

Abstract

Objective: The purpose of the current study was to investigate the effectiveness of group schema therapy in metacognitive beliefs and methadone dose in men treated with methadone maintenance medication.

Method: A quasi-experimental research design, including pre-test and post-test and control group was used for the conduct of this study. The statistical population of this study included all the men who had referred to the addiction treatment clinics of Isfahan city in Spring 2017 for addiction treatment. For sampling, one addiction treatment clinic was selected via convenience sampling method; then, 30 participants were selected from this center based on purposive sampling and entry criteria. The participants were randomly assigned to two experimental and control groups. The experimental group received 10 weekly 90-minute sessions of schema therapy. Wells Metacognitions Questionnaire was administered to the participants before and after the treatment and methadone dose was also recorded before and after the treatment. **Results:** The obtained data were analyzed through multivariate covariance in SPSS₂₃. The results showed that group schema therapy had a significant effect on 5 dimensions of metacognitive beliefs, i.e., positive beliefs about anxiety ($p=0.000$), negative beliefs about controllability of thoughts and concerns related to anxiety ($p=0.000$), cognitive unreliability ($p=0.000$), need for thought control ($p=0.000$), and cognitive self-awareness ($p=0.000$); and methadone dose ($p=0.000$). **Conclusion:** Group schema therapy is an effective method in adjusting metacognitive beliefs and decreasing methadone dose in the men under methadone treatment.

Keywords: metacognitive beliefs, methadone dose, schema therapy

Effectiveness of Group Schema Therapy in Metacognitive Beliefs and Methadone Dose Reduction in Men under Methadone Treatment

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Research on Addiction Quarterly Journal of Drug Abuse

Presidency of the I. R. of Iran
Drug Control Headquarters
Department for Research and Education

Vol. 11, No. 44, Winter 2018
<http://www.etiadpajohi.ir>

Introduction

Substance dependence is introduced as addictive and substance-related disorders in the Diagnostic and Statistical Manual of Mental Disorders (DSM–5) (American Psychiatric Association, 2013), and is one of the most important problems in human life (Lundholm, 2013, Substance Abuse Office and Mental Health Services, 2010) and is considered as the second common psychiatric disorder (Sadock & Sadock, 2016). Addiction disorders and substance dependence, result in considerable physical (Tremain et al., 2016) and psychological problems (Agrawal, Budney, & Lynskey, 2012), and cause many problems for the individual and the community (Klein, 2016; Harrop, & Richard, 2016). In most societies, addiction is a general health problem (Norouzi, Saberi Zafarghandi and Gilani-Pour, 2011). For this reason, many studies have been conducted on the causes and strategies for the prevention and treatment of addiction (McConnell, Memetovic, & Richardson, 2014). Substance dependence is a mental, genetic, physical and social disorder and a variety of medical, psychological, and social interventions are designed with multidisciplinary approaches for controlling and treating it (Brook, & Spitz, 2002). Addiction treatment is a process that begins with the addict motive to stop substance abuse behavior and continues to prevent addiction relapse (Ebrahimi, 2010). One of the most well-known pharmaceutical treatments is methadone maintenance therapy (Whit, & Loptko, 2007), which, in addition to relapse prevention, improves the mental, physical and social quality of the patient (Vazirian, Mohsenifar, Rashtari, 2005). In spite of various addiction therapies, including maintenance therapy, it should be considered that many addicts undergoing treatment are not able to achieve a continuous abstinence despite receiving these treatments (Wazirian et al., 2005). Regarding this issue, it can be concluded that, from a specialized point of view, one of the main challenges facing the specialists in the field of drug dependence is the high rate of relapse in this disorder, and it is suggested that to what extent, therapical actions consider environmental changes and how much is it designed to make changes and the influence on the personality and mental construction of a person? (Afshang, 1986, quoted by Asgari Jannat Abadi, 2012).

Meta-cognition was first introduced in the field of growth psychology and then went to the field of psychology of memory, elderly and neuropsychology. In the last few years, the role of meta-cognition as a fundamental factor has often been addressed or all of the psychological disturbances (Wells and Mateoss, 1994; Wells, 1995, and 2000, quoted by Wells, 2009, Akbari translation, and Colleagues, 2012). Metacognition is defined as any knowledge and cognitive process that participates in the assessment, monitoring, or control of knowledge (Flavel, 1979, quoted by Wells, 2000, Bahrami and Rezwani translation, 2005). From the metacognitive perspective of substance abuse, there is a rapid and significant change in cognitive events such as emotions or memories. These

cognitive changes may be the result of positive and negative drug reinforcement of drug abuse. In addition, drug use may not only create positive beliefs and expectations about the effects of drugs and psychedelics, but also provide knowledge and awareness of cognitive outcomes. Also, the lack of use of drugs when there is tendency can be related to specific beliefs and attitudes about the impact of cognitive events (Tneatto, 1999). In the meantime, the fundamental principle in metacognition is that disorders (including addictive disorders) are associated with the activation of maladaptive thinking style called the cognitive attention syndrome (CAS). Cognitive-attention syndrome includes a repetitive thinking style, as concern or rumination is focused on maladaptive coping behaviors and threats. This style has consequences resulting into sustaining emotions and strengthen negative thoughts. Totally, meta-cognition model is based on this fundamental principle that psychological disorders (including addictive disorders) continue due to the effects of thinking style, i.e., cognitive-attention syndrome on emotional experiences and beliefs (Wells, 2008, translation by Mohammadkhani, 2009). Metacognitive beliefs play a significant role in drug abuse and its relapse (Wells, 2001), and research also emphasizes the role of meta-cognitive beliefs in the onset and continuation of drug use (Jurgen, Johannes, & Johannes, 2007; Spad, Wells, 2005). In this regard, in a research, the relationship between meta-cognition and addiction components among dependent and non-dependent individuals was studied. The results showed that there is a difference between the two dependent and non-dependent groups in meta-cognitive factors (Sa'ed, Yaqoubi, Roshan and Soltani, 2010). The results of another study showed that people with substance abuse had significant problems and defects in metacognitive mastery (Wasmuth et al., 2015). Also, in a research, the role of meta-cognition as a mediator of the relationship between emotion and cigarette dependence was studied. The results showed that three dimensions of metacognition, including positive beliefs about worry, negative beliefs about worry and beliefs about cognitive confidence is positively associated with cigarette dependence (Spad et al., 2007). Steven, & Ondersma (2010) also concluded that metacognitive therapy can significantly improve the treatment of addiction by influencing meta-cognitive beliefs (Steven, & Ondersma, 2010). Considering the importance of the psychological and personality dimension of people in the formation of addiction, one of the most important problems and challenges of the addition therapists is the selection of psychological treatment type (Carole, 1996; quoted by Asgari Jannat Abadi, 2012). Over the past few decades, addiction has undergone tremendous changes (Mc-Kay, 2009), one of which is the development of psychological interventions, especially the cognitive-behavioral model in drug-dependent individuals (Ebrahimi, 2010). Regarding the problems of classical cognitive therapy and its failure, for the treatment of people with chronic character and personality problems, Young (1990-1999) developed a schema therapy for the treatment of patients with chronic character problems and personality disorders

that were not receiving help sufficiently from the classic cognitive behavioral therapy (Young, Klosko, & Weishaar, 2003; Hamidpour and Endouz, 2007). Schema therapy has been effective and successful in the treatment of personality disorders

(Bamelis, Evers, Spinhoven, & Arntz, 2013), this therapy is based on early maladaptive schemas (Young et al., 2003). These schemas can be used in the drug treatment plan (Shorey, Elmquist, Anderson, & Stuart, 2015; and Firoozi, Kharimin, Ahmadi, Panahi, 2015), because it assumes that these schemas may affect the development and maintenance of drugs (Young, 1994). Therefore, it seems that schema therapy can be a good treatment for addictive disorders due to its focus on treatment and improvement of early maladaptive schemas (Tajik-Zadeh, Zare, Nazari and Afshari, 2015). ; Nasseri, Sohrabi, Borajali and Falsafi Nezhad, 2014). The schema therapy approach identifies the active substance dependence as a primary disorder (Ball & Young, 2000). Young suggested that early maladaptive schemas may be associated with substance abuse (Roper et al., 2009). A research in this regard confirmed the relationship between the early maladaptive schemas and meta-cognitive beliefs, and the students' addiction potential and showed that in addition to the schemas, meta-cognitive beliefs have a positive relationship with addiction (Ghadimi, Karami and Yazdanbakhsh, 2014). However, there is not much information about the impact of meta-cognitive beliefs on the incidence and severity of addiction (Garland, Carter, Robes and Howard, 2011). However, the multitude of researches on the effect of meta-cognitive beliefs in addiction (Ghadimi, Karami and Yazdanbakhsh, 2014) shows the importance of considering metacognitive beliefs and its dimensions in the treatment of addictive disorders. According to the mentioned research, no research is conducted on the effect of schema therapy on meta-cognitive beliefs in people undergoing methadone treatment. Therefore, the purpose of this study was to investigate the role of group schema therapy as a combined therapy that is specific to people with character problems, personality persistence and resistant to treatment; in metacognitive beliefs and methadone dose reduction in men treated with methadone maintenance medication.

Method

Population, sample and sampling method

This research is applied, in terms of purpose. A quasi-experimental research design, including pre-test and post-test and control group was used for the conduct of this study. The statistical population of this study included all the men who had referred to the addiction treatment clinics of Isfahan city in Spring 2017 for addiction treatment. For sampling, one addiction treatment clinic was selected via convenience sampling method; then, 30 participants were selected from this center based on purposive sampling meeting the study criterion (man, married, age range from 30 to 50 years, no observed disorder based on DSM5) based on random assignment as in therapy group, the sample size is between 8

to 15 by intervention method (Curie and Curie, 2002) placed in two experiment and control groups (15 people in each group).

Then, both groups entered the pre-test stage. In this regard, Adrian Wells' metacognition questionnaire was provided to all participants and the methadone dose was registered each with the supervision of the doctor and the referral to the therapy case (in cc). After performing pretest, a group-based schema therapy was performed for 15 subjects in the experimental group at 10 sessions per week and the control group continued to the methadone maintenance treatment and not receiving any psychological treatment. After the end of treatment, posttest was performed for both groups.

Instrument

1-Wells meta-cognition questionnaire: In order to study the meta-cognitive beliefs, a short form of Wells meta-cognition questionnaire was used. This self-report scale consists of 30 questions developed by Wells in 1997, evaluating people's beliefs about their thinking. Responses are rated on a 4-point Likert scale from 1 (not agree) to 4 (totally agree). The questionnaire includes five subscales of positive beliefs about worry, with questions 1-7- 10 19-23-28; negative beliefs about the controllability of thoughts and corresponding danger with questions 2- 4- 9 - 11-15-21; Lack of cognitive confidence with questions 26-28-9.24-26.29; need to control thoughts with questions 27- 13.23.25-27.27; and cognitive self-consciousness with questions 3 - 5-12- 16- 18-30. Wells, Catherine- Hatton (2004) reported total reliability and its components between 0.76 and 0.93, and the test retest reliability from 0.59 to 0.87. The Cronbach's alpha coefficient of the total scale in the Iranian sample was 0.91, uncontrolability 0.87, positive beliefs 0.86, cognitive self-consciousness 0.81, cognitive confidence 0.87, and need to control thoughts was 0.71 (Shirin Zadeh, 2006).

2-Methadone dose: To measure the dose of methadone syrup, the dose recorded in each person's case was used before and after the intervention (in cc). This rate is determined by the physician of the addiction treatment center based on the methadone maintenance treatment protocol by considering the need of therapist.

Procedure

After selecting the sample and assigning the subjects in the experimental and control groups, the experimental group received 10 sessions of 90 minutes of the therapy scheme. Every 15 people attended each session, and the sessions were conducted in drug rehab center as continuous based on Young's schema therapy protocol as shown in Table 1 (Young, Klosko, & Weishaar, 2003, translated by Hamidpour and Endoz, 2007).

Table 1: Young Schema Therapy Protocol

<i>Sessions</i>	<i>Goals</i>	<i>Educational content</i>
Pre-session	Justification session with the people in group and complete pre-test	Introducing the tester, express the purpose of the research, the review of the structure of the meetings, the expression of rules and regulations, the emphasis on secrecy, talk about the duration of the sessions, answering questions, completing the pre-test.
First	Introduction to Schema Therapy concepts	Define and explain schema therapy, introduce maladaptive schemas and areas related to each one, express and explain the roots of the schema, explain and educate about the performance of the schemas.
Second	Continue the training of schema therapy concepts and create preparation to evaluate and train schema	Explanation and training of coping styles, explaining and educating various types of schema mentality, and preparing readers in order to measure and change schemas.
Third	Evaluate and train schema	Evaluate the schemas of each group and give feedback, examine the questionnaires of the group and familiarize them with their schemas, conduct and teach the mental imagery technique related to the measurement stage at a meeting, group discussion about schemas and the impact of each on the lives of people, donating the book "Rebuild Your Life" to people in the group, encouraging them to study the book (section related to their schemas for a future as homework).
Fourth	Start the process of schema change	Creating incentives for changing schemas, preparing for changing schemas, introducing cognitive, emotions and strategies of behavioral pattern breaking, associating with members of the group to fight against schemas in three cognitive, Emotion, Behavioral Modeling, homework examination.
Fifth	The start of changing schema by using cognitive strategies	Performing the reliability of a schema, a new definition of schema confirmatory evidence, the evaluation of the advantages and disadvantages of schemas, the evaluation of the benefits and disadvantages of coping styles, the provision of assignments
Sixth	Continue change process by cognitive strategies	Examine homework, teaching and practicing dialogue between the healthy aspect and the aspect of the schema, teaching the development and production of educational cards, and how to use these cards to group members, training how to

<i>Sessions</i>	<i>Goals</i>	<i>Educational content</i>
Seventh	Start the process of schema change by using empirical strategies	complete schema registration forms, presenting homework. The re-introduction of empirical strategies, the presentation of the logic of empirical strategies, the teaching of mental imagery and its implementation in the session, the teaching of the technique of imaginary dialogue and its implementation in the session, writing letters to parents and explaining the logic of using this technique, providing a homework with the subject of writing letters to parents.
Eights	The start of the process of change in schema by using behavioral pattern breaking strategies	The re-explanation and the teaching of various types of coping styles and their effect on the continuity of schemas, the determination of specific behaviors of the group as the potential target of change, prioritization of behaviors in behavioral pattern breaking.
Ninth	Continue the change process in schema by using behavioral pattern breaking strategies	Creating an incentive to change the schema continuity behaviors and studying its impact on people's lives, training healthy behaviors through mental imagery techniques, studying and teaching to overcome barriers to change behavior, teaching methods for using educational cards for behavioral modeling, performing behavioral modeling exercises, providing homework.
Tenth	Conclusion and summary and post-test completion	Examining the exercises performed, summary of the sessions and conclusions, group discussing about the effects of changing schemas, answering the questions of the people, completing the posttest questionnaires by the people in group.

Findings

The mean age of the experimental group was 39.73 years and the mean duration of use was 12.13 years. In the control group, the mean age was 38.44 years and the mean duration of use was 13.33. In both groups, the number of people with a diploma was higher than other degrees. The descriptive statistics of the meta-cognitive beliefs and methadone dosages by groups and type of test are presented in Table 2.

Table 2: Descriptive Statistics of Meta-cognitive Beliefs and Dose of Methadone by Groups and Type of Test

<i>Variables</i>	<i>Pre-test</i>		<i>Post-test</i>	
	<i>mean (SD)</i>		<i>mean (SD)</i>	
	<i>Experiment</i>	<i>Control</i>	<i>Experiment</i>	<i>Control</i>
Positive beliefs about worry	16/26 (3/05)	16/15 (2/18)	12/26 (3/15)	16/33 (3/31)
Negative beliefs about controllability of thoughts and worry	19/53 (3/31)	18/40 (3/04)	13/60 (2/82)	18/67 (2/94)
Lack of cognitive confidence	19/60 (2/89)	17/66 (3/15)	12/07 (2/09)	18/33 (2/64)
The need to thought control	17/46 (2/82)	17/66 (2/02)	11/40 (2/67)	18/33 (2/77)
Cognitive self-consciousness	17/33 (3/08)	18/06 (1/90)	12/27 (3/24)	19/20 (2/14)
Methadone dose	15/86(4/43)	16/20(4/16)	9/26(4/69)	15/86(3/81)

A multivariate covariance analysis was used to study the effectiveness of group schema therapy on meta-cognitive beliefs. In order to perform this analysis, the assumptions must be investigated and established. To test the normal distribution of variables in the post-test, the single-sample Kolmogorov-Smirnov test was used. The results showed that the distribution was normal ($p > 0.05$). Lone test was used to check the homogeneity of error variances. The results showed an assumption ($p < 0.05$). To examine homogeneity of error variance, the Leven's was used and the results indicated that this prediction was established ($P > 0.05$). To evaluate the homogeneity of covariance matrix, Box test is used and the results showed the establishment of this assumption ($M_{box} = 19.91$, $F = 1.07$, $P > 0.05$). The analysis results of gradient homogeneity of regression showed that the interaction of variables (pre-test) and dependent (post-test) was not significant at the factor level (Experiment and control groups) ($P > 0.05$). As the assumptions are established, a multi-variate covariance analysis is performed and the results showed the significant difference of two groups in linear composition of variables (Wilks lambda = 0.842, $F = 20.280$, $P < 0.001$, Effect size = 0.842). To evaluate the difference models, uni-variate covariance analysis as shown in Table 3 is used.

Table 3: Results of Univariate covariance analysis to examine patterns of difference

<i>Variables</i>	<i>Mean of squares</i>	<i>F statistics</i>	<i>Significance</i>	<i>Effect size</i>	<i>Statistical power</i>
Positive beliefs about worry	89/876	12/95	0/0005	0/360	0/931
Negative beliefs about controllability of thoughts and worry	143/189	27/33	0/0005	0/543	0/999
Lack of cognitive confidence	309/143	76/108	0/0005	0/768	1/000
The need to thought control	303/323	82/589	0/0005	0/782	1/000
Cognitive self-consciousness	201/326	65/015	0/0005	0/739	1/000
Methadone dose	299/227	53/531	0/0005	0/66	1/000

As shown, the schema therapy has been effective on the meta-cognition and methadone dose. In other words, Scheme Therapy has been able to reduce the scores of individuals in meta-cognitive beliefs and methadone use.

Discussion and Conclusion

The purpose of the current study was to investigate the effectiveness of group schema therapy in metacognitive beliefs and methadone dose in men treated with methadone maintenance medication. The results showed that group schema therapy affected all aspects of meta-cognitive beliefs in individuals undergoing methadone treatment. A direct research that is exactly consistent with the current research has not been found. But in some researches, the role of meta-cognition and meta-cognitive beliefs in addiction has been confirmed and therefore indirectly is consistent with the present research, and it can be said that indirectly, the findings obtained are consistent with the researches of Kazemi's research and Motahari (2013), Ghadimi et al., (2014), Saed et al. (2010), Abolqasemi et al. (2007), Vasmos et al. (2015) and Spad et al. (2007).

Based on the above finding, it can be stated that the schema therapy is in some way related to the schemas and beliefs of the individual. And by using empirical, cognitive and behavioral techniques in treatment sessions target the past, and childhood of an individual (Young et al., 2003). On the other hand, the positive and negative meta-cognitive beliefs are formed during the growth of the individual (Vasmos, 2015; and Wells, 2005). Therefore, studying the memories, events and experiences of people in the group and reconstructing events, as well as studying the evolutionary roots of the beliefs, could affect the meta-cognitive beliefs of individuals and also changed the relationship between the individual and his thoughts and adjusted the dimensions of meta-cognitive beliefs. Meanwhile, one's recognition of early maladaptive schemas and beliefs and thoughts, which is one of the most important goals of schema therapy (Young, 2003), is also metacognitive in nature, and because people were aware of their cognition and beliefs via cognitive, behavioral and emotional strategies (metacognition), they learned how to respond to these beliefs, and, consequently, they could regulate their relationship with thoughts and beliefs. As a result, this treatment was able to influence their meta-cognitive beliefs. Another point was working on the coping responses of individuals, including submission, avoidance and extreme compensation, using triangular cognitive, behavioral, and empirical techniques that influenced the meta-cognitive strategies of these individuals. Metacognitive strategies are methods for controlling or changing thoughts. Given this definition, one can find many similarities between metacognitive strategies and coping responses (Wells, 2009, Akbari et al., 2012), which led to working on coping responses can also affect the meta-cognitive strategies of individuals in the group.

The other results of the present study were the effectiveness of schema therapy on the reduction of methadone dose. The research that directly were consistent with the present research was Afshari et al. (2011), which examined the effectiveness of group schema therapy on the progression of maintenance therapy with methadone and concluded that this treatment was a good treatment for individuals treated with methadone maintenance medication. Also, Nasser

et al. (2014), in a study, confirmed the effectiveness of two-dimensional schema therapy in the treatment of heroin-dependent patients. Researchers that confirm that early maladaptive schemas in drug addicts are higher and more severe than the normal population and non-addicted individuals are including Firoozi et al. (2015), Khoshlahjesedgh et al. (2012)) and Sahand, Zare and Fati (2010). Referring to the items mentioned in the introduction, it seems that each of the early maladaptive schemas, in their own way, leads to the onset of drug use and sustained use in substance dependent individuals. It seems that the people who are being treated with methadone, because of the fact that the drug is used as a substitute for drug use, has also extended this mechanism to methadone, and take benefit of overdose of this drug as a coping response to relieve bad feelings and to prevent exposure to stimulant situations of schema (Young, 2003), and naturally do not try to reduce the dose of this drug. For example, people who deal with the schema of defect, shame, failure, rejection, emotional deprivation, being harmed by loss and illness, distrust and mistreatment, and other schemas, to prevent confronting the stimulating factors of their own particular schema and bad feelings from their schemas, such as disability, inability, feelings of frustration, feelings of rejection and loneliness, feelings of injury and anxiety, feeling of emotional deprivation and incomprehensibility , distrust, etc. overdose with methadone as a coping response that can involve avoidance, surrender and extreme compensation (Young et al., 2003). This is the reason why medical treatment of these people is problematic to reduce the dose of methadone. According to the presented explanations, the most important factor in the reduction of methadone dose in experimental group in the process of schema therapy, is modification of their early maladaptive schemas and awareness of the schemas and coping responses and learning about how to choose more adaptive behaviors and responses at the time of the emergence of maladaptive schemas and replacing them instead of overdose of methadone. In other words, the knowledge of the experimental group from their early maladaptive schemas during treatment and learning how to deal correctly with these schemas could directly and significantly affect the methadone use by these individuals, which is considered a form of coping response (Young et al., 2003). In general, it is possible to say that people who were treated with methadone were using schema therapy strategies and establishing an appropriate therapeutic relationship, including empathic confrontation and limited re-parenting, which had a very good effect on the unmet needs of their childhood , found that early maladaptive schemas had a tremendous effect on their methadone use patterns in the present, and by working on these schemas and especially the inefficient coping responses, the methadone's dose of these individuals decreased. One of the limitations of this study was that it was only applied to men treated with methadone maintenance and could not be generalized to women and people treated with other medical treatments and those with addictive disorders not receiving any special treatment. In this regard, it is suggested that the scheme

therapy should be considered for people with addictive disorders that are undergoing other medical treatment and those who are not receiving any medical treatment. It is also suggested that counselors and psychologists in the addiction treatment centers, especially those treated with methadone, use a schema therapy for better promotion of therapy and reduce the drug dose.

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