

## Abstract

**Objective:** This study was an attempt to investigate the effect of music therapy on addicts' state-trait anxiety rate in the stage of drug-free rehabilitation. **Method:** A quasi-experimental research design, along with pretest-posttest and control group was employed for the conduct of this study. The statistical population of the study included the addicts in the rehabilitation stage who had referred to the Clean Collaborators Rehabilitation Camp in Ardebil Province in November 2014. From this population, the number of 32 addicts in 16-50-year-old age range was selected as the participants of the study by convenience sampling method. State-Trait Anxiety Inventory was used for data collection. **Results:** The results of multivariate covariant analysis showed that there is a significant difference between control and experimental groups in state and trait anxiety. In other words, the state and trait anxiety of addicts in the experimental group had been reduced after music therapy. **Conclusion:** Considering the obtained results, it can be concluded that music therapy alone or along with other psychological interventions can be an effective method for reducing addicts' anxiety in drug-free rehabilitation stage.

**Keywords:** Addiction, Music Therapy, State-Trait Anxiety, Drug-Free Treatment

# Effectiveness of Music Therapy in State-Trait Anxiety Rate of Addicts in Drug-Free Rehabilitation Stage

Esma'eal Soleimani, Laleh Senobar

## Esma'eal Soleimani

Assistant professor of General Psychology  
Department of Educational Sciences  
Urmia University  
E-mail: soleymany.psy@gmail.com

## Laleh Senobar

M.A. in General Psychology  
Counsellor in Ardabil University of Bentolhoda  
Sadr



Research on Addiction  
Quarterly Journal of Drug  
Abuse

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

Vol. 9, No. 35, Autumn 2015  
<http://www.etiadjohi.ir/>

## Introduction

Addiction entails psychosocial abnormalities that emerge because of unnatural and unauthorized use of some substances such as alcohol, opium, hashish, etc. and lead to one's psychological dependence on substances (addiction). This dependence negatively affects one's mental and social performance and may even seriously threaten one's personal and social life in extreme situations (Noel, Brevers & Bechara, 2013). Addiction and side effects of drug abuse are considered among the big problems in the world. Difficulties arising from addiction affect all aspects of life, family, and even the community and detour great social resources in physical and spiritual realm (Lee, Herrenkohl & Kosterman, 2013). Among effects of substance abuse, it is possible to refer to overdose, transmission of infectious diseases, and mental health problems. The effects of substance abuse in the community can include crime, legal problems, family disintegration, and loss of productivity (Stein et al, 2010). The United Nations Office on Drugs considers addiction as one of the world's four crises. In addition, the prevalence of drug addiction in the world has been reported above half a percent while this figure in Iran amounts to one to two percent, which has made the deaths from addiction on the rise (Kameli, Hojjat, Jajarmi, Abedi & Kameli, 2013).

Drug dependence is a chronic disease that is often associated with other psychiatric disorders, including depression and anxiety disorders (Ilgen, Jain, Kim & Trafton, 2008). Psycho-personality characteristics of drug addicts do not only result from narcotic substances, but addicts have been suffering from many psychological and personality disorders before becoming addicted. Then, these disorders become extremely more serious after addiction, during abstinence, and after drug abstinence. The results of a survey showed that addicts receive a high score in psychosis and neuroticism pertaining to Eysenck Personality Inventory (Ketabi, Maher & Borjali, 2008). Khalatbari & Bazarganian (2010) showed that addicted patients with AIDS who were under methadone treatment suffered from high levels of depression, anxiety, and stress. Hojjati et al. (2011) examined the mental health of the addicts who were under drug-free treatment and concluded that the majority of the subjects suffered from high anxiety. In another study, Soleimani, Najafi, Elahi & Sharghi (2013) investigated the prevalence of anxiety and depression in the addicts under treatment and showed that 49.3 percent of the patients out of 150 ones suffered from anxiety symptoms and 50 of them suffered from depression. Applebaum, Bullis & Traeger (2010) also showed that the heroin addicts who under medical treatment for withdrawal were suffering from high levels of mood disorders and anxiety. Comorbidity psychiatric disorder in addicts under treatment leads to worse prognosis and treatment outcomes in addition to the imposition of high costs on the health care system (Nunes & Levin, 2004). Research has shown that mood disturbances such as anxiety and depression are held stable in addicts up to six months after

withdrawal (Charney, Palacios, Negrete, Pobkin & Gill, 2005). Research has also shown that 95 percent of addicts may have addiction relapse during the first 6 months of drug use withdrawal (Nastiezaie, 2007). Experience of depression and anxiety after drug use abstinence leads to the addicts' tendency to treatment with a rapid relapse to drug use (Shamloo, 2008). There are various methods for reducing and controlling anxiety in patients. Medication and behavioral techniques are among the most effective approaches to control and reduce the amount of anxiety (Janbozorgi & Noori, 2009). The most common drugs used to treat anxiety include benzodiazepines, tricyclic antidepressants, monoamine-oxidase inhibitors, serotonin re-uptake inhibitors, non-benzodiazepine anti-anxiety drugs (buspirone), Carbamazepine, propranolol, and hydroxyzine. Despite their rapid effect, these medical drugs have many side effects and should be used for 8 to 12 months in most cases where anxiety often relapses. The major drawback of these medications is the emergence of tolerance and dependence in case of long-term use (Pourafkari, 2010). Behavioral therapies are the drug-free anxiety-reductionist methods, which include therapeutic touch, heat and cold therapy, different types of relaxation methods (hypnosis, guided imagery, distraction, biofeedback, meditation, yoga, progressive muscle relaxation, and Benson muscle relaxation), and music therapy. In addition to being safe and inexpensive, these methods are also non-invasive (zolfaghari, 2003; cited in Hashemi & Zakeri Moghaddam, 2012). In recent years, the tendency to complementary and alternative therapies has increased and such therapies are being stabilized in many treatment and care-giving centers as secondary treatment and supportive therapies (Kelly, 2004). Drug-free approaches such as exercise, stress management programs, training of relaxation methods, and music therapy programs can prevent stress and mood disorders in the addicts under treatment (Winkelman, 2001).

One of the anxiety-reducing non-pharmaceutical interventions is music therapy, in which the rhythmic sound is used for communication, relaxation, and recovery (Zadeh Mohammadi, 2009). Ghetti (2011) emphasized the effectiveness of music therapy in reducing anxiety in the health sector. Today, it has been proved that music can improve physical, mental, and cognitive problems in patients and is introduced and used as an appropriate and effective intervention in various sectors, especially in public and psychiatric nursing hospitals and rehabilitation centers (Allred, Byers & Sole, 2010). Generally, according to the patient's activity, two types of music therapy, namely active and passive music therapies are used. Active music therapy includes singing, playing or composing music while passive music therapy includes listening to music (Kenyon, 2007). Central nervous system (brain) has been made in such a way that it gives a positive and appropriate response to musical stimuli and allows for the use of this therapy. When fear, restlessness, and anxiety prevail on somebody, a substance called Catecholamine or, say, adrenaline and noradrenaline are secreted from adrenal glands and leads to high blood pressure

and heart rates. Music reduces the release of this anxiety-generating material and, thereby, its function in the body lowers blood pressure and heart rates (Moreno, 2002; cited in Fallah, Sohrabi & Zadeh Mohammadi, 2011). Researchers have proved the effectiveness of music therapy in reducing anxiety of students (Fallah et al. 2011; Hajihassani, Sadipour, Jafarnejad, Rostami & Pirsaghi, 2012), in reducing anxiety of the patients in the cardiac intensive care unit (Hashemi et al., 2012 ; Argstater, Haberbosch & Bolay, 2011), in reducing anxiety of patients undergoing root canal therapy (Maleki, Ashayeri, Jafari, Alavi & Azimi, 2010; Razavian, Barekatin & Mohammadi, 2012), and in reducing pain and anxiety of the patients during burn dressing (Naderi, et al., 2014). It is possible to alleviate anxiety and mood disorders among addicts in the withdrawal stage by means of active and passive music therapy programs (Pankanen, 2007). Results of one study showed that 30-minute sessions of active music therapy can reduce addicts' mood disturbances (Hakwoort & Dijkstra, 2007). Khorramabadi, et al. (2012) showed that music therapy is effective in reducing anxiety and depression in the addicts during withdrawal. Music effectiveness in reducing anxiety drug addicts' anxiety during withdrawal and rehabilitation is to allow the addicts release their emotions and express their negative feelings more easily. These programs can be applied in the individual attempts for drug use withdrawal or in rehabilitation group sessions (Cassity & Cassity, 2010).

In the rehabilitation stage, physical and psychological comfort of addicts is very important. Therefore, due to the intensity of anxiety level and its adverse effects that can prevent drug use abstinence and/or lead to drug use relapse, it is essential for the healthcare team to use effective psychological interventions in reducing anxiety among the addicts under treatment in the rehabilitation stage. Therefore, considering the effectiveness of music relaxation method, the present study was conducted to investigate the effect of music therapy on reducing anxiety levels in drug-free rehabilitation stage.

## **Method**

### **Population, sample, and sampling method**

A quasi-experimental research design, along with pretest-posttest and control group was employed for the conduct of this study. The statistical population of the study included the addicts in the rehabilitation stage who had referred to Clean Collaborators Rehabilitation Camp in Ardebil Province in November 2014. From this population, the number of 32 addicts in 16-50-year-old age range was selected as the participants of the study by convenience sampling method (due to the absence of the list of all persons). Then, these participants were randomly assigned to two experimental and control groups (each group  $n = 16$ ). The criteria for the inclusion of the participants in this study were as follows: response to the pre-test and determination of anxiety level, acceptance

of the testing conditions (time and place, duration of sessions, etc.), non-use of music during the abstinence period, and avoidance of using sedatives one hour before the conduct of training. However, the exclusion criteria included failure to obtain the necessary score to determine anxiety, receiving training by another treatment program, non-acceptance of the conditions of the program, giving up frequent music listening habits during the period, and taking sedatives during training.

### **Instrument**

**Spielberger's State Trait Inventory:** This questionnaire was developed by Spielberger, et al. (1970). It consists of two scales, namely state anxiety and trait anxiety (latent). Each section includes 20 four-point items. Each item is scored from 1 to 4. To extract the correct answer from the patient, the questions have been positively and negatively arranged. The items numbered 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20 in state anxiety and the items numbered 21, 23, 26, 27, 30, 33, 34, 36, and 39 in trait anxiety are scored in reverse. Spielberger et al (1970) reported Cronbach's alpha coefficients of .92 and .90 for state anxiety and trait anxiety, respectively. Abolghasemi (2002) used Facilitative and Debilitative Anxiety Scale to evaluate the validity of State Trait Inventory. The results were indicative of the significance of the correlation between State Trait Inventory and subscales of Facilitative and Debilitative Anxiety Scale (cited in Abolghasemi & Narimani, 2006).

### **Procedure**

In this study, the researchers referred to Clean Collaborators Rehabilitation Camp in Ardebil Province to determine the sample and collect the required data. After coordination with the Camp Chairman, one of the camp rooms was determined as a place of work for the researchers. Then, a meeting was held between the researchers and the Camp Chairman and the required data and information in connection with the situation of the addicts were collected. Then, the selected addicts were randomly grouped and were justified to participate in each group. The experimental group attended the designated room for a week, two hours a day and participated in active and passive musical activities with the researchers. Standly (1992) examined different musical therapies in 55 surveys and studies and reported seven active and passive music therapy approaches as follows: passive listening to music, actively participating in music programs, discussion and advice on music, music and topics related to the development and training, music and actuator, music combined with biofeedback, and music and group activities (cited in Zadeh Mohammadi, 2009). In this study, the first, second and third music therapy methods were used for the experimental group. Passive music entails listening to non-verbal joyful pieces. The certain melody should include pleasurable musical themes to create vitality and joy in patients. Bracing (joyful) themes are the rhythmic pieces with a relatively lively melody,

which induces vitality and joy away from excitement and impatience and is followed by stability and composure (Zadeh Mohammadi, 2009). Active musical affairs in music therapy sessions of the current study included discussion on musical passions, singing, and declamation along with the sound of the piano. The control group received no intervention at the beginning and completed the research questionnaire just for data collection purposes.

**Table 1: A brief description of eight separate sessions of music therapy**

<i>Content</i>
First session: Administering the pre-test with a refreshing listening to the non-verbal piano music, including (other produced pieces and dancing leaves)
Second session: Narrating the negative physical and mental feelings along with playing peaceful piano pieces
Third session: Playing peaceful piano pieces and encouraging the patient to talk about his/her feelings and concerns
Fourth session: playing exhilarating and refreshing nonverbal pieces (I owe you and Land Angel) along with declamation of the songs that are sympathetic with the patients
Fifth session: Playing peaceful piano pieces and encouraging patients to sing songs in their own praise
Sixth session: Playing peaceful piano pieces and talking about feelings, thoughts or memories pertaining to the song lyrics and completing the questionnaire

## Results

The sample aged 16 to 45 years old with the mean and standard deviation of 29.56 and 2.35, respectively. The descriptive statistics of the variables under study are presented in the table below for each group and test type.

**Table 2: Descriptive statistics of the variables under study for each group and test type**

<i>Variable</i>	<i>Pre-test</i>				<i>Post-test</i>			
	<i>Music therapy</i>		<i>Control</i>		<i>Music therapy</i>		<i>Control</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
<b>State anxiety</b>	68.54	6.36	66.60	7.32	33.5	7.9	62.4	7.50
<b>Trait anxiety</b>	69.14	5.67	65.14	7.00	46.9	7.80	64.0	9.30

Multivariate analysis of covariance should be used to evaluate the effectiveness of music therapy in the reduction of state and trait anxiety. One of the assumptions of using this test is the homogeneity of variance of the error. To this end, Levene's test was conducted and the results indicated that this assumption has been met. In the same way, box test was used to evaluate the assumption of the homogeneity of variance/covariance matrix. The results of this test showed that this assumption has also been met ( $p < .05$ ,  $F = 1.570$ ,  $M \text{ Box} = 5.11$ ). The results of MANCOVA suggested the existence of a significant difference in the linear combination of components between the two

groups ( $P < .001$ ,  $F = 8.84$ , Wilks Lambda = .38). Univariate analysis of covariance was used to examine differences in patterns as follows.

**Table 3: Univariate analysis of variance results representing the difference in patterns**

<i>Source</i>	<i>Variable</i>	<i>Sum of squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>	<i><math>\eta^2</math></i>
<b>Group</b>	State anxiety	7003.80	1	7003.80	258.70	.0005	.909
	Trait anxiety	2156.21	1	2156.21	42.35	.0005	.620
<b>Error</b>	State anxiety	703.89	26	27.07	-	-	-
	Trait anxiety	1323.78	26	50.91	-	-	-

As it can be observed in the above table, music therapy could reduce state and trait anxiety in the experimental group.

### **Discussion and Conclusion**

The present study was an attempt to evaluate the effect of music therapy on reducing the State-Trait Anxiety among drug addicts in drug-free rehabilitation stage. The findings of this study showed that active and passive music therapy interventions are effective in reducing drug addicts' state-trait anxiety, and this finding is consistent with the findings of other research. Heldam, Dahlie & Weilgram (2009) stated that music would influence the affective system (limbic). The exposure of music therapy sessions to the addicts during abstinence and recovery can increase positive affect and reduce anxiety (Khoramabadi et al., 2012). Bavari & Borna (2009) showed that relaxation technique and music therapy could significantly reduce addicts' anxiety in rehabilitation stage, which led to control of some experimental behaviors, such as irrelevant thoughts, aggression, and craving for substance use and totally reduced the possibility of resuming drug use. Puncanen (2007) concluded that addicts' mood and anxiety disturbances could be alleviated using active and passive music therapy programs in the withdrawal stage. Hakwoort & Dijkstra (2007) showed that 30-minute sessions of active music-therapy could reduce mood disturbances. Khorramabadi, et al. (2012) showed that music therapy is effective in reducing anxiety and depression of the addicts in the withdrawal stage. In explaining these results, it can be asserted that listening to relaxing music along with the stimulation of alpha waves in the brain can lead to a relaxing state through the release of endorphins and dopamine and through the decrease of catecholamine secretion. Hence, depression, anxiety, and anger are reduced. It also reduces blood pressure and heart rate and, thereby, the relaxation response is activated. For this reason, music and music therapy can help people cope with the devastating effects of anxiety. This leads not only to relaxation, but also leads to people's health. Music reduces blood pressure and muscle tension and leads to positive thinking in mind. As a result, it can be used in the treatment of depression and anxiety. Music can also reduce the negative effects of stress on

the body and increase the power of creativity and optimism (Scott, 2014). It can be noted that music therapy reduces anxiety rate in the addicted people during drug use withdrawal and this is consistent with other research findings. The findings of the current study confirm the effect of music therapy on reducing anxiety in addicts in the rehabilitation stage and lay emphasis on the use of music therapy as a novel therapeutic approach in the treatment of anxiety disorders among addicted patients. Researchers have referred to the inappropriate mental health status as the main cause of prevalence of addiction and relapse after treatment. Based on self-medication theory, substance abuse is viewed as a form of self-cure by addicts. Indeed, addicts turn to substance abuse to solve problems such as depression and anxiety (Mollazadeh & Ashoori, 2009). Abnormal emotions and feelings of anxiety are one of the potential pre-addictive areas in treated addicts. Many addicted patients use drugs for anxiety reduction and anger control after withdrawal (Zainali, Vahdat & Eisavi, 2008). Disorders such as anxiety, depression, and the like play an important role in resuming drug use after abstinence. Providing psychological services in rehabilitation period can reduce anxiety and depression in addicts (Bavari & Borna, 2009). Music therapy can be a major component of anxiety treatment program. Listening to songs for the sympathy and evacuation of concerns and sadness, discussion about different relaxation feelings with relaxing music, and friendly group communications in music activities are exceptional opportunities to help patients to self-adapt. Patients maintain the connection and continuity of their past feelings with the future through these activities (Zadeh Mohammadi, 2009). The results of the present study were in line with the results of other studies, which suggest that the use of music as a new method of therapy can be an effective technique in reducing the disorders related to addiction, especially anxiety. The most important limitation of this study can be mentioned as the small sample size; therefore, care and discretion should be exercised in the generalization of the results. It is recommended that the efficacy of music therapy be compared with other important approaches that are effective in improving addicts' anxiety so that a more acceptable reliability regarding the effectiveness of this therapy can be achieved.

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