Research Article

Available online through
www.ijrap.net

IJRAP
ISSN 2229-3566

HARMONIZING EFFECT OF MUSIC ON THE PATIENTS SUFFERING FROM ANXIETY

Arya Ashwani[1] and Parle Milind[2*]

[1]School of Pharmaceutical Education and Research, Bhagat Phool Singh Mahila Vishwavidyalaya, South Campus, Bhainswal Kalan, Sonipat, Haryana, India

[2]Pharmacology Division, Dept. Pharm. Sciences, Guru Jambheshwar University of Science and Technology, Hisar, Haryana, India

Received on: 08/01/2011 Revised on: 15/02/2011 Accepted on: 07/03/2011

ABSTRACT

Anxiety disorders refer to a collection of mental syndromes characterized by abnormally high levels of distress and avoidance associated with scenarios perceived as dangerous. Music is an ancient and universal feature across all human societies. The ability to appreciate music requires no special training. In view of above, we were interested to explore the beneficial effects of Music Therapy in managing anxiety. This research project was carried out at Gupta Hospital, Hisar with the kind co-operation of psychiatrist Dr. Narender Kumar Gupta $_{MD}$. Forty indoor patients suffering from anxiety admitted at Gupta Hospital during the period from 1st January, 2008 to 31st July, 2008 served as research participants. Physiological parameters such as Blood Pressure (systolic/ diastolic), Pulse Rate (Beats/ minute), Body Temperature (^{0}F) and EEG were observed before and after Music Therapy sessions. Music Therapy administered for five days evoked fall in blood pressure and heart rate close to normal values in patients, who showed hypertension and tachycardia at the time of admission into the hospital. EEG was found to be normal in all the patients under study before and after Music Therapy. Music allows the patient to refocus upon something more pleasant, diverting his or her attention from monotony of hospitalization. Music Therapy is recommended as a cheap, safe and effective non-pharmacological anxiolytic agent due to its effect on the perception of pain and anxiety.

KEY WORDS: Music Therapy, Anxiety, Cognition, Insomnia

***Corresponding Author**

Prof. Milind Parle, Pharmacology Division, Dept. Pharm. Sciences (Accredited by NBA), Guru Jambheshwar University of Science and Technology (Accredited as A-Grade by NAAC), Post Box: 38, Hisar (Haryana) -125 001, India.
E-mail: mparle@rediffmail.com

INTRODUCTION

After silence, if anything comes nearest to expressing the inexpressible, it is music.

Music is an ancient and universal feature across all human societies. The ability to appreciate music requires no special training. Music is the art of thinking in sounds. With its power to evoke and communicate emotions, it has long intrigued philosophers and psychologists. Recently music has attracted the attention of neuroscientists. From the perspective of evolutionary psychology, natural selection grooms species to their environment not only in physical and physiological traits but also in behavioural traits. No matter how advanced or how backward a society is technologically, music is always an integral part of it. Music is capable of moving and transforming individuals emotionally. It has been applied to heal individuals physically, psychologically, socially, emotionally and spiritually[1]. Anxiety is a common psychiatric condition characterized by unnecessary aggression, poor quality of life, fear, worry, avoidance, and compulsive rituals that are associated with significant distress. Although, treatments with demonstrable efficacy are available, a great number of patients fail to respond or continue to suffer with clinically significant residual symptoms after treatment[2]. The term 'anxiety disorders' refers to a collection of mental syndromes characterised by abnormally high levels of distress and avoidance associated with scenarios perceived as dangerous. Anxiety expressed as physical,

emotional, and behavioural responses to perceived threats, is a normal part of everyday life. There is substantial overuse of both psychiatric and no psychiatric medical services and reduced work productivity among patients with anxiety disorders, compared with the general population. Although, Anxiety disorders form the most common type of psychiatric disorders, yet fewer than 30 % of persons with anxiety disorders seek treatment[3]. Anxiety disorders cause a substantial financial burden for patients and their families, as well as a considerable economic burden on society. Noradrenergic (NA) and dopaminergic (DA) systems have been implicated in anxiety disorders, with weak evidence for 5HT[4].

Music has long been recognized as a universal language capable of breaking down cultural, educational, linguistic, mental, and emotional barriers. It can open lines of communication by eliciting feelings, thoughts and memories, thereby creating a familiar environment reminiscent of the family, homeland, and the past. Music Therapy is an innovative, artistic, scientific and evidence based method of restoring, maintaining and improving the emotional, physiological and psychological well-being of human beings of all ages and abilities through the power of music. It has also been defined as the "behavioral science that is concerned with the use of specific kinds of music and its ability to produce changes in behavior, emotions, and physiology"[5]. Its noninvasive nature allows it to be used in a variety of clinical settings, (ranging from surgery, postoperative care, and neonatal care to intensive care). Objective: In view of above, we were motivated to explore the beneficial effects of Music Therapy in managing anxiety.

Experimental Design

This research project was carried out at Gupta Hospital, Hisar with the kind cooperation of psychiatrist Dr. Narender Kumar Gupta.MD.

Subjects (Research Participants)

Forty indoor patients suffering from anxiety admitted at Gupta Hospital during the period from 1st January to 31stJuly, 2008 served as research participants. Written consent was obtained in proper format from the patients before commencement of Music Therapy. Both, male and female patients participated in this study. The age of patients varied from 15 years to 46 years. All the patients belonged to Haryana State in India. Patients suffering from other mental disorders (except anxiety) were excluded from this study. Medical history was recorded of each patient soon after admission. Physiological parameters such as Heart Rate (Beats/ minute), Blood Pressure (systolic/ diastolic), Body Temperature (^{0}F) and EEG were observed before and after Music Therapy sessions. The mental state of patients suffering from anxiety was assessed by observing the clinical signs in **Table 1**. These signs, each defined by a series of symptoms measures both psychic anxiety (mental agitation, psychological distress) and somatic anxiety (physical complaints related to anxiety). The level of anxiety for each patient was measured by the total score of above clinical signs. Each clinical sign was rated on 0-4 (absent to incapacitating) scale. (**Table 1**)

Music Therapy sessions

A total of forty patients participated in this research project. Twenty Five patients who, did not receive Music Therapy served as the control group. The control group received conventional anti-anxiety medicines from the day of admission till discharge from the hospital. Fifteen patients, who consented to participate in the research project, received Music Therapy in two sessions per day lasting for 30 min each. Morning session of Music Therapy commenced at 9 AM and evening session at 6 PM. A minimum of 10 sessions spread over 5 days were administered to these patients. However, two patients had recovered considerably from anxiety and exhibited normal behavior after just two days (4 Music Therapy sessions). These two patients were discharged from the hospital, hence were not available for further Music Therapy intervention. The Music Therapy sessions were administered in a sound proof environment in the presence of the psychiatrist and the clinical psychologist. A collection of Indian devotional songs (compiled in CD) familiar to elderly patients were used uniformly throughout this study. Lady patients received Music Therapy in presence of their relative/guardian, there by providing a safe and secure environment. Some patients also received lorazepam injection on first day to take care of their sleep complaints. However, from second day onwords sedative (lorazepam) was removed from the treatment. The experimental protocol was approved by the Research Ethics Board (REB) constituted as per the guidelines of Indian Council of Medical Research (ICMR), New Delhi.

RESULTS AND DISCUSSION

Music therapy is an innovative, artistic, scientific and evidence based method of restoring, maintaining and improving the emotional, physiological and psychological well-being of human beings of all ages and abilities through the power of music. Music knows no boundaries. Fifteen patients, who were diagnosed to be suffering from

anxiety disorder and received Music Therapy showed fast recovery from anxiety symptoms and exhibited normal behavior after 10 sessions of Music Therapy. Music Therapy administered for five days evoked fall in blood pressure and heart rate close to normal values in patients, who showed hypertension and tachycardia at the time of admission into the hospital. There was no significant change in the body temperature of depressed patients before and after Music Therapy (**Table 2**). EEG was found to be normal in all the patients under study before and after Music Therapy. The mental state of patients suffering from anxiety was considerably improved after five days of Music Therapy (**Table 3**). The patients, who exhibited feelings of insecurity, irritability and / restlessness at the time of admission into the hospital showed stable emotional temperament after 10 sessions of Music Therapy. These patients, were comfortable, fearless and in a position to relax after receiving Music Therapy. All the patients, who received Music Therapy behaved in a purposeful manner and showed no signs of trembling, worries or intellectual impairment. Furthermore, there was significant improvement in gastrointestinal distress (dysphagia/ Nausea or Vomiting/ Weight loss) as well as autonomic symptoms (dry mouth/ Flushing/ Pallor/ Sweating), (Table 3) observed in patients suffering from anxiety. Music Therapy facilitated the onset and duration of sleep. Twenty Five patients, who did not receive music therapy (control group) exhibited headache and disturbed night-sleep during hospital stay and were advised to take antianxiety treatments even after discharge from the hospital. On the other hand, the patients who received Music Therapy experienced sound sleep at night and did not complain of headache during hospital stay. Thus, Music Therapy had been successful in reversing various symptoms of anxiety and improved overall behavior, mental state and attitude of the patients. Music helps us to uplift our mood by cuing us towards more positive affirmations, such as sad to cheerful, discouraged to hopeful, gloomy to sunny, or tormented to peaceful mind-set. Music as a medium for channeling our emotional being is trans-cultural, given that all known cultures harness music. The reason most of us like music (listening, composing, or playing music) is because of the fact that music is capable of arousing deep and profound emotions[6,7]. When, we communicate with the emotional centers of our being, such as through the use of music, we can reduce stress and achieve a sense of well-being. And, it is through our emotions that we create a feeling of being bonded with other people and feel safe within ourselves. Music also triggers the release of endorphins, which helps the mind create sounds and images, allowing us to escape into a painless world. For older people, music is a way of feeling connected to their past and also feeling valued and needed. The connection with the past via long term memory happens because the brain remembers things by categorizing them rather than by viewing them as discreet photographs[8].

The patients, who exhibited feelings of insecurity, irritability and / restlessness at the time of admission into the hospital showed stable temperament after 10 sessions of Music Therapy. In the present study, these patients were comfortable, fearless and in a position to relax after receiving Music Therapy. These results are in agreement with the studies in literature[9],[10]. Music Therapy facilitated the onset and duration of sleep. Sleep, a vital ingredient in life, is an active and complex rhythmic state that may be affected by ageing process. Sleep disorders can result in tiredness, fatigue, depression, irritability, pain sensitivity, immunosuppression and reduced work capacity. Inadequate sleep carries significant morbidity and mortality concerns with compromised function and quality of life[11,12]. The non-pharmacological intervention like Music Therapy for treating insomnia is free from side effects & complications associated with allopathic medicines. Music has been found to reduce the circulating nor-adrenaline[13], which is associated with sleep onset. Music intervention for 45 minutes before bedtime improved sleep quality in the form of shorter sleep latency, longer sleep duration and less sleep disturbances. Music reduced sleep onset time and number of night awakenings in older women[14]. Insomniac patients showed reductions in α wave activity & enhancements in θ and β wave activity in the brain & defects in the functional capacity of right hemisphere. Levin, (1998), developed 'Brain music' by transforming the EEG signals into music by using special algorithm[15]. Patients listened to these compositions before bed-time. Brain music increased α wave activity & decreased β wave activity. Moreover, it restored the non verbal & verbal functions of the right hemisphere, thereby decreasing the number of night-dreams[15]. Anxiety provoked by stressors is considerably reduced on exposure to music therapy & this effect was independent of gender. Music therapy is equally effective in both the sexes. Music Therapy is an innovative, artistic, scientific and evidence based method of restoring, maintaining and improving the emotional, physiological and psychological well-being of human beings of all ages and abilities through the power of

music. Music knows no boundaries. It pervades everywhere irrespective of caste, creed, culture, national barriers or blood-brain barrier. It forms an integral part of our lives. Music is a form of sensory stimulation, which provokes responses due to the familiarity, predictability, and feelings of security associated with it[16]. People with anxiety disorders are incapacitated by chronic and intense feelings of anxiety, so strong that they are unable to function on a day-to-day basis. Physical symptoms, such as fatigue, headache, insomnia, dizziness, nausea, palpitations, and numbness, are often nonspecific and may mimic the patient's existing co-morbid conditions, further complicating the differential diagnosis of an anxiety disorder. Because of the difficulty in recognizing and properly diagnosing anxiety disorders, epidemiological prevalence rates may under estimate the factual number of people experiencing the anxiety disorder. High levels of anxiety result in negative physiological manifestations, such as elevated blood cortisol levels, increased blood pressure and heart rate, leading to slower wound healing, diminished immune response, and increased risk of infection[17].

Music Therapy administered for 5 five days evoked fall in blood pressure and heart rate close to normal values in patients, who showed hypertension and tachycardia at the time of admission into the hospital. These results are in agreement with the studies of Myskja and Lindbaek, (2000), which showed that Music Therapy may influence central physiological variables like blood pressure, heart rate, respiration, EEG pattern and body temperature[18]. Theoretically, active participation in music sessions could give some meaningful activity. During the neuroendocrine response to stress, the adrenal medulla is sympathetically stimulated to secrete dopamine, nor-epinephrine and epinephrine. The adrenal glands release epinephrine and cortisol in response to signals such as stress, exercise or fear. Epinephrine commonly is reffered to as the hormone that induces the fight response. When epinephrine is released, the heart beats more forcefully, the blood pressure rises and the rate of breathing increases[19]. Increased levels of melatonin following music therapy contribute to the relaxed & calm mood in patients with anxiety. Music has been found to be an effective nonpharmacological adjunct for managing anxiety and for promoting relaxation in critically ill patients, since it is reduces the levels of catecholamines and cortisol, the stress chemicals[20].

All the fifteen patients, who received Music Therapy behaved in a purposeful manner and showed no signs of trembling, worries or intellectual impairment in the present study. Robert et al., (2001), found that listening to music decreased anxiety levels and pain scores significantly and increased satisfaction scores and patients comfort and tolerance[10]. Furthermore, there was a significant improvement in gastrointestinal distress as well as autonomic symptoms such as dry mouth, flushing, pallor, sweating or dizziness observed in patients suffering with anxiety in the present study. By listening to music, the meaning of the negative sensation can be altered, and the patient gains a sense of autonomy and buids ability to cope[21]. The results of clinical studies suggest that listening to music has a positive effect on psychological and physiological status of patients[22]. Music has been advocated as a cheap, safe and effective non-pharmacological anxiolytic agent due to its effect on the perception of pain and anxiety. As a matter of fact, music makes the patient to refocus upon something more pleasant. Further, by reducing self-preoccupation and by filtering out unpleasant and unfamiliar sounds associated with hospitalization, the needs for excessive medication are reduced, the side effects of the medication are minimized, and a quicker recovery is facilitated. In essence, music produces a counter to the stress response, in which relaxation is promoted, and the body returns to a healthy state. Music Therapy is a simple, noninvasive, inexpensive and nonpharmacological method without any adverse effects.

CONCLUSION

Music has traditionally been used to manage psychiatric disorders. In the present study, Music Therapy was successful in alleviating various symptoms of anxiety and improved overall behavior, mental state and attitude of the patients. The underlying mechanism for the beneficial effect of Music in fighting anxiety can be attributed to the favorable influence of music on the central nervous system, psychology of the patient and physiological parameters such as blood pressure, heart rate, endocrine glands etc. Music has a harmonizing effect on the minds of the patients producing pleasant effects comparable to meditation.

ACKNOWLEDGEMENTS

The authors are highly grateful to Dr. Narender Gupta, MD (psychiatrist), Dr. S. K. Bharti (clinical psychologist) and Ms. Madhu for their kind help.

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Table 1: Clinical Signs and symptoms of anxiety

Sr.	Clinical Signs	Symptoms Observed
1.	Feelings of insecurity, irritability and / restlessness as reflected by worries/ trembling / crying easily tendencies.	This parameter covers the emotional condition of uncertainty about the future and ranges from worries, insecurity, irritability and apprehension to overpowering dread, inability to relax, nervousness and trembling
2.	Fears / Phobia	Fear of the dark, fear of strangers, fear of being alone, fear of animal
3.	Insomnia	Difficulty in falling asleep, disturbed sleep, nightmares
4.	Intellectual impairment	Difficulties in decision making and judgment
5.	Sensory and Somatic symptoms	(Muscular weakness, stiffness, increased muscular tone, soreness, increased fatigability, functional disturbances of the senses, including tinnitus, blurring of vision, hot and cold flushes and prickling sensations
6.	Gastrointestinal distress	dysphagia, nausea, vomiting, constipation or weight loss
7	Autonomic symptoms	dry mouth, flushing, pallor, sweating or dizziness

Table 2: Blood pressure, Heart rate & Body temperature of patients before and after music therapy

Patient	Age (yr)) Gender	Blood Pressure (mm Hg)		Pulse Rate (per min)		Body Temperature (^{0}F)	
		Before MT	After MT	Before MT	After MT	Before MT	After MT
I.	24/M	140/100	130/80	94	72	98	98.6
II.	29/F	100/70	110/70	80	70	98.6	98.
III.	30/M	130/90	120/80	88	76	98.9	98.
IV.	19/M	110/70	120/80	118	82	98.2	96.9
V.	23/M	130/80	120/80	86	66	98.2	98.2
VI.	46/F	130/80	130/80	82	66	98.2	96.5
VII.	17/M	120/80	120/80	90	74	96	98.7
VIII.	37/F	120/90	120/80	100	70	97.4	98.6
IX.	30/F	110/70	120/80	84	72	98.3	98.6
X	60/F	140/90	120/70	84	82	98.6	98.2
XI.	18/M	110/70	120/80	84	72	98.4	98.8
XII.	40/F	110/70	120/80	88	82	98.1	98.5
XIII.	38/F	150/100	140/100	94	76	98.5	98.
XIV.	15/F	130/80	120/80	96	86	98.2	98.4
XV.	35/M	110/80	120/80	84	82	96.6	98.6

Blood Pressure denotes- Systolic / Diastolic values.
M= Male, F= Female, MT = Music Therapy

Table 3: Music therapy for relieving anxiety

Patient	Score Before Music Therapy								Score After Music Therapy							
	Anxious Mood	Fears	Insomnia	Intellectual impairment	Sensory & Somatic symptoms	GI Symptoms	Autonomic Symptoms	Total Score	Anxious mood	Fears	Insomnia	Intellectual impairment	Muscular & Sensory symptoms	GI Symptoms	Autonomic Symptoms	Total Score
I	3	2	2	1	2	1	1	**12**	1	1	0	1	1	0	1	**5**
II	3	3	1	2	2	2	2	**15**	1	1	0	1	1	1	1	**6**
III	2	2	2	1	2	2	2	**13**	1	0	1	1	1	1	1	**6**
IV	3	3	2	2	2	1	2	**15**	1	2	1	1	1	0	1	**7**
V	2	3	2	2	3	2	2	**16**	0	1	0	1	2	1	1	**6**
VI	3	3	2	1	2	2	2	**15**	2	1	1	0	1	1	1	**7**
VII	3	1	3	2	2	3	3	**17**	1	0	2	1	1	2	1	**8**
VIII	2	3	2	2	2	2	2	**15**	0	2	1	1	1	1	1	**7**
IX	2	2	2	1	1	2	1	**11**	1	1	0	1	0	1	1	**5**
X	2	2	2	2	2	1	2	**13**	1	0	1	1	1	1	1	**6**
XI	3	3	2	2	2	3	2	**17**	1	1	1	1	1	1	1	**7**
XII	3	2	3	2	2	2	2	**16**	1	1	2	1	1	1	1	**8**
XIII	3	3	3	2	2	3	2	**18**	1	2	2	1	1	1	1	**9**
XIV	3	2	3	2	2	1	1	**14**	1	0	1	1	1	0	0	**4**
XV	2	2	2	2	3	2	2	**16**	1	2	1	1	1	1	1	**8**

Levels of Anxiety: 0-5 = No Anxiety; 6-12-= Mild; 13-20 = Moderate; 21-28 = Severe.
Anxiety Score: 0- absent; 1- slight; 2- moderate; 3- severe; 4- incapacitating
GI Symptoms (dysphagia/ Nausea or Vomiting/ Weight loss); Autonomic Symptoms (dry mouth/ Flushing/ Pallor/ Sweating)
Anxious Mood (Worries/ restless/ trembling/ Crying easily tendencies

Source of support: Nil, Conflict of interest: None Declared