

## THE EFFECT OF MUSIC INTERVENTION ON PSYCHOLOGICAL DISTRESS OF CARDIOVASCULAR PATIENTS AND CANCER PATIENTS

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### ABSTRACT

The study was intended to find out the effect of music intervention on the psychological distress of cardiovascular patients and cancer patients. The sample under study for music intervention was 30 female cardiovascular patients and 30 female cancer patients selected from various hospitals in Kerala. The patients were selected based on their willingness to attend the intervention program. The tools used were DASS 21 and music CD recorded with seven songs based on Indian ragas like Hindolam, Abhogi, Hamsadhvani, Sree Ragam, Sreeranjini, Sivaranjani, Revathi, pre-recorded with the help of an expert musician. The results indicated that there were significant differences in their level of depression, anxiety, stress and total psychological distress in both cardiovascular and cancer patients before and after music intervention. Cardiovascular and cancer patients after music intervention had significantly lower level of depression, anxiety, stress and total psychological distress compared to their score on depression, anxiety, stress and psychological distress before music intervention. The results clearly indicated that music have a significant effect on the psychological distress of cardiovascular and cancer patients.

**KEYWORDS:** Cardiovascular Disease, Cancer, Music Intervention

### INTRODUCTION

*Music washes away from the soul the dust of everyday life.*

*-Berthold Auerbach, 1856*

The modern world of medicine is finally catching on to this hundred years old theory that was first referenced in the ancient writings of the scholars Plato and Aristotle who both noted the healing qualities and influences music had on both humans and animals. The immense potential of the power of Shabda (cosmic flow of sound) hidden in music was well recognised by the ancient Indian sages and they had devised several musical patterns emanating from the "Omkaara" for chanting of the Vedic hymns and for distinct spiritual effects. The Shastric schools of music discovered musical octave (sa, re, ga, ma, pa, dha, ni, sa) indwelling in the subtle sounds of Nature and invented the basic classical ragas for activating specific streams of natural powers and effects; a wide variety of musical compositions were generated consequently. Ever since then music has been an integral part of human culture with varied applications and forms.

According to an ancient Indian text, Swara Sastra, the seventy-two melakarta ragas (parent ragas) control the 72 important nerves in the body. It is believed that if one sings with due devotion, adhering to the raga lakshana (norms) and srutishuddhi, (pitch purity) the raga could affect the particular nerve in the body in a favourable manner. According to the Vedic Philosophy, yoga and music both are part of Nada Vidya. Yoga deals with realisation of anahata nada the sublime sound (extrasensory vibrations) of the eternal force of cosmic consciousness. Music pertains to the

perception and expression of the infinite spectrum of the rhythmic flow of the ahata nada (perceivable sonic currents) pervading in Nature. Both have direct impact on the shat chakras hidden along the endocrine column and hence affect our physical as well as subtle bodies.

The seven basic swaras (musical notes) of the musical octave have a one-to-one correspondence with these chakras (nuclei of subtle energy). The lower most (in the kava equina region along the erect endocrine column), viz., the Muladhara Chakra is associated with the swara "sa"; that means, the practice of chanting this particular musical note will have impact on awakening or activation of this particular chakra. Similarly, the chakras successively upwards in this direction namely, the Swadhisthana, Manipura, Anahata, Vishuddha, Agya and the top-most Sahastrara Chakra have correspondence respectively with the swaras "re", "ga" "ma", "pa", "dha" and "ni". Significantly, the order of the compositions of these swaras in the "aroha" (ascending) and "avaroha" (descending) patterns of the Shastric musical tunes also match with the top-down (from Sahastrara to Muladhara) and bottom-up (from Muladhara to Sahastrara) directions of the flow of energy. Music has been used throughout human history to express and affect human emotion.

In biblical accounts, King Saul was reportedly soothed by David's harp music, and the ancient Greeks expressed thoughts about music having healing effects as well. Many cultures are steeped in musical traditions. It can change mood, have stimulant or sedative effects, and alter physiologic processes such as heart rate and breathing. The apparent health benefits of music to patients in Veterans Administration hospitals following World War II lead to it being studied and formalized as a complementary healing practice.

## **EFFECTS OF MUSIC ON BODY AND MIND**

Research has shown that music has a profound effect on your body and psyche (Elizabeth Scott, 2011). The following are some of effects of music:

### **Brain Waves**

Music with a strong beat can stimulate brainwaves to resonate in sync with the beat, with faster beats bringing sharper concentration and more alert thinking, and a slower tempo promoting a calm, meditative state. The change in brainwave activity levels that music can bring can also enable the brain to shift speeds more easily on its own as needed, which means that music can bring lasting benefits to your state of mind, even after you've stopped listening.

### **Breathing and Heart Rate**

With alterations in brainwaves, changes in other bodily functions occur. Those governed by the autonomic nervous system, such as breathing and heart rate can also be altered by the changes music can bring. This can mean slower breathing, slower heart rate, and an activation of the relaxation response, among other things. This is why music and music therapy can help counteract or prevent the damaging effects of chronic stress, greatly promoting not only relaxation, but health.

### **State of Mind**

Music can also be used to bring a more positive state of mind, helping to keep depression and anxiety at bay. This can help prevent the stress response from wreaking havoc on the body, and can help keep creativity and optimism levels higher, bringing many other benefits.

### **Reducing Blood Pressure**

By playing recordings of relaxing music every morning and evening, people with high blood pressure can train themselves to lower their blood pressure - and keep it low. According to research reported at the American Society of Hypertension meeting in New Orleans, listening to just 30 minutes of classical, Celtic or raga music every day may significantly reduce high blood pressure (Teng et al., 2007).

### **Medicine for the Heart**

Music is good for heart. Research shows that it is musical tempo, rather than style. Bernardi et al., (2006) recruited young men and women, half of whom were trained musicians. The participants slipped on head phones and listened to six styles of music, including rap and classical pieces, with random two-minute pauses. As the participants kicked back and listened, the researchers monitored their breathing, heart rates and blood pressure. The participants had faster heart and breathing rates when they listened to lively music.

When the musical slowed, so did their heart and breathing rates. During the musical pauses, heart and breathing rates normalized or reached more optimal levels. Whether or not a person liked the style of music did not matter. The tempo, or pace, of the music had the greatest effect on relaxation.

### **Speeds Post-Stroke Recovery**

A daily dose of one's favorite pop melodies, classical music or jazz can speed recovery from debilitating strokes. When stroke patients listened to music for a couple of hours each day, verbal memory and attention span improved significantly compared to patients who received no musical stimulation, or who listened only to stories read out loud (Sarkamo et al., 2008).

### **Music Boosts Immunity**

Music can boost the immune function. Scientists explain that a particular type of music can create a positive and profound emotional experience, which leads to secretion of immune-boosting hormones (Kuhn, 2002). This helps contribute to a reduction in the factors responsible for illness. Listening to music or singing can also decrease levels of stress-related hormone cortisol. Higher levels of cortisol can lead to a decreased immune response (Le Roux, et al., 2007., Kreutz et al., 2004).

### **Chronic Headaches & Migraine Remedy**

Music can help migraine (Oelkers-Ax et al., 2008) and chronic headache (Risch et al., 2001) sufferers reduce the intensity, frequency, and duration of the headaches.

### **Music Enhances Intelligence, Learning and IQ**

The idea that music makes us smarter received considerable attention from scientists and the media. Music has the power to enhance some kinds of higher brain function such as reading and literacy skills (Besson, et al., 2007., Register., 2001., Overy, 2003), spatial-temporal reasoning (Jausovec, Jausovec, Gerlic, 2006; Sarnthein, et al., 1997) and mathematical abilities (Schmithorst, Holland., 2004 ; Rauscher et al., (1997). Even children with attention deficit/hyperactivity disorder benefit in mathematics tests from listening to music beforehand.

### **Emotional Intelligence**

Earlier it has been thought that listening to classical music, particularly Mozart, enhances performance on cognitive tests. However, recent findings of Schellenberg, Hallam, (2005) show that listening to any music that is personally enjoyable has positive effects on cognition.

### **Music Improves Memory Performance**

The power of music to affect memory is quite intriguing. Mozart's music and baroque music, with a 60 beats per minute beat pattern, activates the left and right brain. The simultaneous left and right brain action maximizes learning and retention of information. The information being studied activates the left brain while the music activates the right brain. Also, activities which engage both sides of the brain at the same time, such as playing an instrument or singing, cause the brain to be more capable of processing information.

Listening to music facilitates the recall of information Researchers have shown that certain types of music are a great "keys" for recalling memories. Information learned while listening to a particular song can often be recalled simply by "playing" the songs mentally (Mammarella, Fairfield, Cornoldi, 2007). Musical training has even better effect than just listening to classical music. There is clear evidence that children who take music lessons develop a better memory compared with children who have no musical training (Ho YC, Cheung, Chan, 2003).

### **Music Improves Concentration and Attention**

Easy listening music or relaxing classics improves the duration and intensity of concentration in all age groups and ability levels. It's not clear what type of music is better, or what kind of musical structure is necessary to help, but many studies have shown significant effects (Patston, et al., 2007).

### **Music Improves Physical Performance**

Choosing music that motivates us will make it easier to start moving, walking, dancing, or any other type of exercise that we enjoy. Music can make exercise feel more like recreation and less like work. Furthermore, music enhances athletic performance. The four central hypotheses explaining music's facilitation of exercise performance include reduction in the feeling of fatigue, increase in levels of psychological arousal, physiological relaxation response and improvement in motor coordination (Simpson, Karageorghis, 2006., Edworthy, Waring 2006., Copeland, Franks, 1991).

### **Music Improves Body Movement and Coordination**

Music reduces muscle tension and improves body movement and coordination (Bernatzky, et al., 2004., Rosenkranz et al., 2007). Music may play an important role in developing, maintaining and restoring physical functioning in the rehabilitation of persons with movement disorders.

### **Music as Fatigue Fighter**

Listening to upbeat music can be a great way to find some extra energy. Music can effectively eliminate exercise-induced fatigue (Jing, Xudong, 2008) and fatigue symptoms caused by monotonous work (Ladenberger - Leo, 1986).

### **Music Improves Productivity**

Many people like to listen to music while they work. Whilst there may be many reasons for wishing to listen to music in the workplace, it really improves productivity (Fox, Embrey, 1972). According to a report in the journal, *Neuroscience of Behaviour and Physiology* (Pavlygina et al., 1999) a person's ability to recognize visual images, including letters and numbers, is faster when either rock or classical music is playing in the background.

### **Relaxing Music Induces Sleep**

Relaxing classical music is safe, cheap and easy way to beat insomnia (Harmat et al., 2008). Many people who suffer from insomnia find that Bach music helps them. Researchers have shown that just 45 minutes of relaxing music before bedtime can make for a restful night. Relaxing music reduces sympathetic nervous system activity, decreases anxiety, blood pressure, heart and respiratory rate and may have positive effects on sleep via muscle relaxation and distraction from thoughts.

### **Music Reduces Stress and Aids Relaxation**

Listening to slow, quiet classical music, is proven to reduce stress (Labbe et al., 2007).

### **Physical Relaxation**

Music can promote relaxation of tense muscles, enabling us to easily release some of the tension we carry from a stressful day.

### **Aids in Stress Relief Activities**

Music can help us get "into the zone" when practicing yoga, self-hypnosis or guided imagery, can help us feel energized when exercising and recover after exercising, help dissolve the stress when we are soaking in the tub.

### **Reduces Negative Emotions**

Music, especially upbeat tunes, can take our mind off what stresses us, and help us feel more optimistic and positive. This helps release stress and can even help us keep from getting as stressed over life's little frustrations in the future. Khalfa et al., (2003) discovered that music can decrease the amount of the cortisol, a stress-related hormone produced by the body in response to stress.

### **Music Improves Mood and Decreases Depression**

Music's ability to "heal the soul" is the stuff of legend in every culture. Many people find that music lifts their spirits. Modern research tends to confirm music's psychotherapeutic benefits (Maratos et al., 2008). Bright, cheerful music (e.g. Mozart, Vivaldi, bluegrass, Klezmer, Salsa, reggae) is the most obvious prescription for the blues.

## **MUSIC AS A THERAPY**

Music has been used in medicine for thousands of years. Ancient Greek philosophers believed that music could heal both the body and the soul. The therapeutic benefits of music can be traced back in time to ancient shamanistic rituals. Throughout the history of human development, music in some form has been used as an important aid to healing. Schullian and Schoen describe references to the divine alliance of music and medicine in classical antiquity and the healing function of music among primitive peoples. Beneficial effects of music have been recognized by the ancient Greeks and

Romans, including Pythagoras, Democritus, Aristotle, Galen, and Celsus, and Plato, Cicero, and Seneca all believed that music profoundly affected the behaviour of entire societies and that the state should regulate the performance of certain types of music. Similarly, traditional Chinese medicine refers to the qualities of specific instruments and sounds and their beneficial effects on various organs of the body. From these early beginnings to the present day, interest in music as an adjunct to the healing or therapeutic experience has been sustained. Music as a healing touch used during age old times, as a means of therapy.

Music Therapy is a comparatively newer concept of alternative medicine to fight with many diseases. Music therapy is based on the associative and cognitive powers of the mind. Sound creates vibrations on the eardrum, which is picked up by the auditory nerve and sent to the brain and redistributed throughout the neuron network. Music therapy has the potential for multidimensional influence on the physical, psychological, social and spiritual aspects of a patient's life. Physically it promotes muscular relaxation, helps to relieve pain and facilitates physical participation. Psychologically it can alter the patient's mood including the easing of anxiety and the lessening of depression. It provides a nonverbal means of expressing feelings.

Music enhances communication and helps the patient to recall past significant events. Socially it provides an opportunity to participate in a group and to lessen isolation. It can be used as a bond promoting a sense of community with family members and others. It can also promote healing during the family's grief process. Spiritually it provides an avenue to search for the meaning of life and helps the patient to accept the dying process by easing the fear of death. Music can inspire hope. Music therapy has a great deal of potential for meeting the needs of the terminally ill and their families. In the future, music therapy is expected to be used more widely and more effectively not only in terminal care but also in the field of psychosomatic medicine (Cicely Saunders, 1993). The studies reviewed found that music have a significant effect on mind and body. This study was taken up to execute an intervention technique like listening to music and to find out the effect of music on the level of depression, anxiety, stress and total psychological distress of the cardiovascular and cancer patients.

## **METHODOLOGY**

### **Sample**

The sample under study for music intervention was 30 female cardiovascular patients and 30 female cancer patients selected from various hospitals in Kerala. The patients were selected based on their willingness to attend the intervention program.

### **Tools**

The tools used for collecting the data were DASS 21 and music CD. The Depression Anxiety Stress Scales 21 (DASS-21) developed by Lovibond and Lovibond is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress. Each of the three DASS 21 scales contains seven items, divided into subscales with similar content. The Depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia, and inertia. The Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The Stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. The reliabilities of the DASS-21 scales were .88 for Depression, .82 for Anxiety,

.90 for Stress, and .93 for the Total scale. The validities of the DASS- 21 for depression, anxiety and stress subscales were 337, 328 and 347, respectively. The music cd used was recorded with seven songs pre-recorded with the help of an expert musician. The songs were based on Indian music ragas like Hindolam, Abhogi, Hamsadhwani, Sree Ragam, Sreeranjini, Sivaranjani, Revathi.

## MUSIC INTERVENTION PROCEDURE

The group for intervention program was selected from the main sample under study. 30 patients from each patient category were selected based on their willingness to undergo the music intervention program. The intervention group was given an awareness program about the scientific basis of music intervention. Care was taken to clear all their doubts. The selected group had to listen to a cd with particular ragas which were pre- arranged with the help of an expert musician.

The cd consists of seven songs based on ragas like Hindolam, Abhogi, Hamsadhwani, Sree Ragam, Sreeranjini, Sivaranjani, Revathi. The selected patients were divided into 5 groups (representation in each group ranging from 4-6) in each patient group according to their convenience of attending the program. A room was arranged at the hospital for music intervention. The patients were requested to reach the place by 10 am. The participants were asked to sit in a comfortable position and avoid any distraction such as reading, using mobile etc. They were instructed to listen to the music for 20 minutes. The intervention was given for 25 days continuously. The depression, anxiety, stress and total psychological distress scores of the patients were collected using DASS before and after the intervention programme. After data collection, the data were consolidated and scoring was done. The data were analysed using SPSS version 17.

## STATISTICAL TECHNIQUE USED FOR INTERVENTION

The statistical technique used for analyzing the data was paired t-test.

## RESULTS AND DISCUSSIONS

The paired *t* test was done with the scores obtained on DASS before and after music intervention program, to find out whether cvd patients and cancer patients differ significantly in the level of depression, anxiety, stress and total psychological distress before and after music intervention. The details are given in Table 1.

**Table 1: Paired *t* Test Analysis of the Scores Obtained on the DASS by the Two Groups (Cvd and Cancer Patients) before and after Music Intervention**

Group	Variable before and after Music Intervention	N	Mean	Std. Deviation	<i>t</i>
Cvd	Depression 1	30	19.0667	5.27148	16.589**
	Depression 2	30	15.5333	5.15774	
Cancer	Depression 1	30	11.0667	6.72070	7.172**
	Depression 2	30	9.2667	5.96503	
Cvd	Anxiety 1	30	9.7333	5.40072	7.913**
	Anxiety 2	30	7.9667	5.18940	
Cancer	Anxiety 1	30	6.7333	2.75347	8.500**
	Anxiety 2	30	5.6000	2.32824	
Cvd	Stress 1	30	11.9333	4.37811	12.022**
	Stress 2	30	9.0667	4.02521	
Cancer	Stress 1	30	13.5333	4.53898	15.577**
	Stress 2	30	10.6667	3.85364	



**Table 1: Contd.,**

Cvd	Total psy distress 1	30	40.7333	9.20994	20.493**
	Total psy distress 2	30	32.5667	9.05418	
Cancer	Total psy distress 1	30	31.3333	7.20791	17.953**
	Total psy distress 2	30	25.5333	6.30672	

**Note:** \*\* The *t* value is statistically significant at 0.01 level

The *t* values shown in table 1, indicated that there were significant differences in their level of depression, anxiety, stress and total psychological distress in both cvd and cancer patients before and after music intervention. The mean scores showed that cardiovascular and cancer patients after music intervention had significantly lower level of depression, anxiety, stress and total psychological distress compared to their score on depression, anxiety, stress and psychological distress before music intervention. The results clearly indicated that music have a significant effect on the psychological distress of cardiovascular and cancer patients.

The following studies supported the findings of the study:

First described in palliative care over three decades ago (Munro and Mount, 1978), music therapy has since become a widely accepted discipline that can promote resilience, control, comfort, and peace among people affected by life-threatening illnesses, including patients and their families, friends, and staff caregivers (Dileo and Loewy, 2005., Hilliard, 2005., O'Callaghan, 2006a., Rykov and Salmon, 2001). Music therapy in oncology and palliative care can be described as the professionally informed and creative use of music within a therapeutic relationship with people who have been identified as needing psychosocial, physical, or spiritual help or who desire further self-awareness, enabling increased life quality. Lisa Gallagher (2006) assessed the effect of music therapy on patients with advanced disease. Two hundred patients with chronic and/or advanced illnesses were prospectively evaluated. The effects of music therapy on these patients are reported. All improvements were statistically significant. Most patients and families had a positive subjective and objective response to music therapy.

Moradipناه (2009) examined the effect of music on the levels of anxiety, stress, and depression experienced by patients undergoing coronary angiography. Differences in pre- and post-intervention scores demonstrated that there were significant decreases in mean scores of state anxiety, stress and depression in the intervention group, who listened to 20 minutes of relaxing music, as compared with the control group who had 20 minutes of bed rest. Individuals with coronary heart disease often suffer from severe distress putting them at greater risk for complications, including sudden cvd death. The findings of a related research study suggest that music listening may have a beneficial effect on blood pressure and heart rate in people with coronary heart disease. Music listening also appears to be effective in reducing anxiety in myocardial infarction patients. No evidence for anxiety-reducing effects of music was found for patients undergoing cvd procedures. This may be due to the fact that anxiety was measured after the completion of the procedure rather than during it. The vast majority of the studies examined the effects of patient's listening to pre-recorded music. More research is needed on the effects of music offered by a trained music therapist (Bradt Dileo, 2009).

Some music may reduce heart rate, respiratory rate, and blood pressure in patients with coronary heart disease, according to a 2009 Cochrane review of 23 clinical trials. Benefits included a decrease in blood pressure, heart rate, and levels of anxiety in heart patients. However, the effect was not consistent across studies. Music did not appear to have much effect on patient's psychological distress (Joke Bradt and Cheryl Dileo, 2008). Shui-Tao Hu (2007) examined effectiveness of application music therapy on cardiovascular patients in intensive Care unit (ICU). The subject group



consisted of 60 cardiovascular patients. The subjects were divided into two groups, 30 subjects in each group. The subjects in the experimental group received music therapy and another subjects in the control group received the routine care. Results lead researchers to conclude that implementing music therapy could effectively decrease anxiety on cardiovascular patients in intensive Care unit.

Kathy Bally et al., (2003) examined patient's response to music during operative procedures involving spinal, epidural, or local infiltration anesthesia: 75% of the patients rated the music as helpful, relaxing, and supportive. Participants stated that listening to music helped counterbalance the feeling of depersonalization associated with being in the hospital environment. They also reported the effect of music on patient's anxiety during flexible sigmoidoscopy. They found that music was an effective anxiolytic; state anxiety scores were significantly less in the group of patients who listened to self-selected tapes during procedures than in patients who received the standard protocol. Conversely, music in combination with muscle relaxation was ineffective in reducing anxiety in patients admitted to a coronary care unit with unstable angina or acute myocardial infarction.

Forsch Komplement armed (1999) conducted a study on the influence of musical rhythm on synchronisation and co-ordination of heart rate. The sample was 28 patients with chronic cancer pain in a stable phase of the disease. 14-day training of a relaxation therapy designed for improving the falling asleep, including a 30-minute lullaby-like, rhythmically dominated music with gradually decreasing tempi. No training in the control group. Relaxation therapy led to an improvement of falling asleep and to a decrease in consumption of analgesics. Lullaby-like music within a special range of tempi can induce attainable synchronisation of heart rate, functionally associated with the formation and intensity of a relaxation reaction.

Lucanne Magill et al., (2011) piloted a program with 39 critically ill cancer patients. Pre-therapy and post-therapy scores were obtained with the Distress Thermometer, a well-validated 10-point Likert scale for measuring cancer distress. The mean distress score before the intervention was 4.6. After intervention it dropped to a mean  $\pm$  SD of  $2.5 \pm 1.5$ , representing a 46% improvement. This was statistically significant (95% confidence interval of 1.6–2.9,  $p=0.001$ ). A qualitative thematic analysis encompassed the following topics: faith, hope, family, meaning in life, creativity, hopelessness, abandonment, and fear of death.

This feasibility study suggests a unique approach to behavioural activation for critically ill cancer patients by using combined music therapy and CBT. In addition to the therapeutic value of music, lyrics are used to generate coping statements, which are often based on memories that can be used to sustain the patient through his or her current adversity. Huang (2007) examined the effect of music on cancer pain using a two group pre-test post-test experimental design and to examine relaxation and distraction as the mediating variables. This study tested a proportion from the Good and Moore theory that non-pharmacological interventions reduce pain. The results extended the Good and Moore acute pain theory, to include the effect of music on chronic cancer pain, and identify explanatory mechanisms. Nurses can offer soft music to supplement analgesic mediation for cancer patients with pain. Future researchers can study the effects of music for pain and other symptoms in people with specific types of cancer.

Music therapy was found to reduce mood disturbance in cancer patients undergoing autologous stem cell transplantation, a procedure known to cause significant psychological distress. Music alleviates pain and anxiety in breast cancer patients in those receiving chemotherapy and radiation therapy, and improves the quality of life in people

with terminal cancer. Music also reduces pain and anxiety, and increases comfort in hospitalized children with cancer. Women undergoing colposcopy reported reduced anxiety and pain perception after listening to slow-rhythm music. Because music therapy is noninvasive and free of side effects, it is being integrated into the standard care in major cancer hospitals to help relieve pain and other physical and psychological discomfort (Boso et al., 2006). Cancer patients reported that songwriting was a pleasurable, helpful, unique, calming, and easy experience that allowed them to express themselves and record significant life events (O'Brien, 2005).

Music Therapy programme was conducted to improve a cancer patient's physical and emotional well-being by providing a distraction during treatment, thus decreasing stress, pain, and anxiety levels.

## CONCLUSIONS

The conclusions are engaging cancer patients in music therapy appear to have a positive effect on their emotional and physical well-being. One hundred percent (100%) of program participants somewhat or strongly agreed that music therapy decreased their stress, as well as anxiety levels, and 69% somewhat or strongly agreed that participating in the program decreased their pain level. Cancer patients who participate in music therapy seem to largely benefit from the program. One hundred percent (100%) somewhat or strongly agreed the music therapy program was beneficial / valuable to them, and all would participate again if given the chance (Clements-Cortes, 2004).

There have been studies showing that music therapy can help people who've had cancer to feel less anxious, more relaxed, and to feel less pain. In a very preliminary 2001 British study of music therapy in 29 cancer patients, participants felt a higher sense of well-being and less tension during one session. Researchers measured improvements in immune function and decreases in the amount of the stress hormone cortisol. 20 patients awaiting breast biopsy showed that, when some of the patients had a 20-minute music therapy session while in the pre-operative waiting room, their anxiety and respiratory rates were much lower than those of the patients who did not have a music therapy session (Demmer, 2004). Sahler (2003) was done a study with 42 patients on the bone marrow transplant unit at the James Wilmot Cancer Center.

Patients ranged in age from 5 to 65 years of age, most were being treated for various types of cancer, including leukemia, lymphomas, and solid tumours. The patients who met twice each week for music-assisted relaxation and imagery reported significantly less pain and nausea - on average, they rated both their pain and nausea 'severe' before sessions, but 'moderate' after sessions. Their new bone marrow took hold faster, too. The average time until patients began producing their own white blood cells was 13.5 days in the group receiving music therapy, compared to 15.5 days in the control group. The length of this span of time, when patients are most vulnerable to infection, is crucial. Most music and oncology studies, however, have examined the effects of receptive interventions such as music listening, music and imagery, or a combination of music therapy interventions (receptive and interactive) on outcomes such as decreasing pain and nausea, improving mood, increasing family communication, and improving quality of life (Sahler, Hunter, and liesveld, 2003).

The high prevalence and associated increase in morbidity and mortality justifies future research regarding the management of depression, anxiety and stress in both cardiovascular diseases and cancer. Current evidence suggests that multi-faceted interventions such as alternative therapies like music therapy along with mainstream medicine may offer the best hope for improving outcomes for psychological distress and may improve well-being and quality of life of patients

who are experiencing stress due to their severe/chronic medical conditions like cardiovascular diseases and cancer. Music therapy has a great deal of potential for meeting the needs of the terminally ill and their families. In the future, music therapy is expected to be used more widely and more effectively not only in terminal care but also in the field of psychosomatic medicine.

## REFERENCES

1. Bernardi, L., Porta, C., Sleight, P. (2006). Cardiovascular, cerebrovascular, and respiratory changes induced by different types of music in musicians and non-musicians: the importance of silence. *Heart*, 92(4), 445-52.
2. Bernatzky, G., Bernatzky, P., Hesse, H.P., Staffen, W., Ladurner, G. (2004). Stimulating music increases motor coordination in patients afflicted with Morbus Parkinson. *Neurosci Lett*, 6, 361(1-3), 4-8.
3. Besson, M., Schon, D., Moreno, S., Santos, A., Magne, C. (2007). Influence of musical expertise and musical training on pitch processing in music and language. *Restor Neurol Neurosci.*, 2, 5(3-4), 399-410.
4. Boso, M., Politi, P., Barale, F., Enzo, E.(2006). Neurophysiology and neurobiology of the musical experience. *Funct Neurol.*, 21(4):187-91.
5. Boso, M., Politi, P., Barale, F., Enzo, E.(2006). Neurophysiology and neurobiology of the musical experience. *Funct Neurol.*, 21(4):187-91.
6. Bradt, J., Dileo, C (2009). Music for stress and anxiety reduction in coronary heart disease patients. *Cochrane Database of Systematic Reviews, Issue 2. Art. No.: CD006577. DOI: 10.1002/14651858.CD006577.pub2.*
7. Bradt, J., Dileo, C (2009). Music for stress and anxiety reduction in coronary heart disease patients. *Cochrane Database of Systematic Reviews, Issue 2. Art. No.: CD006577. DOI: 10.1002/14651858.CD006577.pub2.*
8. Bradt, J., Dileo, C. (2008). Music therapy for end-of-life care. *Cochrane Database of Systematic Reviews, Issue 2. Art. No.: CD007169. DOI: 10.1002/14651858.CD007169.*
9. Cicely Saunders (1993). Terminal Care and Music Therapy. *Japanese Journal of Psychosomatic Medicine*, 33(1), 25-28.
10. Clements-Cortes, A. (2004). The use of music in facilitating emotional expression in the terminally ill. *Am J Hosp Palliat Med.*, 21:255–60.
11. Copeland, B.L., Franks, B.D. (1991). Effects of types and intensities of background music on treadmill endurance. *J Sports Med Phys Fitness*, 31(1), 100-3.
12. Demmer, C. A. (2004). Survey of complementary therapy services provided by hospices. *J Palliat Med.*, 7:510–6.
13. Dileo, C., & Loewy, J. (Eds.), (2005). *Music therapy at the end of life*. Cherry Hill, NJ: Jeffrey Books.
14. Edworthy J, Waring H. (2006). The effects of music tempo and loudness level on treadmill exercise. *Ergonomics*, 15, 49 (15):1597-610.
15. Elizabeth Scott, M.S. (2011). Music and Your Body: How Music Affects Us and Why Music Therapy Promotes Health How and Why Is Music A Good Tool For Health?, *Retrieved from About.com Guide, October 27, 2011.*

16. Forsch Komplementarmed. (1999). Life style changes and coronary heart disease. *Boion Info park library*, 6 (5):276-8.
17. Fox, J.G. (1972) Embrey ED. Music - an aid to productivity. *Appl Ergon.*, 3(4), 202-5.
18. Harmat, L., Taka'cs, J., Bo'dizs, R. (2008). Music improves sleep quality in students. *J Adv Nurs.*, 62(3), 327-35.
19. Hilliard, R. (2005). *Hospice and palliative care music therapy: A guide to program development and clinical care*. Cherry Hill, NJ: Jeffrey Books.
20. Ho, Y.C., Cheung, M.C., Chan, A.S. (2003). Music training improves verbal but not visual memory: cross-sectional and longitudinal explorations in children. *Neuropsychology*, 17(3), 439-50.
21. Huang, Shih-Tzu. (2007). The effects of music on cancer pain. *Dissertation Abstracts International*, B, 67 (11), 199.
22. Jausovec, N., Jausovec, K., Gerlic, I. (2006). The influence of Mozart's music on brain activity in the process of learning. *Clin Neurophysiol.*, 117 (12), 2703-14.
23. Jing, L., Xudong, W. (2008). Evaluation on the effects of relaxing music on the recovery from aerobic exercise-induced fatigue. *J Sports Med Phys Fitness*, 48(1), 102-6.
24. Kathy Bally., R.N., Debbie Campbell, R.N., Kathy Chesnick, R.N., Joan, E. Tranmer, R.N. (2003). Effects of Patient-Controlled Music Therapy During Coronary Angiography on Procedural Pain and Anxiety Distress Syndrome. *Critical Care Nurse*, 23, 50-57.
25. Khalfa, S., Bella, S.D., Roy, M., Peretz, I., Lupien, S.J. (2003). Effects of relaxing music on salivary cortisol level after psychological stress. *Ann N Y Acad Sci.*, 999, 374-6.
26. Kreutz, G., Bongard, S., Rohrmann, S., Hodapp, V. (2004). Grebe D. Effects of choir singing or listening on secretory immunoglobulin A, cortisol, and emotional state. *J Behav Med*, 27(6), 623-35.
27. Kuhn, D. (2002). The effects of active and passive participation in musical activity on the immune system as measured by salivary immunoglobulin A (SIgA). *J Music Therapy*.39(1), 30-9.
28. Labbe, E., Schmidt, N., Babin, J., Pharr, M. (2007). Coping with stress: the effectiveness of different types of music. *Appl Psychophysiol Biofeedback.*, 32(3-4), 163-8.
29. Ladenberger-Leo E. (1986). Effect of music on the general feeling of persons performing monotonous work. *Med Pr*, 37(6), 347-52.
30. Le Roux, F.H., Bouic, P.J., Bester, M.M. (2007). The effect of Bach's magnificat on emotions, immune, and endocrine parameters during physiotherapy treatment of patients with infectious lung conditions. *J Music Ther.*, 44(2), 156-68.
31. Lisa, M. Gallagher., Ruth Lagman., Declan, Walsh., Mellar, P. Davis, Susan, B. LeGrand, (2006). The clinical effects of music therapy in palliative medicine. *Supportive Care in Cancer*, 14 (8), 859-866. DOI: 10.1007/s00520-005-0013-6.

32. Lucanne Magill, D.A. (2011). The spiritual meaning of pre-loss music therapy to bereaved caregivers of advanced cancer patients. *Music and Medicine*, 3 (1), 56-63.
33. Mammarella, N., Fairfield, B., Cornoldi, C. (2007). Does music enhance cognitive performance in healthy older adults? The Vivaldi effect. *Aging Clin Exp Res.*, 19(5), 394-9.
34. Maratos, A.S., Gold, C., Wang, X., Crawford, M.J. (2008). Music therapy for depression. *Cochrane Database Syst Rev.*, 23, (1) CD004517.
35. Moradipناه, F., Mohammadi, E., & Mohammadil, A.Z.(2009). Effect of music on anxiety, stress, and depression levels in patients undergoing coronary angiography. *Eastern Mediterranean Health Journal*, 15 (3), 639.
36. Munro, S., & Mount, B. M. (1978). Music therapy in palliative care. *Canadian Medical Association Journal*, 119, 1029–1034.
37. O'Brien, E. (2005). Songwriting with adult patients in oncology and clinical haematology. In Baker, F., & Wigram, T. (Eds.), *Songwriting methods, techniques and clinical applications for music therapy clinicians, educators and students*. 185-205. London: Jessica Kingsley.
38. O'Callaghan, C. (2006a). Special section on music therapy. *Journal of the Society for Integrative Oncology*, 4(2), 57–81.
39. Oelkers-Ax R., Leins, A., Parzer, P., Hillecke, T., Bolay, H.V., Fischer, J., Bender, S., Hermanns, U., Resch, F. (2008). Butterbur root extract and music therapy in the prevention of childhood migraine: an explorative study. *Eur J Pain*, 12(3), 301-13.
40. Overy, K. (2003). Dyslexia and music- From timing deficits to musical intervention. *Ann N Y Acad Sci.*, 999, 497-505.
41. Patston, L.L., Hogg, S.L., Tippett, L.J. (2007). Attention in musicians is more bilateral than in non-musicians. *Laterality*, 12(3), 262-72.
42. Pavlygina, R.A, Frolov, M.V., Davydov, V.I, Milovanova, G.B., Sulimov, A.V. (1999). Recognition of visual images in a rich sensory environment: musical accompaniment. *Neurosci Behav Physiol.*, 29(2), 197-204.
43. Rauscher, F.H., Shaw, G.L., Levine, L.J., Wright, E.L., Dennis, W.R., Newcomb, R.L. (1997). Music training causes long-term enhancement of preschool children's spatial-temporal reasoning. *Neurol Res.*, 19 (1):2-8.
44. Register, D. (2001). The effects of an early intervention music curriculum on pre-reading/writing. *J Music Ther.*, 38(3), 239-48.
45. Risch, M., Scherg, H., Verres, R. (2001). Music therapy for chronic headaches. Evaluation of music therapeutic groups for patients suffering from chronic headaches. *Schmerz.*, 15 (2), 116-25.
46. Rosenkranz, K., Williamon, A., & Rothwell, J.C. (2007). Motorcortical excitability and synaptic plasticity is enhanced in professional musicians. *J Neurosci.* 9, 27(19), 5200-6.
47. Rykov, M., & Salmon, D. (2001). Music therapy in palliative care [Thematic issue and companion CD-ROM]. *Journal of Palliative Care*, 13(3), 41-60.

48. Sahler, O.J.Z, Hunter, B.C, Liesveld, J.L. (2003). The effect of using music therapy with relaxation imagery in the management of patients undergoing bone marrow transplantation: A pilot feasibility study. *Alternative Therapies in Health and Medicine*, 9(6), 70-4.
49. Sarkamo, T., Tervaniemi, M., Laitinen, S., Forsblom, A., Soinila, S., Mikkonen, M., Autti, T., Silvennoinen, H.M., Erkkila, J., Laine, M., Peretz, I., Hietanen, M. (2008). Music listening enhances cognitive recovery and mood after middle cerebral artery stroke. *Brain*, 131(3), 866-76.
50. Sarnthein, J., VonStein, A., Rappelsberger, P., Petsche, H., Rauscher, F.H., Shaw, G.L. (1997). Persistent patterns of brain activity: an EEG coherence study of the positive effect of music on spatial-temporal reasoning. *Neurol Res.*, 19(2), 107-16.
51. Schellenberg, E.G., Hallam, S. (2005). Music listening and cognitive abilities in 10- and 11-year-olds: The blur effect. *Ann N Y Acad Sci.*, 1060, 202-9.
52. Schmithorst, V.J., & Holland, S.K. (2004). The effect of musical training on the neural correlates of math processing: a functional magnetic resonance imaging study in humans. *Neurosci Lett.* 16, 354(3), 193-6.
53. Shui-Tao Hu.,& Fang-Kuei Hsien. (2007). *Effectiveness of Application Music Therapy in Cardiovascular Patients*. This paper presentation is part of Evidence -Based Strategies in Acute Care.
54. Simpson, S.D., & Karageorghis, C.I. (2006). The effects of synchronous music on 400-m sprint performance. *J Sports Sci.*, 24(10), 1095-102.
55. Teng, X.F, Wong, M.Y, Zhang, Y.T. (2007). The effect of music on hypertensive patients. *Eng Med Biol Soc*, 4649-51.