FULL TEXT ARTICLE

Music therapy as an adjunct to standard treatment for obsessive compulsive disorder and co-morbid anxiety and depression: A randomized clinical trial

Shahrzad Shirani Bidabadi and Amirhooshang Mehryar

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Abstract

Background

Previous studies have highlighted the potential therapeutic benefits of music therapy as an adjunct to standard care, in a variety of psychiatric ailments including mood and anxiety disorders. However, the role of music in the treatment of obsessive–compulsive disorder (OCD) have not been investigated to date.

Methods

In a single-center, parallel-group, randomized clinical trial (NCT02314195) 30 patients with OCD were randomly assigned to standard treatment (pharmacotherapy and cognitive-behavior therapy) plus 12 sessions of individual music therapy (n =15) or standard treatment only (n =15) for one month. Maudsley Obsessive–Compulsive Inventory, Beck Anxiety Inventory, and Beck Depression Inventory-Short Form were administered baseline and after one month.

Results

Thirty patients completed the study. Music therapy resulted in a greater decrease in total obsessive score (post-intervention score: music therapy+standard treatment: 12.4±1.9 vs standard treatment only: 15.1±1.7, p <0.001, effect size=56.7%). For subtypes, significant between-group differences were identified for checking (p =0.004), and slowness (p =0.019), but not for washing or responsibility. Music therapy was significantly more effective in reducing anxiety (post-intervention score: music therapy+standard treatment: 16.9±7.4 vs standard treatment only: 22.9±4.6, p <0.001, effect size=47.0%), and depressive symptoms (post-intervention score: music therapy+standard treatment: 10.8±3.8 vs standard treatment: 17.1±3.7, p <0.001, effect size=47.0%).

Limitations

Inclusion of a small sample size, lack of blinding due to the nature of the intervention, short duration of follow-up.

Conclusion

In patients with OCD, music therapy, as an adjunct to standard care, seems to be effective in reducing obsessions, as well as co-morbid anxiety and depressive symptoms.

Highlights

- Effects of music therapy on obsessive–compulsive disorder are reported.
- Music therapy was added to pharmacotherapy and cognitive behavior therapy.
- Addition of music therapy resulted in a more significant improvement of obsessions.
- Music also yielded therapeutic benefits for co-morbid anxiety and depression.

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1 Introduction

Often overlooked and under diagnosed, obsessive–compulsive disorder (OCD) is a common psychiatric ailment and is estimated to affect 1–3% of the population at some point in their lives (Grant, 2014). In a nation-wide survey of Iranian adults aged 18 and above, a point-prevalence of 1.8% for OCD was documented (Mohammadi et al., 2004). Obsessions are characterized by the presence of worrisome images, ideas, or impulses that are intrusive and unwanted, and are usually accompanied by compulsions: repetitive actions, mental images, or ritualistic behaviors that the patient feels compelled to do in order to relieve anxiety caused by obsessive thoughts (American Psychiatric Association, 2000).

Pharmacotherapy with selective-serotonin reuptake inhibitors (SSRI), or the tricyclic antidepressant clomipramine combined with psychotherapy (e.g. exposure-response prevention, cognitive behavioral therapy) are the mainstay of treatment in the management of OCD (American Psychiatric Association, 2006; Fineberg and Gale, 2005). For OCD treatment, compared with anxiety and depression, SSRIs need to be prescribed at higher doses and usually take longer to take effect (American Psychiatric Association, 2006). Consequently, the patient may experience more troubling dose-related side effects, negatively impacting medication's tolerability (Bloch et al., 2010; Jenike, 2004). Additionally, a prolonged course of treatment is required in order to achieve full resolution of symptoms and to forestall relapse (Ravizza et al., 1996). Even with cooperative patients where medication adherence is not a major obstacle, in at least one third of the patients,

treatment response remains insufficient. In the naturalistic follow-up study of Brown Longitudinal Obsessive Compulsive Study (BLOCS), 38% of patients receiving SSRIs at recommended doses appraised their symptoms as minimally improved, unchanged, or even worse (Mancebo et al., 2006). Use of psychotherapeutic techniques alongside pharmacotherapy augments treatment efficacy (Grant, 2014). However, in many clinical settings, psychotherapy is only offered to a fraction of patients and its use remains relatively low. The BLOCS study demonstrated that less than one-fourth of OCD patients participate in the recommended number of cognitive-behavioral therapy sessions (Mancebo et al., 2006).

Given the shortcomings of medications and psychotherapy in the management of OCD, complementary and alternative medicine (CAM) methods have the capacity to be used as an adjunct to standard care and help improve patient outcomes (Sarris et al., 2012). Music therapy, a form of CAM, is a non-invasive, safe, well-tolerated, inexpensive, and readily available technique which has been shown to provide therapeutic benefits in a wide range of psychiatric disorders including but not limited to depression, anxiety, schizophrenia, autism, and dementia (Lin et al., 2011). Bruscia (1998) defines music therapy as "a systematic process of intervention wherein the therapist helps the client to promote health, using music experiences and the relationships that develop through them as dynamic forces of change" (Bruscia, 1998). Aside from its role in inducing relaxation, music in the context of psychiatric disorders could be viewed as a medium for non-verbal communication between the patient and the therapist, and could be incorporated to help patient express feelings that are not articulated otherwise (Mössler et al., 2011).

A number of studies to date have delved into the possible therapeutic implications of music therapy in relieving anxiety, anxiety-related disorders, and depression (Elliott et al., 2011; Erkkila et al., 2011; Goldbeck and Ellerkamp, 2012). Despite a strong theoretical framework, and expanded knowledge regarding the mechanistic of music on neuropsychology, clinical evidence corroborating therapeutic implications of music therapy in the treatment of OCD is only sparsely available. The present randomized clinical trial was thus designed and conducted to investigate the efficacy of music therapy as an adjunct to standard treatment, on OCD. Moreover, given the fact that a significant proportion of patients with OCD have other comorbid mood or anxiety disorders, the question of whether therapeutic benefits of music could be expanded to also affect concurrent depressive and anxiety symptoms was explored.

2 Methods

2.1 Patients

Between April and June 2014, consecutive patients visited in the outpatient psychiatry clinic of a not-for-profit hospital (Shariati Hospital, Isfahan, Iran) were assessed for eligibility. Patients were found eligible if: (1) were at least 18 years or older; (2) had axis I diagnosis of OCD according to the criteria delineated by the diagnostic and statistical manual of mental disorders – fourth edition (

American Psychiatric Association, 2000) diagnosed by an experienced psychiatrist; (3) had not received treatment previously for the disorder; and (4) agreed to partake in the study. Initially, 96 patients were assessed for eligibility among whom 30 met the inclusion criteria and were randomized to treatment arms. Written informed consent was obtained from all participants prior to enrollment. All procedures dealing with human subjects were conducted in accordance with the guidelines laid in the latest revision of Helsinki declaration. The protocol of the study was approved by the ethics committee of the Faculty of Psychology, Islamic Azad University, Marvdasht Branch.

2.2 Trial design and interventions

This single-center, parallel-group, randomized clinical trial was designed and conducted to investigate the effects of music therapy as an adjunct treatment to pharmacotherapy and cognitive behavioral therapy in patients with OCD. The trial protocol is registered with the clinicaltrials.gov (Identifier no.: NCT02314195).

Using a simple randomization module in Microsoft ® Excel ® , eligible patients were randomly assigned to 'music therapy+standard treatment', or 'standard treatment only' arms of the trial. Patients in the standard treatment only arm received a medication of SSRI family, and also received cognitive behavioral therapy by a psychologist. Patients in the music therapy arm received standard treatment as described plus sessions of receptive music therapy scheduled three days a week, over four weeks. Baseline assessment of the patients was conducted before randomization to prevent allocation bias. However, given the nature of the intervention, no blinding for either the assessor or the patients was done. Over a span of four weeks, each individual took part in 12 sessions of individual music therapy conducted by an experienced psychiatrist. In Iran, the concept of music therapy is relatively new, and at present no official training, registration, and oversight for music therapists exist in the country. The receptive music therapy scheme used herein was therefore developed by the principal investigator working in collaboration with an experienced musician, specialized in composition and production of Iranian classical music. The intervention was carried out in the form of receptive music therapy (listening to selected tracks of Iranian classical music composed by well-known musicians) followed by discussions. The protocol and arrangement of music therapy sessions are delineated in Table 1 (t0005) .

Table 1

Protocol of the music therapy sessions for patients with obsessive–compulsive disorder.

First 10 min		Music presented	Activity
30 min	First 10 min	Piano solo [a] (tbl1fna)	The patient is asked to recall obsessional thoughts he or she tries to generally avoid that cause great anxiety for him/her. At this stage, the patient is asked to reflect on these thoughts, images, or impulses and

			freely express the feelings that they provoke.
	Second 10 min	Ballad [b] (tbl1fnb)	The patient is asked to focus on the music lyrics, reflect on them, and to express, in a few words, how the lyrics of the song relate to his or her feelings/experiences.
	Third 10 min	Santur solo [c] (tbl1fnc)	The patient is asked to close his or her eyes, relax, and focus on pleasant thoughts, images, and how to achieve them.
	Epilogue		The patient is asked to discuss his or her feelings during the session. The three tracks played is given to the patient. As a homework assignment, the patient is asked to listen to the tracks following the same protocol and write down his or her feelings.

a by Morteza Mahjubi or Javad Marufi.

b by Mohamadreza Shajarian or Gholamhosein Banan.

c by Faramarz Payvar; Santur is a Persian string instrument.

2.3 Assessment and outcome measures

The primary outcome measure was change in the obsessional symptoms. Corollary measures included change in co-morbid anxiety and depressive symptoms. At baseline and before randomization, patients were surveyed using the following battery of self-administered tests: (1) Maudsley Obsessive–Compulsive Inventory (MOCI); (2) Beck Anxiety Inventory (BAI); and (3) Beck Depression Inventory – Short Form (BDI–SF). In a follow-up visit scheduled at the completion of music therapy, the same battery of tests were completed by the patients. A brief description of the tests and their psychometric properties are presented below.

2.3.1 Maudsley obsessive–compulsive inventory (MOCI)

Developed by Hodgson and Rachman (1977) , MOCI is a 30-item, binary (true/false), self-administered questionnaire devised to evaluate the extent of obsessive–compulsive complaints and to distinguish patients from nonclinical samples. The inventory reports scores on four obsessive–compulsive subtypes that include checking (9 items), washing (11 items), slowness (7 items), and doubting (7 items). The scores on individual subtypes can then be summed up to provide a final score ranging from zero (no symptoms) to 30 (maximum presence of symptoms). Of note, since four items in the inventory are repeated in two subtypes, they are only counted once to create the total obsessionality score. MOCI has been widely used in research and clinical settings and has been shown to be particularly sensitive to therapeutic changes, making it a practical tool for tracking treatment response in patient populations (Meca et al., 2011). In the present study, the translated version of the inventory was used (Ghassemzadeh et al., 2002).

2.3.2 Beck anxiety inventory (BAI)

Developed by Beck and Steer (1990) , BAI is a 21-item self-administered questionnaire to assess anxiety and to delineate patients from nonclinical samples. Each item is answered on a four-point Likert-type scale ranging from 'not at all' (0 point), to 'mildly' (1 point), 'moderately' (2 points), and to severely (3 points). The individual items are them summed to calculate a final score of 0–63 (Beck and Steer, 1990). In the current study, the translated version of the inventory was used (Kaviani and Mousavi, 2008).

2.3.3 Beck depression inventory – short form (BDI–SF)

Originally developed by Beck et al. (1961) , BDI is a 21-item self-administered questionnaire devised to measure depression in cognitive-affective and somatic-performance domains. In the BDI–SF, only the first 13 items of cognitive-affective domain are retained (Beck and Steer, 1987). A score of 0–3 is assigned to each item and a final score ranging from 0 to 39 is then calculated (Beck and Steer, 1987). In the current study, the translated version of the inventory was used (Hojat et al., 1986).

2.4 Statistical analysis

All statistical tests were done using the Statistical Package for the Social Sciences (SPSS ®) version 17.0 (SPSS Inc., Chicago, IL). Continuous variables are presented as mean±standard deviation. Baseline scores between the two groups were compared using independent *t* -test. One-way analysis of covariance (ANCOVA) models were conducted to compare the effectiveness of two interventions designed to reduce obsessive–compulsive complaints score in patients with OCD. Reducing anxiety and depressive symptoms were also considered as corollary outcomes. The type of intervention (music therapy+standard treatment or standard treatment only) entered the model as independent variable. The dependent variables consisted of follow-up or post-intervention scores on outcome variables. Baseline or pre-intervention scores were also included in the model as covariates, thereby adjusting for the possible baseline between-group differences. Before conducting each analysis, preliminary checks of ANCOVA assumptions including normality, linearity, homoscedasticity, and homogeneity of regression slopes were performed and the final model was deemed acceptable if no violation of assumptions was identified. In each ANCOVA model, the effect size was calculated from the partial eta squared and is presented as percentages. Partial eta squared represents the amount of variance of the dependent variable (outcome) explained by the independent variable (intervention). Based on Cohen′s recommendations, a partial eta squared of 13.8% or greater indicates a large effect size. In all tests, $p < 0.05$ was consideed necessary to reject the null hypothesis of no between-group difference.

3 Results

Thirty adult patients with the diagnosis of OCD were randomly assigned to trial arms. All enrolled participants in both arms completed the trial course and no patient was lost to follow up. Age of the enrolled patients ranged from 18 to 50 years and was comparable between the two groups. Also, the female-to-male ratio in both groups were identical and males comprised 25% of the studied sample (n =6).

Baseline scores for the MOCI, Beck anxiety, and Beck depression inventories for trial arms are presented in Table 2 (t0010) . The overall obsessional score, as well as scores for its four constituent subtypes were comparable across the two groups (p >0.05 in all tests). Additionally, baseline scores for BAI were similar between the two groups. On the other hand, patients in the standard treatment only arm had significantly higher BDI–SF scores compared with their counterparts in the standard treatment+music therapy arm (21.2 versus 16.3, p =0.022).

Table 2

Baseline scores for obsessive–compulsive, anxiety, and depression scales of patients with obsessive–compulsive disorder enrolled in the randomized clinical trial.

	Standard treatment+music therapy (n =15)	Standard treatment only (n =15)	p value
Obsessions			
Checking	5.9±1.0	6.3±1.1	0.235
Washing	5.6±2.0	6.0±1.4	0.541
Slowness	4.3±1.0	3.9±1.0	0.368
Responsibility	5.4±1.3	5.1±1.1	0.365
Total score	17.6±2.4	18.1±1.7	0.489
Anxiety	26.7±9.9	27.2±3.9	0.866
Depression	16.3±5.6	21.2±5.4	0.022

The effects of music therapy versus no music therapy on primary and corollary outcome variables were compared using ANCOVA models and the findings are outlined in Table 3 (t0015) . With respect to the primary outcome, music therapy, as an adjunct to the standard treatment protocol, resulted in a greater decrease in total obsessive score than standard treatment alone (p <0.001, effect size=56.7%). For subtypes, significant between-group differences were identified for checking, and slowness, but not for washing or responsibility (Table 3 (t0015)). Music therapy added as an adjunct therapy was also significantly more effective in relieving self-reported anxiety (p <0.001), and also

reducing self-reported depressive symptoms (p <0.001). For both anxiety and depression, music therapy plus standard treatment was approximately 47% more effective than standard treatment alone, indicating a large effect size.

Table 3

Comparison of the effects of music therapy added to standard treatment versus standard treatment alone on obsessive–compulsive, anxiety, and depression scores of patients with obsessive–compulsive disorder.

	Follow-up score [a](tbl3fna)		F statistic	*p* value	Effect size
	Standard treatment+music therapy (*n* =15)	Standard treatment only (*n* =15)			
Obsessions					
Checking	3.9±1.0	5.1±1.1	10.06	0.004	26.0%
Washing	3.5±2.0	4.5±1.5	2.73	0.110	8.0%
Slowness	2.7±1.2	3.7±1.1	6.24	0.019	18.0%
Responsibility	4.2±1.5	4.6±1.3	0.62	0.430	2.0%
Total score	12.4±1.9	15.1±1.7	35.36	<0.001	56.7%
Anxiety	16.9±7.4	22.9±4.6	24.18	<0.001	47.0%
Depression	10.8±3.8	17.1±3.7	24.02	<0.001	47.0%

a Adjusted Follow-up score for outcome variables calculated controlling for the between-group differences at baseline.