

# “A Study To Assess The Effectiveness Of Music Therapy On Levels Of Pain Among Post-Operative CABG Patients”

Dr. Vasanth Kumar. Kasturi

Ph.D. Psychiatric Nursing, Nursing Officer, AIIMS Bibinagar, India.

---

## Abstract

*Objective: Pain Is The Most Common Distress That Everyone Can Face After A Major Surgeries. The Purpose Of The Present Study Is To Evaluate The Effect Of Music Therapy On Levels Of Pain Among Cabg Patients By Using Sf-Mcgill Pain Questionnaire, And Finding Association Between Given Demographic Variables And Levels Of Pain*

*Method: Used Evaluative Research Approach And Quasi Experimental Research Design. The Survey Took Place In A Cardiothoracic Intensive Care Unit In Two Super Specialty Hospitals In India. 300 Patients, Those Who Had Undergone Coronary Artery Bypass Graft Surgery Were Assigned Music Intervention. Music Therapy Is Administered Through Headphone For 15 Minutes Of Two Sessions, At An Interval Of One Hour Between Each Session. The Music Used Is Depends On Patient Wish But Smooth Music Only. Levels Of Pain Was Assessed After The Second Session. The Level Of Post-Operative Pain Was Assessed With The Help Of Sf-Mcgill Pain Questionnaire Before And After Intervention. Data Was Analyzed By Using Spss Version 20 Software.*

*Results: By Analyzing Collected Data We Could Find That In Pre-Test 90 (30%) Had Mild Pain, 131 (43.7%) Had Moderate Pain, And 79 (26.3%) Had Severe Pain Levels. In Post-Test 108 (36%) Had Mild Pain, 127 (42.3%) Had Moderate Pain, And 65 (21.7%) Had Severe Pain Levels. Moreover There Was A Statistical Significant Association Between The Duration Of Illness And Levels Of Pain, At The Level Of  $P < 0.01$ , It Was 0.010, Remaining Demographic Variables Doesn't Had Significant.*

*Conclusion: This Study Provides Evidence Support That The Impact Of Music Therapy On Levels Of Pain Had Positive Outcome Because The Pain Levels Was Decreased After Posttest Compared To Pretest And Support By Statistical Significance Of Duration Of Illness. It Is Important To Conduct Further Research To Implement Music Therapy In Essential Setting In Different Areas Of Hospital.*

---

Date of Submission: 22-06-2023

Date of Acceptance: 02-07-2023

---

## I. Introduction

Along with technology development in India, cardiovascular diseases also increasing as well. As per global burden of cardiovascular disease study in India said that India cardiovascular diseases death rate of 272 per 100 000 population is much elevated than the worldwide average of 235 per 100 000 population overtaken world mean level (Prabhakaran et al., 2016).

There are many pharmacological and natural methods in alleviating pain in post-operative patients who were undergone cardiac surgeries. Among nonmedical approach music therapy was seems to be effective. Music Based Interventional therapies have been utilized to ease acute pain as monitored using subjective measures by pain rating scales and objective methods by fMRI (Hole j et al., 2015).

Due to the extended surgical procedure and treatment therapies patients often evidence a different physical and psychological signs and some adverse effects that may have impact their quality of life and coping mechanism. So this is the situation where we can test the effective of music therapy which will give a positive impact on alleviating the levels of pain (Hilary A et al., 2014)

Music therapy is the skilled practice of music and its elements as an interventional therapy in medical, educational, with individual, family, or community who wants to enhance their quality of life, coping capacity, and improve physical, mental, social, emotional wellbeing. However clinical training in music therapy are grounded on professional morals according to sociocultural context (World Federation of Music Therapy, 2011)

With combined approach of cold and music therapy was used in clinical setting by nursing professionals to offer effective pain control following chest tube removal among patients who under gone cardiac bypass surgery. In this studythere was 4 groups and among 3 groups received mixer of combined

therapy and final group was control. Final outcome represented as successful in alleviating pain levels (SajadYarahmadi and Mohammad Gholami, 2018).

Pain has constantly been a major worry for patients and nurses staff during the postoperative days. It claimed that the use of soft track of 60-80 beats per minutes for at least 15 to 30 minutes for two times a day during on pre and postoperative patients by nursing staff may lead to more reductions in surgical pain and reduction in opioid use. (Poulsen MJ, Coto J, 2018)

Nursing music intervention, a research group including nurses, making use of a systematic mapping method, 68 out of the 809 studies published within 2013 and 2017, were assessed. In 87.7 % of the studies, receptive music therapy was used while new age music was listened to in 23.9% of the studies. Music therapy was effective in alleviating anxiety and pain in 54% and 34.1% of the 44 studies examined the efficacy of receptive music therapy. (YelizCiğerci, CahideÇevik, 2019)

The main aim of this study was to evaluate the effectiveness of music therapy on levels of pain among postoperative CABG patients by participating the patients in therapy as their optional music track but only smoothening music in two sections with one hour gap. SF-McGill Pain Questionnaire was used to check the pretest and posttest pain levels to evaluate the music therapy impact on postoperative patients.

## II. Methods

### *Design*

A non-randomized quasi experimental research design and evaluative research approach was used for the present study.

### *Participants and setting*

Participants were recruited by non-probability purposive sampling technique. This study was conducted at two multispecialty hospitals in south India, in one hospital monthly average CABG surgeries were 50 and in another hospital monthly average CABG surgeries were 20. Patients who undergone CABG were taken for the study from June 2018 to October 2018. CABG patients were given treatment in the ICU for nearly 1-2 days before going to step down ICU. The average length of hospital stay was nearly two weeks.

Inclusive criteria for the patients were: age 18 years or above; present during the time of data collection; patients who are conscious and willing to participate in study. The exclusive criteria were as showed below: patients who are not fully conscious, who are severe illness for participation and who are suffering with hearing problems, who are not showing interested to participate in study. A total of 300 patients were actively participated in study. The sample size was calculated by using G\* Power 3.1.

### *Ethical Considerations*

The study was conducted as a part of my doctoral of philosophy in Himalayan University. Got ethical clearance and head of the department from my university as well as from hospital where I collected samples (Sunshine Hospital and Mediciti Hospitals, Hyderabad). Informed to every patients regarding purpose and outcome of study. Moreover informed regarding data confidentiality would be maintained.

### *Procedure for data collection*

After obtaining the necessary permissions from the concerned authorities and informed consent from the samples, the investigator collected data. The information was gathered in three stages.

**Phase I:** The level of post-operative pain and anxiety and physiologic parameters will be assessed with the help of SF-McGill Pain Questionnaire.

**Phase II:** Music therapy will be administered through headphone for 15 minutes of two sessions, at an interval of one hour between each session. The music used will be patient wish. But only smooth music.

**Phase III:** Post-test: level of pain will be assessed after the second session.

Duration of data collection is 16 to 18 weeks.

### *Instruments*

#### *Demographic information form*

Demographic data were collected by using a structured tool, which included age, gender, religion, marital status, education, occupation, residence, type of family, monthly income, duration of illness, post-operative day, and medical illness.

#### *Short form-McGill Pain Questionnaire*

A short form version of the McGill Pain Questionnaire (SF-MPQ) was developed in 1987. This contains a total of 15 descriptors, in that 1-11 represent the sensory dimension of pain experience and 12-15 represent the affective dimension. Each descriptor is ranked on an intensity scale of 0 = none, 1=mild,

2=moderate, 3=severe. Taken standard questionnaire of SF-McGill from owner Melzack Ronald through Mapi Research Trust for my total research period. (Melzack R. The short-form McGill Pain Questionnaire. Pain 1987; 30(2):191-7)

**Statistical Analysis**

Analysis of data was done by using SPSS 20 in Windows 10 was used for data entry, frequency distribution tables and charts were generated for the variable. Descriptive statistics includes: frequency, percentage, mean, standard deviation. Inferential statistics includes: chi-square, paired t-test, correlation used in this present study.

**III. Results**

*Total SF-MPQ Tool Results*

Figure 1: illustrates that in pre-test 90 (30%) had mild pain, 131 (43.7%) had moderate pain, and 79 (26.3%) had severe pain levels. In post-test 108 (36%) had mild pain, 127 (42.3%) had moderate pain, and 65 (21.7%) had severe pain levels.

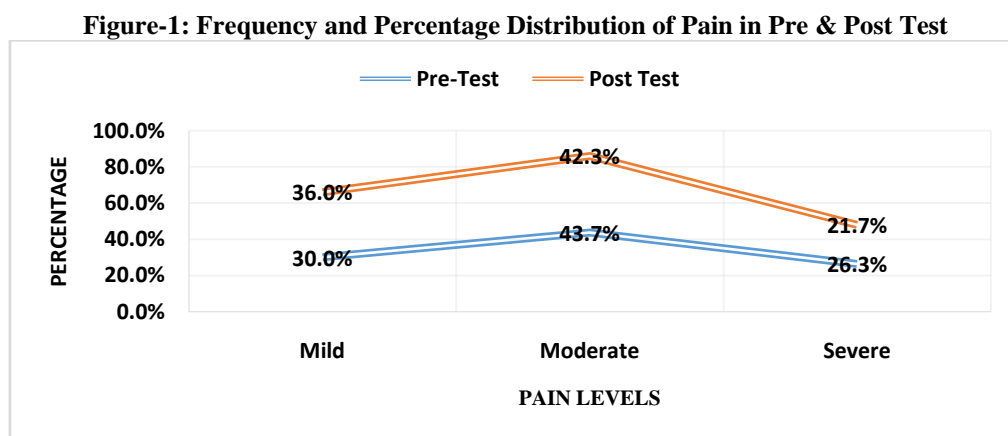


Table 1: shown that, there was a statistical significant association between the duration of illness and levels of pain, at the level of  $p < 0.01$  it was 0.010, remaining demographic variables doesn't had significant.

**Table-1: Shows that there was a significant association between Demographic Variables and Levelsof Pain in post-test.**

**N: 300**

SL. NO	Variables	Chi-Square	df	'P' Value
1	Age (In Years)	5.912	4	0.206
2	Gender	3.961	2	0.138
3	Religion	6.182	4	0.186
4	Marital Status	10.709	6	0.098
5	Education	15.024	10	0.131
6	Occupation	10.364	10	0.409
7	Residence	3.316	2	0.191
8	Type of Family	2.616	2	0.270
9	Monthly Income	3.829	4	0.430
10	Duration Of Illness	13.033	4	0.011
11	Post-Operative Day	5.514	6	0.480
12	Medical Illness	6.149	12	0.908

Table 2: tells that there was an effectiveness of music on levels of pain, significance at the level of  $p < 0.000$ .

**Table 2: The effectiveness of Music Therapy on levels of pain in Pre & Post-Test.**

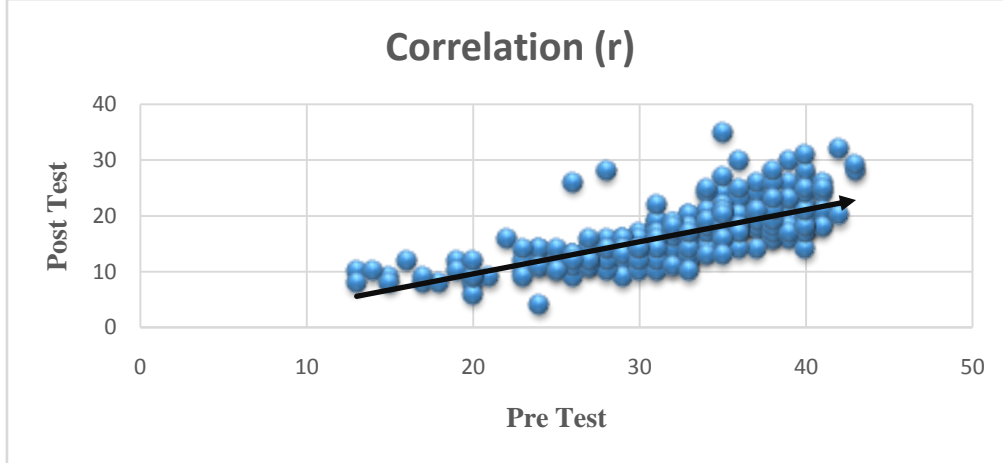
**N: 300**

Pain	Mean	SD	't' value	df	'P' Value
Pre-Test	32.76	6.073	64.603	299	0.000

Post-Test	16.98	4.846		
-----------	-------	-------	--	--

Figure 2: depicts that, statistical significant positive correlation between Pre-test and Post-test pain levels that was  $r = + 0.721$ , at the level of  $p < 0.000$ .

**Figure 2: Statistical significant positive correlation between Pre-test and Post-test pain levels**



*SF-MPQ Sensory Dimension Results*

Figure 3: illustrates that in pre-test 81 (27%) had mild, 143 (47.7%) had moderate, and 76 (25.3%) had severe pain levels insensory dimension. In post-test 88 (29.3%) had mild, 98 (32.7%) had moderate, and 114 (38.0%) had severe pain levels in sensory dimension. Here we can observe in depth sensory dimension of SF-MPQ, from this study we could see that in post-test there was an increase of mild and severe pain that was 2.3% & 13% when compared to pre-test percentage respectively, this was an interesting alimnt which we could observe in present study.

**Figure-3: Percentage Distribution of levels of Pain Sensory Dimension in Pre & Post Test**

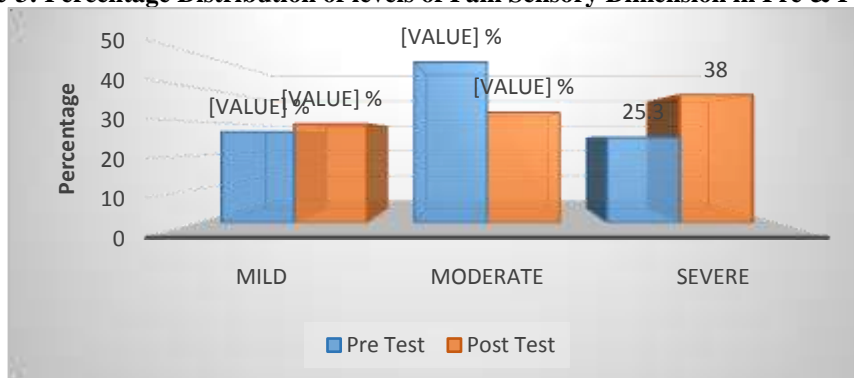


Table 3: depicts that, there was a statistical significant association between the residence and levels of pain in Sensory Dimension, at the level of  $p < 0.05$  it was 0.019, remaining demographic variables doesn't had significant.

**Table-3: Significant association between Demographic Variables and Levelsof Pain Sensory Dimension in post-test.**

**N: 300**

SL. NO	Variables	Chi-Square	df	'P' Value
1	Age (In Years)	5.006	4	0.287
2	Gender	0.726	2	0.696
3	Religion	3.065	4	0.547
4	Marital Status	4.068	6	0.667
5	Education	11.951	10	0.290
6	Occupation	10.999	10	0.358
7	Residence	7.909	2	0.019
8	Type of Family	3.300	2	0.192

9	Monthly Income	4.729	4	0.316
10	Duration Of Illness	4.556	4	0.336
11	Post-Operative Day	8.522	6	0.202
12	Medical Illness	12.070	12	0.440

**SF-MPQ Affective Dimension Results**

Figure 4: illustrates that in pre-test 98 (32.7%) had mild, 85 (28.3%) had moderate, and 117 (39%) had severe pain levels in affective dimension. In post-test 137 (45.7%) had mild, 67 (22.3%) had moderate, and 96 (32%) had severe pain levels in affective dimension.

**Figure-4: Percentage Distribution of levels of Pain Affective Dimension in Pre & Post Test**

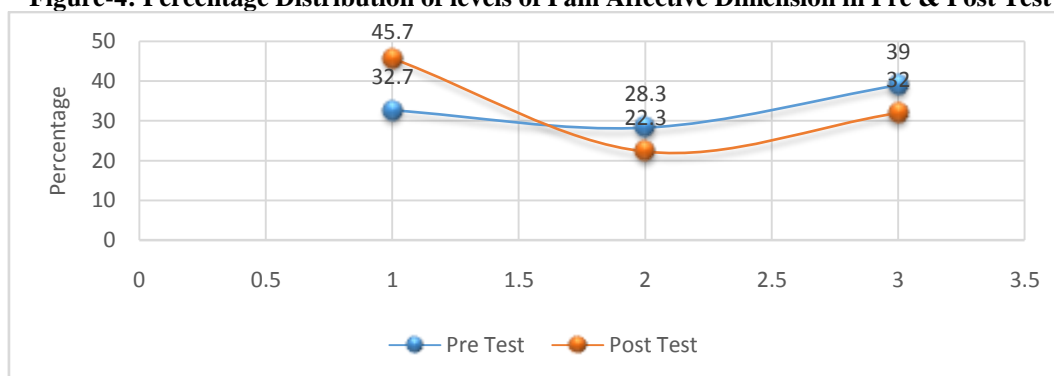


Table 4: shows that, there was a statistical significant association between the marital status and levels of pain in affective Dimension, at the level of  $p < 0.05$  it was 0.039. Secondly education and levels of pain in affective Dimension, at the level of  $p < 0.05$  it was 0.042, remaining demographic variables doesn't had significant.

**Table-4: Significant association between Demographic Variables and Levelsof Pain Affective Dimension in post-test.**

N: 300

SL. NO	Variables	Chi-Square	df	'P' Value
1	Age (In Years)	7.209	4	0.125
2	Gender	1.251	2	0.535
3	Religion	1.620	4	0.805
4	Marital Status	13.287	6	0.039
5	Education	18.834	10	0.042
6	Occupation	16.532	10	0.085
7	Residence	2.073	2	0.355
8	Type of Family	0.401	2	0.818
9	Monthly Income	4.660	4	0.324
10	Duration Of Illness	3.694	4	0.449
11	Post-Operative Day	8.532	6	0.202
12	Medical Illness	19.821	12	0.071

**IV. Discussion**

The present study explore the effectiveness of music therapy on levels of pain on operated cardiac disease patients. In demographic data we could see that majority of age group people were age between 48 to 63 years 151 and 72 were from age above 64 years, male were found to be more CABG operative patients that is 202 out of 300 sample, it shows that most of the male gender were suffering with cardiac related disorders, this was supported by the related studies with age group and gender with CABG (VladanPeric et al., 2015; PrachiKar et al., 2017). When we see in to the medical illness we could see many of the patients were suffering with diabetic mellitus that is 28.7 % than other illnesses, this was supported by another study that 78% female and 64% males were from south Indian population who undergo CABG (Varma PK et al., 2014).

There was a reduction in Pain levels after music therapy intervention, in pre-test 90 (30%) had mild pain, 131 (43.7%) had moderate pain, and 79 (26.3%) had severe pain levels. In post-test 108 (36%) had mild

pain, 127 (42.3%) had moderate pain, and 65 (21.7%) had severe pain levels. Furthermore the mean and standard deviation of pre-test pain levels were 32.76 and 6.073, mean and standard deviation of post-test pain levels were 16.98 and 4.846. Only one variable from demographic variable that is duration of illness had statistical significance with decreased levels of pain after introduction of music in post CABG patients at the level of  $p < 0.01$  it was 0.010. From above results observation we could strongly say that music therapy had a good impact on relieving pain in post-operative CABG patients along with medicine and these results are consistent with studies showing music therapy can alleviate pain levels (PhadkeShweta et al., 2014)

On the other hand when we look into the SF McGill Dimensions of Sensory and Affective we could observe some interesting results. Sensory dimension of pain levels were from question 1 to till 11. In Pre-test 76 (25.3%) had severe pain levels, in post-test 114 (38.0%) had severe pain levels in sensory dimension. After introducing music therapy intervention in post-test there was a drastic increase in the pain levels, which was statistically significance with residency of patients like urban and rural areas. Compares between rural and urban patients the number of rural patients were increased their pain levels after music therapy intervention than the number of urban patients (Rural 57% & Urban 43%). This was a notable results which we could find compared to whole study. It said that sensory dimension got no effect music therapy in post-operative pain levels instead it had negative effect by increasing pain levels.

Where as in Affective dimension, pre-test 117 (39%) had severe pain levels, which is decreased in post-test to 96 (32%). It was clear that there was a good effect of music intervention on decreasing levels of pain in affective dimension in post-operative CABG patients.

## V. Conclusion

When a patient listen to a smooth songs for some time it would affect the nervous system by dominating sympathetic nervous system by a parasympathetic nervous system which change body psychological and physiological randomly. At present in India there is no much music therapy intervention on the patients in any setting of the hospitals by a nurse or any music therapist.

Light Music can use all over the hospital settings, like reception, outpatient department, wards, ICU, ICCU, SICU, CTICU, and in Operation Theater. Recently in South Africa Mr. Musa Manzini Dec-2018 and from India Mr. Abhishek Prasad have been played music during his neurosurgery in July 2017. So in many ways we can use music like surgical treatment to avoid mistakes in surgery and to reduce psychological problems i.e. pain, anxiety, depression, fear and stress. However music will provide psychological wellbeing for all the people irrespective of age, gender and health.

Listening to music, as it true for many nondrug therapies such as hypnosis, offers potential advantages of low cost, ease of provision, and safety. Present study findings reveal that, listening to music may have a beneficial effect on pain in post CABG patient. Pain reducing effects appear to be greatest when people are given a choice of which music to listen to. However, these findings need to be interpreted with caution. More research is needed into the effects of music interventions in various views.

## References

- [1]. Prabhakaran, D., P. Jeemon, A. Roy. “Cardiovascular Disease InIndia: Current Epidemiology And Future Directions.” *Circulation*. 133(16): 1605-20.
- [2]. Hole J, Hirsch M, Ball E, Meads C. (2015). Music As An Aid For Postoperative Recovery In Adults: A Systematic Review And Meta-Analysis. *Lancet* 2015; 386:1659–71.
- [3]. Hilary A. Fredenburg MA, MT-BC, Michael J. Silverman Phd, MT-BC. (2014). EffectsOf Music Therapy On Positive And Negative Affect And Pain With Hospitalized Patients Recovering Form A Blood And Marrow Transplant: A Randomized Effectiveness Study. *The Arts In Psychology*, Volume 41, Issue 2, April 2014, Pages 174-180.
- [4]. World Federation OfMusic Therapy. (2011). “What Is Music Therapy”. *WFMT’s Peer-Reviewed Music Therapy Journal*, 2011, <https://wfmt.info/wfmt-new-home/about-wfmt/>.
- [5]. SajadYarahmadiAndMohammad Gholami. (2018). The Combined Effects Of Cold Therapy And Music Therapy On Pain Following Chest Tube Removal Among Patients With Cardiac Bypass Surgery. Volume 31, May 2018, Pages 71-75.
- [6]. Poulsen MJ, Coto J. (2018). Nursing Music Protocol AndPostoperative Pain. *Pain ManagNurs*. 2018 Apr;19(2):172-176
- [7]. YelizCiğerci, CahideÇevik, (2019). Nursing Music Intervention: A Systematic Mapping Study. Volume 35, May 2019, Pages 109-120
- [8]. VladanPericEt Al., (2015). Quality Of Life In Patients Of Different Age Groups Before And After Coronary Artery By-Pass Surgery. *Ann ThoracCardiovasc Surg*. 2015; 21(5): 474–480.
- [9]. Varma PK, Kundan S, Ananthanarayanan C, Panicker VT, Pillai VV, Sarma PS, Et Al. Demographic Profile, Clinical Characteristics And Outcomes Of Patients Undergoing Coronary Artery Bypass Grafting-Retrospective Analysis Of 4,024 Patients. *Indian J ThoracCardiovascSurg*2014;30:272-7. Back To Cited Text No. 24
- [10]. PrachiKar, KanithiGeeta, Ramachandran Gopinath, AndPadmajaDurga. (2017). Mortality Prediction InIndian Cardiac Surgery Patients: Validation Of European System For Cardiac Operative Risk Evaluation II. *Indian J Anaesth*. 2017 Feb; 61(2): 157–162.