

Original Article



The effect of traditional music on mental status of chronic schizophrenic patients: a clinical trial study

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Abstract

Background and aims: Music therapy is a simple and inexpensive method for the treatment of some psychiatric disorders. The aim of this study was to determine the effect of traditional music on the mental state of hospitalized chronic schizophrenia patients.

Methods: In this clinical trial, 30 schizophrenia patients in the intervention group received routine treatment and attended music therapy sessions and 30 patients in the control group received routine treatment alone. Group music therapy sessions with traditional music were conducted 5 times a week for 2 months. Demographic questionnaire and Andreasen's positive and negative symptoms questionnaires were completed at baseline and after the completion of music therapy sessions. Data analysis was conducted in SPSS version 16.0 using independent and paired *t* tests.

Results: The mean scores of delusion ($P=0.001$) and bizarre behavior ($P=0.036$) and the total score of the SAPS ($P=0.001$) significantly decreased after intervention in the music therapy group. However, in the control group, the differences in the total and individual domain scores of the SAPS were not significant ($P>0.05$). There was no significant difference between the control and music therapy groups in the total and individual domain scores of the Scale for the Assessment of Negative Symptoms (SANS) before and after the intervention ($P>0.05$). Additionally, before and after the study, the mean score of avolition in the music therapy group was significantly lower compared to the control group ($P=0.03$). The mean score of alogia in the music therapy group was significantly lower compared to the control group ($P=0.01$).

Conclusion: Music therapy is effective in improving most of the positive symptoms of schizophrenia and some of its negative aspects, and therefore can be used as a complementary therapy along with drug therapy.

Keywords: Schizophrenia, Positive symptoms, Negative symptoms, Music therapy

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Introduction

Schizophrenia is a type of chronic psychological disorder that has various symptoms including hallucinations, delusions, cognitive dysfunction, and disturbed (catatonic) speech or behavior (1).

The development of schizophrenia is due to abnormalities of dopaminergic and serotonergic neurotransmitters, hypoactivity of GABA, and alpha-adrenergic or glutaminergic hyperactivity. Genetics also plays a key role in the development of the disease (2). Schizophrenia is a disorder of the brain that is associated with psychotic symptoms, rather than a mental disorder. The disease has a negative impact on the quality of life of patients with neuropsychotic symptoms and disrupts all body functions (3). The early onset of schizophrenia,

along with its chronic episodes, turns the disease into a debilitating disorder for many patients and their families, which leads to numerous mental, emotional, and social problems (4-6). Although the current treatments mainly consist of antipsychotics combined with psychological therapies, social support, and rehabilitation, there is a pressing need for more effective treatments and development of new and complementary therapies (7,8). One of the non-pharmacological approaches to treating psychiatric disorders is the use of pleasant acoustic stimuli, known as music therapy (9,10). Music therapy is a non-pharmacological and complementary therapy that improves the treatment and well-being of patients by increasing stress thresholds and eliminating negative emotions, regulating internal processes, maintaining relaxation, and

enhancing immunity (11,12), and it helps psychosocial, physiological, and emotional integration throughout the treatment of illness and disability (10). However, this issue needs further studies because psychiatric patients have different psychological conditions and may not have the same reactions in response to external acoustic stimuli (12). On the other hand, music therapy has no negative side effects and is relatively inexpensive (13). Therefore, the present study was conducted to determine the effect of Bakhtiari traditional music on the mental state of chronic schizophrenic patients admitted to Sina hospital.

Materials and Methods

This double-blind clinical trial was performed on schizophrenic patients hospitalized in Sina hospital (west of Iran) in 2015. The intervention group (n=30) attended music therapy sessions and the control group (n=30) received routine treatments for schizophrenia. Patients were selected by convenience sampling method and then randomly divided into two groups of intervention and control. The study was a double-blind study in which each patient was given a code, which indicated which group they belonged to, and the researcher did not know which patient enrolled in the control or treatment group. The sample size was determined to be 30 patients per group according to similar studies (13-15) based on the following formula with 95% confidence interval and 80% power.

$$n = \frac{(z_1 + z_2)^2 (2s^2)}{d^2} \cong 30$$

$$Z_{1-\alpha/2} = 1.96$$

$$Z_{1-\beta} = 0.84$$

S: An estimate of the standard deviation of the variable was considered.

d: The accuracy was considered to be 0.7 of S.

The inclusion criteria were chronic schizophrenia, hospitalization, lack of mental retardation, hearing impairment and severe physical disabilities, ability to attend group sessions, and at least 18 years of age. The exclusion criteria were lack of volunteering to participate in the study and experience of psychotic distress or discomfort during the intervention.

Demographic information included age, sex, and duration of hospital stay. In addition, two questionnaires of positive and negative symptoms developed by Andreasen were used to evaluate the positive and negative symptoms of the patients. The Scale for the Assessment of Positive Symptoms (SAPS) consists of 33 items to investigate symptoms such as hallucinations, delusions, bizarre behaviors, and thought disorders. The choices include none to suspected (rated 0-1), mild to moderate (rated 2-3), and severe to excessive (rated 4-5).

The higher the score, the more severe the disease. The Scale for the Assessment of Negative Symptoms (SANS) addresses certain symptoms such as affective blunting,

poverty of speech, aimlessness, lack of affection, lack of pleasure and social apathy and inattention. The items (n=24) are scaled similarly to those of the SAPS (16).

The construct validity and reliability of the positive and negative symptom questionnaires were assessed based on Iranian cultural context and adaptation was performed (17).

In a study conducted by Khalafbaigi et al, the coefficients of reliability for five domains of positive symptoms were calculated by internal consistency method and coefficients for all symptoms were significant. The coefficient of reliability was found to be 0.78 for the negative symptoms and 0.77 for the positive symptoms (18).

Demographic questionnaires, SAPS, and SANS were completed at the beginning of the study and after the completion of music therapy sessions. In the intervention group, in addition to routine treatment, group music therapy was delivered in five sessions per week for two months.

In the control group, only routine treatment was delivered and during two months of intervention, patients did not use music and similar interventions. Music therapy sessions lasted 60 minutes in which Bakhtiari folk music was replayed while patients were active and danced. After the completion of the intervention, both positive and negative symptoms were assessed in both groups.

Data were analyzed by SPSS version 16.0 using descriptive statistics including the mean and inferential statistics including independent *t* test. The Kolmogorov-Smirnov test was used to test the normal distribution of the data.

Results

In this study, 60 patients were divided into control and music therapy groups. There were 10 women and 20 men in each group. The mean age ($P=0.91$) and mean length of stay ($P=0.17$) were similar between the two groups and the groups were not significantly different (Table 1).

The Kolmogorov-Smirnov test showed that the distribution of data in this study was normal according to the total score of positive and negative symptoms and demographic variables ($P<0.05$). At the baseline, independent *t* test showed that the two groups were similar in total and individual domain scores of the SAPS and SANS and there was no statistically significant difference (Tables 2 and 3).

The comparison of total and individual domain scores of the SAPS before and after intervention in music therapy

Table 1. Comparison of age and duration of hospitalization in the two study groups

Variable	Control	Intervention	P value
	Mean ± SD	Mean ± SD	
Age	41.6 ± 46.73	41.9 ± 23.05	0.91
Duration of hospitalization	7.40 ± 83.80	9.30 ± 26.17	0.17

Table 2. Comparison of the total and individual domain scores of the SAPS before and after intervention in control and music therapy groups

Variables		Control	Intervention	P value
		Mean ± SD	Mean ± SD	
Hallucination	Before	14.43 ± 4.09	15.70 ± 3.46	0.20
	After	14.40 ± 2.83	14.50 ± 0.49	0.84
P value		0.97	0.06	
Differences before and after the intervention		-0.03 ± 1.54	-1.20 ± 2.75	0.04
Delusion	Before	30.73 ± 4.43	30.90 ± 4.48	0.88
	After	29.93 ± 6.78	26.20 ± 3.56	0.009*
P value		0.59	0.001*	
Differences before and after the intervention		-0.80 ± 3.27	-4.70 ± 6.30	0.004*
Bizarre behavior	Before	9.83 ± 2.03	10.50 ± 3.39	0.36
	After	9.43 ± 3.65	9 ± 1.80	0.56
P value		0.60	0.03*	
Differences before and after the intervention		-0.40 ± 1.67	-1.50 ± 2.67	0.06
Formal thought disorder	Before	17.83 ± 2.69	19.36 ± 4.68	0.12
	After	18.83 ± 9.50	17.10 ± 6.50	0.41
P value		0.58	0.12	
Differences before and after the intervention		1.00 ± 3.61	-2.26 ± 4.70	0.003*
Total score of positive symptoms	Before	72.83 ± 8.06	76.46 ± 9.75	0.12
	After	72.60 ± 14.80	66.80 ± 6.21	0.049*
P value		0.94	0.001*	
Differences before and after the intervention		-0.23 ± 5.37	-9.66 ± 13.18	0.001*

group based on paired *t*-test showed that the mean scores of delusion ($P=0.001$) and bizarre behavior ($P=0.03$) and total score of the SAPS ($P=0.001$) significantly decreased after the intervention. However, in the control group, the difference in the total and individual domain scores of the SAPS before and after the intervention was not significant ($P>0.05$). Moreover, based on the results of independent *t*-test, there was a significant difference between the two groups in terms of the mean scores of delusion ($P=0.004$) and inferential thinking ($P=0.003$) and total score of the SAPS ($P=0.001$) before and after study. This difference was higher in the music therapy group compared to the control group and the mean scores of delusion and inferential thinking and the total score of SAPS were lower in the music therapy group compared to the control group.

Based on the results of the paired *t*-test, there was no significant difference between the control and music therapy groups before and after intervention in terms of total and individual domain scores of the SANS ($P>0.05$). Moreover, based on the results of the independent *t* test, there was a significant difference between the two groups before and after the intervention in terms of the mean score of avolition ($P=0.03$). The mean score of avolition was lower in the music therapy group than in the control

group. In addition, the mean difference between the control and music therapy groups in alogia was significant after the intervention, indicating that the mean score in the music therapy group was significantly lower compared to the control group ($P=0.01$) (Table 3).

Discussion

The aim of this study was to determine the effect of traditional music on the mental status of chronic schizophrenic patients admitted to Sina hospital of Joneghan. In the present study, the mean scores of delusion and bizarre behavior and the total score of the SAPS significantly reduced after the intervention in the music therapy group, and the mean scores of delusion and formal thinking and total score of the SAPS were significantly lower in the music therapy group than in the control group. In addition, the mean score of avolition in the music therapy group was lower compared to the control group. In addition, the mean score of alogia was

Table 3. Comparison of total and individual domain scores of the SANS before and after intervention in control and music therapy groups

Variables		Control	Intervention	P value
		Mean ± SD	Mean ± SD	
Affective blunting	Before	13.10 ± 2.33	13.16 ± 3.19	0.92
	After	13.40 ± 4.83	14.42 ± 5.40	0.47
P value		0.76	0.24	
Differences before and after the intervention		0.30 ± 1.93	1.26 ± 1.00	0.018
Alogia	Before	12.16 ± 3.90	10.86 ± 3.30	0.16
	After	11.80 ± 2.63	9.83 ± 3.01	0.01*
P value		0.67	0.21	
Differences before and after the intervention		-0.36 ± 1.79	-1.03 ± 2.39	0.22
Avolition-Apathy	Before	10.63 ± 2.73	11.16 ± 2.46	0.43
	After	10.40 ± 1.60	9.80 ± 3.21	0.36
P value		0.69	0.07	
Differences before and after the intervention		-0.23 ± 1.19	-1.36 ± 2.59	0.03*
Anhedonia-asociality	Before	11.76 ± 2.43	10.66 ± 3.30	0.14
	After	11.56 ± 3.86	9.86 ± 4.93	0.14
P value		0.81	0.46	
Differences before and after the intervention		-0.20 ± 1.59	-0.80 ± 2.61	0.28
Inattention	Before	9.06 ± 2.25	8.13 ± 2.77	0.15
	After	8.83 ± 2.78	7.37 ± 3.15	0.06
P value		0.72	0.32	
Differences before and after the intervention		-0.23 ± 1.32	-0.76 ± 2.04	0.23
Total score of negative symptoms	Before	56.73 ± 8.08	54.00 ± 7.67	0.18
	After	56.47 ± 16.95	51.30 ± 14.38	0.20
P value		0.94	0.36	
Differences before and after the intervention		-0.26 ± 5.90	-2.70 ± 7.67	0.17

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significantly lower in the music therapy group compared to the control group. Consistent with the results of this study, a study conducted by Khalafbaigi et al confirms these findings. Their findings showed that music therapy is effective in raising memory and attention scores (18). Yang et al also found that after three months of music therapy, negative symptoms reduced in the schizophrenic group but no significant change was observed in the control group (19). Lu et al have also reported that group music therapy is an economical and convenient method that can be used to relieve depression and positive and negative symptoms in patients with schizophrenia (20). In another study aimed at investigating the effect of relaxation and music therapy on psychological symptoms and depression in patients with schizophrenia, the results showed that in the intervention group, the mean scores of the psychological symptoms and depression reduced.

Relaxation exercises and music therapy were also effective in reducing the positive and negative psychological symptoms as well as depression in schizophrenic patients (21). The results of another study indicated that group music therapy combined with standard care was effective in controlling the dose of neuroleptic drugs in patients with psychotic disorders such as schizophrenia (22).

A study conducted by Peng et al showed that 10 sessions of group music activity including singing and listening to music reduced the scores in total and subscales of the BPRS in patients with acute schizophrenia (13).

In addition, in their study, group music activity included both active and passive forms of music therapy. Group activities may have increased social interactions among patients, which increased the positive effects of these activities (13). In this study, it can be concluded that positive changes in patients' conditions were due to music therapy. The goal of music therapy is to enable the patient to develop relationships and express relationships and points of view that cannot be expressed through words by playing music and singing (23).

Music therapy can help people with schizophrenia improve mental state (general symptoms, depression, and anxiety), general and social functioning, global state, and quality of life in the short to medium term. Music therapy particularly seems to affect patients' motivational, emotional, and relational aspects and helps patients to improve their social activities and associated roles (24). Music therapy incorporates music experiences to help people with serious mental disorders develop relationships as they may not be able to use words alone to solve problems.

Previous studies have examined the effects of music therapy as a complementary therapy to standard treatments. However, the effects of music therapy appear to depend on the number of music therapy sessions (24). Therefore, further studies should be conducted with the control of confounding factors, and also to investigate

longer-term symptoms.

Conclusion

Music therapy alone has an effect on the overall improvement of positive symptoms as well as on aspects of delusions, bizarre behavior, and formal thinking. Regarding negative symptoms, however, music is more effective in improving the subscales of avolition and alogia than other negative symptoms. In other words, music improves the patient's behavior, makes it more rational, and also improves his/her relationship with the environment. Based on these results, music can be used as a complementary therapy along with drug therapy.

Conflict of Interests

The authors declare that there is no conflict of interests.

Ethical Approval

This study protocol was approved by Shahrekord University of Medical Sciences (IR.SKUMS.REC.91-7-20) and it was also registered at the Iranian Clinical Trial Registry (identifier: IRCT201412282085N14).

Authors Contribution

MN and FH conceived and design the study, PY acquired data, EZ analyzed and interpreted of data, MN and FH drafted of the manuscript, MN, FH and PY did critical revision of the manuscript for important intellectual content, MN, FH, EZ and PY supervised and approved final draft.

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