 33 and 7.70 years and mean and standard deviation of age of non-addict group are respectively 32 and 8.30 years. Table 1 shows the mean, standard deviation of scores of project variables. To assess the difference between two groups in terms of research variables, student t-test analysis has been applied. Table 2 and 3 shows the comparison of problem solving style and abstract thinking of men undergoing methadone maintenance (MMT) and normal subjects. In this study for analyzing data used independent t-test for comparing the two groups. Results of table 2 indicate that there are the difference between two groups in approach style, creative problem-solving style, sorting piles and preservative errors on the Wisconsin test. However, there are no differences between two groups in other variables.

Table1. The mean and standard deviation

Subjects	Addict		Non- Addict	
	Mean	SD	Mean	SD
Helplessness	1.8	1.2	0.9	1
Control	2.5	0.87	1.7	0.96
Creative	3.2	1	3.6	0.65
Confidence	1.2	1.3	2.8	1.2
Avoidance	2.9	1	2.9	1.5
Approach style	3.5	0.83	3.8	0.44
Sorting piles	1.8	2	3.6	2.4
Preservative errors	11	5	9.6	6.6

Table 2. Comparison of problem solving style and abstract thinking of men undergoing methadone maintenance (MMT) and normal subjects

Variables	T	df	P
Helplessness	3.9	118	0.05
Control	4.8	118	0.6
Creative	-2.6	118	0.001
Confidence	-2.9	118	0.3
Avoidance	-0.13	118	0.5
Approach style	-1.9	118	0.000
Sorting piles	-4.3	118	0.000
Preservative errors	1.4	118	0.04

Discussion

The current investigation examined the relation of the problem solving style and abstract thinking between men undergoing methadone maintenance treatment (MMT) and men without addiction. Results showed that the difference between two groups in approach style and creative problem-solving style. There are no differences between two groups in helplessness, problem-solving control, problem-solving confidence and avoidance style. Furthermore, there are significant differences between two groups in sorting

piles and preservative errors on the Wisconsin test. This study findings are similar to those of Stavro, Pelletier, & Potvin (19), Hoch, et al. (20), Baker, et al. (21), Leen, et al., Whlleya et al. (24), Demribas et al. (25), Burhanoglu, et al. (26), Yavari & Arefi (27), Verdejo -Garcia et al. (33).

These findings support the assumption that there are differences between two groups in abstract thinking and problem solving style. Findings illustrate that weakness in abstract thinking cause make deficits in social behaviors; resulting in increased craving. People with low performance in social behavior may show poor reaction in stressful situations. People with social dysfunctions respond poor in these situations and may limit the development of mental ability including abstract thinking (34).

In order to define and determine problem-solving procedures, Wisconsin sorting card test has been administered. In this study, men undergoing MMT, showed that more perseverative errors than normal people.

Therefore, it may be concluded that men undergoing MMT have dysfunction in cognitive and have poor flexibility. Men undergoing MMT comparing with men without addiction, showed more disruptive performance in Wisconsin sorting card test, conformably to other studies (35, 36, 37). Different studies showed that deficits in executive function and problem solving correlated with impairments in frontal regions (38). Furthermore, several projects claimed that deficits in inferior frontal gyrus and basal ganglia may result in problems in performing Wisconsin card sorting test (39). Therefore, these areas can be considered in order to examine the performance in Wisconsin card sorting test and Dopamine is neurotransmitter as regulators connections in these areas (40). Severtson et al. (41) measures that substance regular users perform poorly in WCST. They had to struggle more than normal group to tackle the task. Furthermore, group with methadone maintenance treatment have more errors due to cerebral system deficits. As results showed, men methadone maintenance treatment feel lonely more often, conformable to previous studies concerning disordered social function and deficits in substantial skills toward to the everyday problems. Hence, they abuse substances to collate with their problems. It can be generally concluded that people undergoing methadone maintenance treatment do not have effective and proper skills to deal with negative emotions and current problems, and confronting substance risk situations and they fail while issues challenging them. Overall, results showed the importance of training problem solving. Men methadone maintenance treatment are unable to take account of their problems as a normal part of life and unwilling to deal with the problems they face and they make a less profit out of problem solving, creativity, confidence in problem-solving and intimacy (42). Moreover, it seems their poor coping style and problem-solving result in addiction, methadone maintenance treatment social and psychological problems. Studies have shown that individuals with poor problem-solving, in confronting to the everyday problems, resort to substance abuse

(43). Furthermore, studies have shown that substance abusers suffer from some kind of brain atrophy leading to impairments in concrete and abstract thinking (44).

Overall, level of abstract thinking of men undergoing methadone maintenance treatment is lower than normal subjects, due to their perseverative, repetitive, stereotypic thought and less effective problem solving. Moreover, this issue does not lead to ability to design effectively and conduct meaningful actions to achieve the goal, abstract and conceptual thinking have not been developed and they experience cognitive inflexibility (45). These results are conforming to the study examined depression criteria in methadone maintenance treatment patients and assets that the major risk factors for depression were already being in MMT, female gender, any DSM-V Axis I psychiatric diagnosis, taking any psychotropic medication (46).

The major limitation of this study was lack of access to other gender, since only male persons were selected. Another limitation related to region of sampling, as the samples were selected only from Shiraz city. And at last, the sample was small.

Hence, for further studies, it is suggested that the relationship between variables in female undergoing methadone maintenance treatment to be considered as well, and subjects would be selected from different cities and even villages. The study suggests that in order to increase efficiency and enhance the success rate in addiction treatment, there is a need for large sample for understanding cognitive functions in addicts and attaining better results. Moreover, interviews might preferably be used, so that more extensive and helpful information would be extracted.

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