


Original Research Article

# Impact of Music Therapy in Reducing the Severity of Depression Measured by MADRS among Depression Patients: A Randomized Control Study

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## Abstract

**Background:** The most serious and frequent mental disorders worldwide is depression. Depression is also known for second major cause of morbidity after cardiovascular disease throughout the world by 2020 as predicted by the World Health Organisation. Various treatment options are available for treating depression which includes pharmacological and non-pharmacological. Non-pharmacological treatment options like yoga, meditation and music therapy are gaining importance.

**Objectives:** To assess the efficacy of music therapy in reducing the severity of depression using 10-item, clinician administered Montgomery-Asberg Depression Rating Scale (MADRS) among depression patients.

**Materials and methods:** Music therapy was administered to depression patients weekly two sessions for one hour duration over a period of 2 months. The impact of this was measured by using MADRS rating scale.

**Results:** The mean score of depression as assessed by MADRS was reduced significantly from  $32.90 \pm 14.16$  to  $2.00 \pm 1.76$  ( $P < 0.05$ ).

**Conclusion:** Music therapy with Indian classical music is beneficial in alleviating the severity of symptoms of depression among depression patients.

## Key words

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Depression, ICD-10, Music, MADRS.

## Introduction

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One of the most common and frequent mental disorders worldwide is depression. According to WHO 2017, approximately 322 million of the world's population suffer from a clinical depression [1]. Depression is also known for second major cause of morbidity after cardiovascular disease throughout the world by 2020 as predicted by the World Health Organization [2]. Depression can influence the whole human being in a fundamental way thus leading to psychological stress, loss of social function, reduced quality of life, and increased disability rates [3]. The weighted prevalence of depression for both current and life time was 2.7% and 5.2%, respectively, indicating that nearly 1 in 40 and 1 in 20 suffer from past and current depression, respectively. Depression was reported to be higher in females, in the age-group of 40-49 years and among those residing in urban metros. Equally high rates were reported among the elderly (3.5%) [4]. There are many causes for depression that range from genetic, psychological factors (negative self-concept, pessimism, anxiety and compulsive states, etc.) to psychological trauma. In addition, substance abuse or chronic diseases can also trigger depression [5, 6].

The ICD-10 [7] and the DSM-V [8] provide a classification based on symptoms, considering the patient's history and its severity, duration, course and frequency. However, depression can be treated and prevented [9]. The pharmacological treatment for depression is mainly based on antidepressants, which are effective and useful. Several studies also reported the beneficial effects of non-pharmacological treatment like aromatherapy and psychotherapy in the management of depression [10, 11, 12]. In the recent decades, one of the non-pharmacological therapies, which have gained a prominent attention in the treatment of depression is the music therapy [3].

From the earliest days of civilization, music has been used to heal the body and soul, and to express what is difficult to articulate in words. The ancient Greek philosophers used music for therapeutic purposes. The National Association of Music Therapy (NAMT) which was founded in 1950 has created standards for university-level educational and clinical training requirements for music therapists, and also further researching in the particular field. The American Music Therapy Association (AMTA), which was formed in 1998 is the single largest music therapy association in the world, serving over 5000 music therapist across 30 different countries [13].

Music therapy stands for the "clinical and evidence-based use of music intervention to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program" (AMTA) [14, 15, 16]. Music therapy is a simple and easily accessible treatment. The therapy settings may include listening, playing, composing, or interacting with music. Presentations can be pre-recorded or live [16].

Music is used to manage a wide range of health problems from pain to emotional relationship problems and useful in maintaining cognitive, physical and emotional health [17, 18, 19]. The order of different musical notes promotes mental health and therefore can be used to manage depressed people's unpleasant feelings and loneliness [19].

Many researchers reported the beneficial effects of music, such as strengthening awareness and sensitiveness for positive emotions, or improvement of psychiatric symptoms [20, 21]. Several studies reported the beneficial effect on the use of classical, percussion (drumming based), jazz music in the management of

depression [16] but there are limited literature available with the use of Indian ragas as music therapy. Hence, this study was designed to investigate the impact of Indian classical music therapy in reducing the severity of depression along with pharmacotherapy compared to pharmacotherapy alone.

## **Objectives**

- To investigate the efficacy of Indian classical music therapy in reducing the severity of depression among depression patients measured by MADRS.
- To compare the efficacy of Indian classical music therapy along with pharmacotherapy in reducing the severity of symptoms of depression compared to pharmacotherapy alone.

## **Materials and methods**

This pilot study was a randomized controlled trial (RCT) with a pre-intervention and post-intervention design. This study consisted of two groups intervention group (n=10) who received music therapy along with pharmacotherapy and control group (n=10) who received pharmacotherapy alone.

Institutional Ethical Committee clearance was taken and participants were recruited from Psychiatry OPD and IPD through simple random sampling method. The recruited participants were adults with age group of 18 to 50 years of age and were diagnosed as depression according to ICD-10 by psychiatrist.

The participants didn't had any classical musical background and also not aware of classical musical skills. Patients with psychosis, substance abuse, adjustment disorders, and other psychiatric disorders were excluded from the study.

After explaining the procedure and benefits of the study, written informed consent was taken from all the participants. Data collection was done using a two-part questionnaire. The first

part of questionnaire included items on the patient's demographic characteristics and the second part was the MADRS rating scale.

A MADRS questionnaire was filled by psychiatrist initially and then they were made to listen recorded Indian raga (Raga - Bilahari) weekly 2 sessions for 60 minutes duration over a period of two consecutive months under supervision by the investigators. These participants were on standard pharmacotherapy too as advised by psychiatrist. The intervention tools included a laptop and a headphone of Hewlett Packard Company. Indian raga (Raga-bilahari) was recorded in the instrumental form and in vocal form, after obtaining 2 music experts' opinion. At the end of first and second month study period, they were invited to complete the MADRS questionnaire again.

The control group was on pharmacotherapy alone. They were also asked to complete the MADRS questionnaire initially and again after 1<sup>st</sup> and 2<sup>nd</sup> months.

### **Montgomery-Asberg Depression Rating Scale (MADRS)**

MADRS is an expert's rating tool to assess the severity and symptoms of depression developed by Professors Stuart Montgomery and Marie Asberg [22]. It is also a reliable and valid scale for use in clinical practice and research [23]. The MADRS was drawn from a 67-item scale (Comprehensive Psychopathological Rating Scale (CPRS)) and consists of 10 items that showed greatest variation in response to treatment and also the best correlation with total score change. The items included in the MADRS are: 1) Apparent sadness, 2) Reported sadness, 3) Inner tension, 4) Reduced sleep, 5) Reduced appetite, 6) Concentration difficulties, 7) Lassitude, 8) Inability to feel, 9) Pessimistic thoughts, 10) Suicidal thoughts.

The MADRS scale can be completed in 20-30 minutes. Each item in the scale is rated from 0 to 6 based on severity (0 = no abnormality to 6 = severe). Treatment response is typically defined

as  $\geq 50\%$  improvement in total score, whereas remission is typically defined as an endpoint total score  $\leq 10$  or 12. MADRS was originally designed to assess symptom variation and is also used to evaluate severity of depression based on the total score, with higher scores indicating greater severity of depression. Severity gradations for the MADRS is 9-7 = mild, 18-34 = moderate, and  $\geq 35$  = severe [24]. The questionnaires were coded numerically and the data were analyzed by using SPSS version (v.18.0) software. Mean and standard deviation measures were used for data description. Independent t test and One-way analysis of variance (ANOVA) were used to analyze and compare the means. Data analysis was performed at a significance level of less than 0.05.

## Results

The present study was done on 20 patients who were diagnosed as depression according to ICD 10, aged  $37.70 \pm 8.33$  on an average and comprising of both males and females. Most of the participants of the two groups lived in urban area close enough to the hospital for them to visit weekly once for the music therapy. Thus, the participants of the two groups were demographically matched and comparable.

### MADRS score

As shown in **Table – 1**, the baseline (pre-treatment) MADRS score of the intervention

group was lower than the baseline Depression score of the control group, but statistically not significant ( $p > 0.05$ ). After 1 month of treatment, the MADRS score was lower in the intervention group than in control group and was statistically significant ( $p < 0.05$ ). After 2 months of treatment the MADRS score was lower in the intervention group compared to control group and was statistically significant ( $p < 0.05$ ) as per **Graph - 1**.

As shown in **Table – 2**, a significant ( $p < 0.05$ ) mean change was observed in MADRS scores in both intervention group and control group from baseline to 1 and 2 month and from 1 to 2 month, however, mean change was lower in intervention group than control group.

The findings revealed that before the intervention the MADRS score was  $32.90 \pm 14.16$  in the intervention group and after the music therapy this value decreased to  $2.00 \pm 1.76$  (**Table - 1**). As shown in **Table - 2**, though the severity of symptoms of depression reduced significantly in both the groups, the mean scores of depression were lower in intervention group compared to control group. Thus the results showed that the participants receiving music therapy along with pharmacotherapy showed greater improvement and thus reducing the severity of depression compared to control group who received pharmacotherapy alone.

**Table - 1:** Changes in MADRS-S score (Mean $\pm$ SD) from baseline to 1 and 2 month.

MADRS scores	Cases (Intervention group)	Controls (Control group)	P value
Baseline	$32.90 \pm 14.16$	$38.40 \pm 7.65$	0.294
After 1 month of treatment	$9.50 \pm 5.66$	$18.40 \pm 7.04$	0.006**
After 2 month of treatment	$2.00 \pm 1.76$	$6.90 \pm 3.57$	0.001**

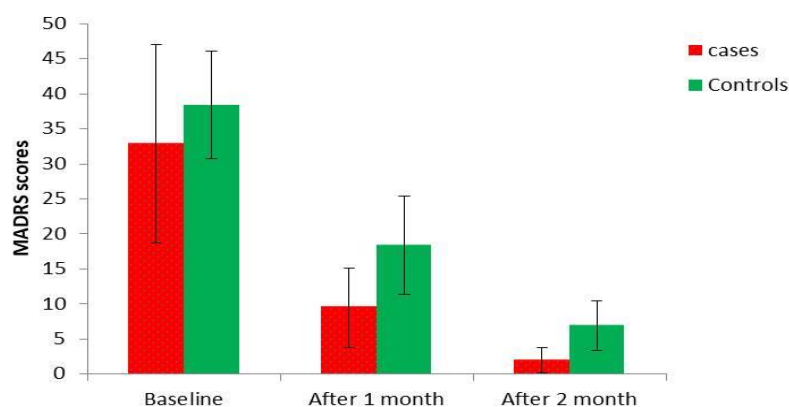
Between group: Student t test (Unpaired)

**Table - 2:** Mean changes in MADRS-S score (Mean $\pm$ SD).

	Difference	Intervention group (n=10) Mean $\pm$ SD	Control group (n=10) Mean $\pm$ SD
MADRS-S	Baseline to 1 month (P value)	23.400 ( $< 0.001^{**}$ )	20.000 ( $< 0.001^{**}$ )
	Baseline to 2 month (P value)	30.900 ( $< 0.001^{**}$ )	31.500 ( $< 0.001^{**}$ )
	1 month to 2 month (P value)	7.500 ( $< 0.001^{**}$ )	11.500 ( $< 0.001^{**}$ )

\*2 $\times$ 3 Repeated measures ANOVA ( $p < 0.05$ )

**Figure – 1:** MADRS Score.



## Discussion

Depression often reduces participation in social activities. It also has an impact on reliability or stamina at daily work and may even result in a greater susceptibility to diseases [16]. Evidence is beginning to emerge that music therapy can improve the mental health of people with depression. Many researchers reported the beneficial effects of music, such as strengthening awareness and sensitiveness for positive emotions, or improvement of psychiatric symptoms [20, 21]. AMTA also enlist over a dozen studies supporting the benefits of music therapy for persons with depression and anxiety. The common outcomes documented in music therapy were: Reduced muscle tension, increased self-esteem, decreased anxiety, enhanced interpersonal relationships, increased motivation, successful and safe emotional release [13].

In music therapy, a therapist uses music to address physical, emotional, and social needs of an individual. Listening and creating music within a therapeutic context allows individuals to express themselves in nonverbal ways. The interplay of melody, harmony, and rhythm stimulate the senses of a person and promote calmness by slowing down the breath, heart rate, and other bodily functions. Musical engagement, especially when combined with talk therapy, boosts levels of the hormone dopamine, which plays a role in the reward-motivation behaviour. The kind of music used is usually tailored to the

needs of the patient. It is common to employ several combination of music [13].

In our study, the primary outcome of music therapy with Indian raga was significant reduction in the severity of symptoms of depression in the intervention group compared to control group. Our results were consistent with Deshmukh, et al., who reported that Indian classical music therapy with selected ragas showed improvement in MADRS scores in the intervention group compared to the control group and these effects persisted beyond the treatment period [25]. Our results were also consistent with Erkkila, et al., who reported lower levels of depression among patients with depression, who received both standard care and music therapy compared with patients, who had solely received standard care [26]. The results of the present study also correlate with the study by Chan et al, who illustrated that an eight-week music therapy intervention significantly reduced depression and they also recommended music therapy as a simple non-invasive technique for depression alleviation [27]. However, our results were not consistent with Silverman, who reported that there was no significant reduction of depression among the music intervention group [28].

## Conclusion

The results of the present study showed that the eight weeks of music therapy intervention along with pharmacotherapy significantly reduced the severity of symptoms of depression compared to



pharmacotherapy alone. The non-pharmacological intervention like music therapy is simple and cost-effective and therefore can be used as an appropriate and accessible strategy to prevent and alleviate depression among depression patients. Thus, the music therapy is a valuable enhancement to established treatment practices.

### **Limitations of the study**

Further studies are required to investigate the impact of music therapy with Indian ragas in a larger sample size, longer time duration, and for other mental disorders.

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