EFFECTIVENESS OF MOZART MUSIC THERAPY ON POST-OPERATIVE PAIN AMONG CHILDREN UNDERGONE SURGERY AT SELECTED HOSPITAL, CHENNAI

DISSERTATION SUBMITTED TO

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI - 600 032.

In partial fulfillment of the requirement for the degree of

MASTER OF SCIENCE IN NURSING

OCTOBER - 2015

Internal Examiner:

External Examiner:

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Finally, my whole hearted thanks and gratitude to **one and all**, who helped me on my way to successfully complete this study.

LIST OF ABBREVIATIONS

CNE	Continuous Nursing Education
WHO	World Health Organisation
NINR	National Institute of Nursing Research
SF-MPQ	Short-Form McGill Pain Questionnaire
ICN	International Council of Nurses

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ABSTRACT

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of Mozart music therapy on post-operative pain among children undergone surgery at Selected Hospital, Chennai.

OBJECTIVES OF THE STUDY

1. To assess the pre-test level of post-operative pain among children in both experimental and control group.
2. To assess the post-test level of post-operative pain among children in both experimental and control group.
3. To assess the effectiveness of Mozart Music Therapy on post operative pain among children in both experimental and control group.
4. To associate the post-test level of post-operative pain among children in experimental group with the selected demographic variables.

METHODS

A true experimental design was adopted for this study. A review of literature was done on studies related to benefits of music on post operative pain, effect of music therapy on pain, benefits of Mozart music and Nursing care and pain management. The Conceptual framework adopted for the study was based on the Ludwig Von Bertalanffy's general system theory (1972). The study was conducted in Chettinad Hospital, Kelambakkam, Chennai. The tool used was Wong-Baker FACES Pain Rating Scale. The sample size for this study was 60 postoperative children (30 in experimental; 30 in control group) selected using simple random sampling technique with lottery method. The intervention given in this study was Mozart Music for 3 consecutive days. Pre test of pain in experimental and control group was assessed using Wong-Baker pain scale. Each hospitalized children after surgery on the first postoperative day was given Mozart music therapy at the duration of 10 minutes for 3 consecutive days. The post test of pain in

experimental and control group were assessed on the third day using Wong-Baker pain scale. The data was analysed and interpreted based on the objectives using descriptive and inferential statistics.

MAJOR FINDINGS OF THE STUDY

The study findings revealed that the frequency and percentage distribution of pre-test level of pain in experimental group, 30(100%) were in moderate pain level & none of them were in no pain level, mild pain level & severe pain level. In control group, 30(100%) were in moderate pain level.

The frequency and percentage distribution of post-test level of pain in experimental group, 8(26.67%) were in moderate pain level & 22(73.33%) were in mild pain level. In control group, 30(100%) were in moderate pain level. The study findings also revealed that the pre-test mean and standard deviation were 5.43 and 0.50 respectively and in the post-test mean and standard deviation were 3.10 and 1.06 respectively. The findings also revealed that there was a significant association with one selected demographic variable.

Thus it is proved that after the administration of Mozart Music Therapy the post operative pain was considerably reduced among children who underwent surgery and this clearly indicates that Mozart Music therapy was found to be effective in reducing the pain among children in the experimental group.

CONCLUSION

Mozart music therapy is an effective intervention in reducing the pain among children who has underwent surgery. From a nursing perspective, this intervention provides a challenge and an opportunity for nurses to blend alternative therapies in managing postoperative pain among children. The study is focused on Mozart music as it appears to be an effective non-invasive, non-pharmacological and relatively cheap intervention for postoperative pain management, and this measure will be considered as a diversional strategy to reduce pain experienced by children who have underwent surgery.

INTRODUCTION

" Where words fail, music speaks."
- (-Hans Christian Andersen)

Children are the eyes to the future and are one-third of our population and all of our future. How a child's life is formed determines how our future is shaped. Sigmund Freud laid down the basic foundation of a Child's personality. The Wealth of a nation is not so much in its of economical and natural resources but it lies more decidedly in the kind and quality of the wealth of its children. It is they who will be the creators and shapers of a nation's tomorrow. It, is therefore, becoming mandatory for every nation and every society to nurture a strong, healthy and intellectual Child.

The Children of a nation is its power-house. Unfortunately we live our lives taking things for granted, but when we come in contact with the misfortune of having a sick child, one starts to appreciate life in a different way.

Hospitalization brings storms and stress to children. When it accompanies with pain it reaches the peak level of discomfort. Depending on their past experiences or tales they have heard, children may anticipate overwhelming pain following surgery and may become fearful. Effective post operative pain control is an essential and humanitarian need for every surgical procedure. Inadequate pain control may result in increased mortality, delayed recovery and increased hospital cost. Pain is a universal experience, and it is the most frequent reason for people seeking health care.

The taxonomy committee of International Association for the study of pain (IASP) (2014), defines pain as "An unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. Post operative pain is considered a form of acute pain due to surgical trauma with an inflammatory reaction and initiation of an afferent neuronal barrage. It is combined constellation of several unpleasant sensory, emotional and mental experiences precipitated by the surgical trauma are associated with autonomic, endocrine, metabolic, physiological and behavioural responses.

Music appears to help in pain reduction by activating sensory pathways. The theory of music therapy's effect on chronic pain has to do with how pain signals travel through the body. When the brain senses injury to the body, pain signals begin in the somatosensory cortex and the hypothalamus and work their way through the "pain pathway", ultimately sending signals that provide pain relief. There are also signals that stimulate the release of neurotransmitters such as endorphins, dynorphins, and enkephalins.

The diversion therapy is a pain management technique to achieve positive health outcomes by incorporating leisure programmes into their lifestyles. These are often quite diverse and can range from games, computers, gentle exercise, music, arts and crafts.

Dr J Friedland., (2013), explains diversional therapy as a group of psychosocial interventions that support the psychological, social, spiritual and physical wellbeing of individuals. These interventions include exercise, music therapy, art therapy, guided imagery, relaxation, animal-assisted therapy, spiritual support, therapeutic touch and meditation.

Frederich Scheidemantel., (2012), stated that the cure for many physical ailments was the children' experience of joy.

Adolf Meyer., (2000), said that, individuals need physical and mental protection from factors that cause stress. Supportive family members and healthcare providers give physical protection; recreational activity provides protection from mental stress.

1.1 BACKGROUND OF THE STUDY

The number of under-five deaths worldwide has declined from 12.7 (12.5, 12.9) million in 1990 to 6.3 (6.1, 6.7) million in 2013. This translates into 17 000 fewer children dying every day in 2013 than in 1990. About half of the world's under-five deaths in 2013 still occurred in only five countries: India, Nigeria, Pakistan, Democratic Republic of the Congo, and China. India (21%) and Nigeria (13%) together account for more than a third of under-five deaths worldwide.6.3 million children died in 2013, nearly 17 000 every day. 83%of deaths in children are caused by infectious, neonatal or nutritional conditions. (**WHO, 2014**)

India has 440 million children. That's more than the entire population of North America (USA, Mexico and Canada put together). Every fifth child in the world is Indian. About 27 million children are born each year in India and only about 24 million survive. But nearly 2 million of them do not live to the age of 18. Much of this is due to malnourishment. India has over 200 million people in hunger, and over 40% of the children are up to 12 years of age. (**WHO, 2013**)

Funds are limited and the health delivery system remains grossly inadequate to tackle the congenital and the acquired medical and

surgical problems related to children below 14 years of age, constituting almost 37 percent of our 900 million population. **(Gupta D.K, 2009)**

India has more than a billion population and a crude birth rate of 27.2/1000 population. This would amount to about 28 million live births every year. Going by an incidence of congenital heart disease (CHD) of 8/1000 live births, it could be expected that about 180,000 children born with an abnormal heart every year. Of these, nearly 60,000-90,000 suffer from critical CHD requiring early intervention. **(Suresh G Nair, 2008)**

In the 2011 census India's population is 1.2 billion of which 41% are children up to 18 years of age among which 19% of the required surgery. (**Venkat Sripathi, 2013**)

1.2 NEED FOR THE STUDY

Lisa Hartling et al,. (2013), conducted a study and found no significant difference in the change in behavioral distress from before the procedure to immediately after the procedure, there was a significantly less increase in distress for the music group (standard care group = 2.2 vs music group = 1.1, P < .05). Pain scores among children in the standard care group increased by 2 points, while they remained the same in the music group (P = <.04); the difference was considered clinically important. Nurses reported that it was easier to perform the procedure for children in the music group (76% very easy) than the standard care group (38% very easy). Nurses were more satisfied with the intravenous placement in the music group (86% very satisfied) compared with the standard care group (48%).

Valeria Calcaterra et al., (2013), says that postoperative effect of music listening has not been established in pediatric age. Response in

pediatric day care surgery was evaluated, 42 children were enrolled to whom Slow and classical Mozart music were played. There was Positive impact on reactions to pain noted using the FLACC scale. Heart rate, blood pressure, oxygen saturation, glucose and cortisol levels, faces pain scale and Face, Legs, Activity, Cry, Consolability (FLACC) pain scale were considered as indicators of response to stress and pain experience. Mozart music did improve cardiovascular parameters, stress-induced hyperglycemia. Positive effects were achieved by the slow rhythms and pauses even in pediatric age.

Dr. Claudius Conrad., (2007), examined the effect of Mozart music on post operative children. Ten children were outfitted with headphones. As their sedation wore off, five of the children were played Mozart music for an hour. The other five recovered in silence. The Mozart children were expected to have a decrease in stress hormone levels, heart rate, blood pressure, and pain.

. **Harrling et al., (2006),** published a systemic review on the efficacy of music for medical indicators in term and preterm neonates. Nine randomized trials were included. According to the results of the review music did have positive effects on physiological parameters and behavioural states, and did reduce pain and improve oral feeding rates.

Lisa M Gallagher, (2002), said that music improves mood while decreasing pain, anxiety, depression, and even shortness of breath among seriously ill children. A study was conducted between 2000 and 2002 with about two hundred subjects from across the world. The subjects selected were from a variety of phases of life and suffering from different illness including non cancerous tumors, pain disorders, and sickle cell diseases.

From the literature accessed it is evident that there is need for Music therapy to help combat Pain experienced by the children who underwent surgery. Music was found to be an effective non-invasive, non-pharmacological and relatively cheap intervention for postoperative pain management, so the investigator selected this study to evaluate the effectiveness of Mozart Music and this measure can be considered as a diversional strategy to reduce pain experienced by children who have underwent surgery.

1.3 STATEMENT OF THE PROBLEM

A study to assess the effectiveness of Mozart music therapy on post-operative pain among children undergone surgery at Selected Hospital, Chennai.

1.4 OBJECTIVES OF THE STUDY

1. To assess the pre-test level of post-operative pain among children in both experimental and control group.

2. To assess the post-test level of post-operative pain among children in both experimental and control group.

3. To assess the effectiveness of Mozart Music Therapy on post operative pain among children in both experimental and control group.

4. To associate the post-test level of post-operative pain among children in experimental group with the selected demographic variables.

1.5 OPERATIONAL DEFINITIONS

ASSESS:

It refers to the art of finding out the effectiveness of the Mozart music therapy in reducing pain among the children who have underwent surgery.

EFFECTIVENESS:

It refers to the significant gain in reducing post-operative pain after the implementation of Mozart music therapy evidenced by the decrease in scores of post-test pain level.

MOZART MUSIC THERAPY

It refers to intervention with Mozart's music (classical style instrumental music on the piano composed by Wolfgang Amadeus Mozart) heard by the children who have undergone surgery for 10 minutes per day in the morning using iPod and earphone.

POST OPERATIVE PAIN

Post-operative pain is a unpleasant situation experienced by children who have undergone surgery.

CHILDREN

It refers to the children between the age group of 6- 12 years in post-operative ward at Chettinad Hospital, Chennai.

1.6 RESEARCH HYPOTHESIS

H_1:   There is a significant difference between the pre-test and post-test level of post-operative pain among children in experimental group who underwent Mozart music

H_2:   There is a significant association in the post test level of post operative pain among children with selected demographic variables.

1.7 ASSUMPTIONS

1) Pain is more prevalent among hospitalised children who have undergone surgery

2) Mozart music therapy may have excellent result in reducing post-operative pain among children.

1.8 DELIMITATIONS

1) The study was delimited to a period of 4 weeks.

2) The study was delimited to the selected settings at Chennai.

3) The study is delimited to postoperative children.

1.9 CONCEPTUAL FRAMEWORK

A Conceptual framework refers to frame work of prepositions for conducting research. Conceptual framework serves as a spring board for theory development as this is made up of concepts which are mental images of a phenomenon.

Polit and Hungler (1995) state that, conceptual framework is interrelated concept or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme. It is a device that helps to formulate research steps and provides and extension of knowledge in all direction.

The Conceptual framework adopted for the present study was based on the Ludwig Von Bertalanffy's general system theory (1972).

The Karl Ludwig Von Bertalanffy was an Austrian born biologist known as one of the founders of general systems theory.

In general system theory, the systems are composed of both structural and functional components that interact with in boundary, which filter the type and rate of exchange with the environment. A structure refers to the arrangements of the part at a given time whereas function is the process of continuous change in the system as matter, energy and information.

For survival, a system must achieve a balance internally and externally. Equilibrium depends on the system's ability to regulate input and output to achieve a balanced relation of the interactive part and the process applied for proper balance. The system uses various adaptation mechanisms to maintain equilibrium. Adaptation may occur through

accepting or rejecting the matter, energy or information or by accommodating the input and modifying the system responses.

Ludwig Von Bertalanffy's general system theory focused on three areas.

- Input
- Throughput
- Output

INPUT

According to general system input refers to the matter, energy or information from the environment into the system. Here the input refers to assessment of the demographic variables such as age, sex, religion, education, occupation, income, physical exercise, food habit, presence family history, BMI and pain level before listening to Mozart Music therapy.

THROUGHPUT

In this model throughput refers to the procedure by which matter, energy and information that is modified or transformed within the

system. In the present study it includes the listening to Mozart music in experimental group for 10minutes/day.

OUTPUT

Output refers to matter, energy and information that are released from the interaction of the system into the environment. In the present study it involves the pain score obtained from the post operative children after Mozart Music therapy.
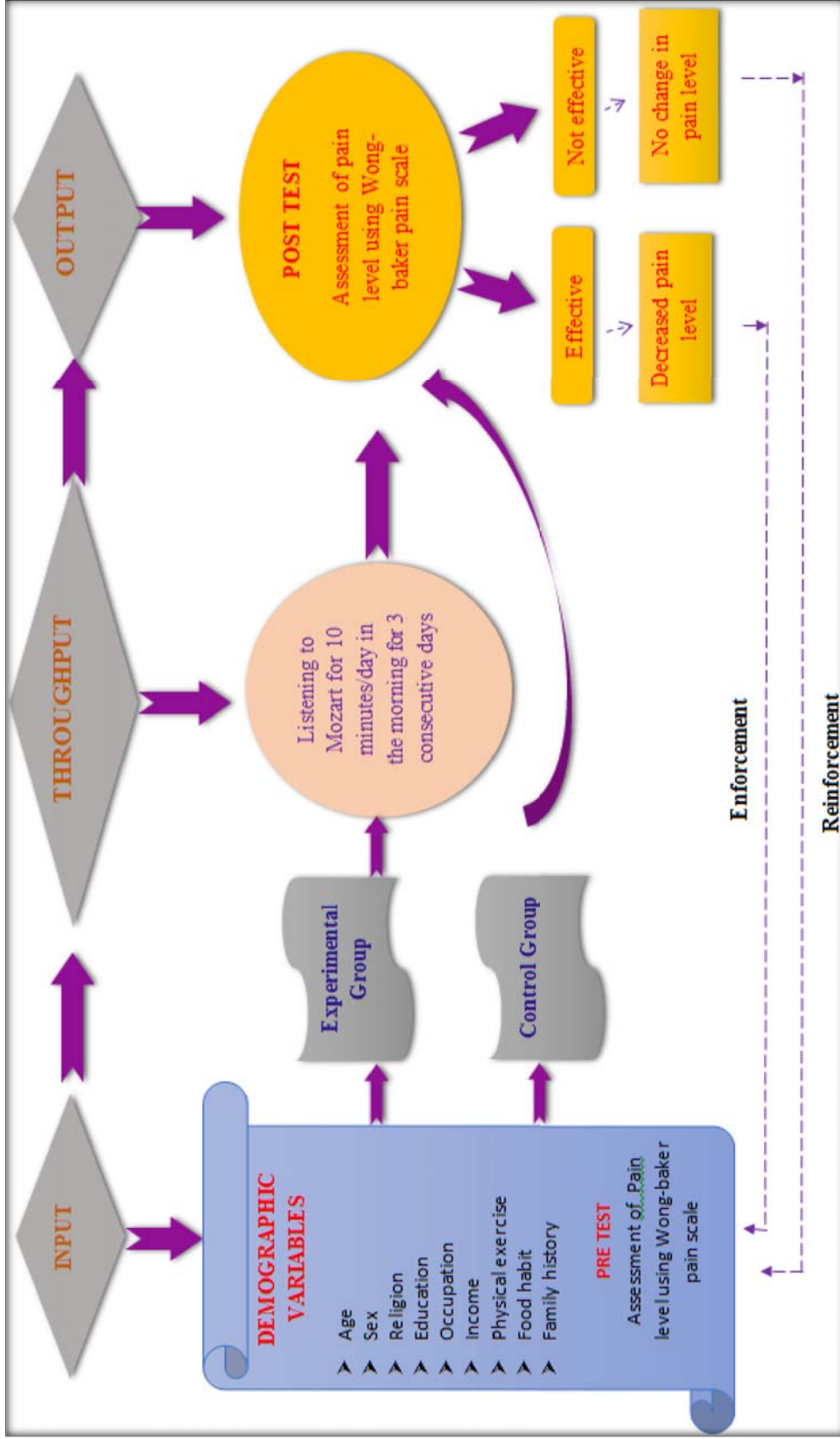
FIGURE 1: CONCEPTUAL FRAME WORK: MODIFIED LUDWIG VON BERTALANFFY'S GENERAL SYSTEM THEORY (1972)

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1.10 OUTLINE OF THE REPORT

Chapter 1 **:** Dealt with background of the study, need for the study, statement of the problem, objectives, operational definition, research hypotheses, assumptions, conceptual framework and delimitations of the study.

Chapter 2 **:** Deals with review of literature

Chapter 3 **:** Presents the methodology of the study and plan for data analysis

Chapter 4 **:** Focuses on data analysis and data interpretation

Chapter 5 **:** Enumerate the discussion of the study

Chapter 6 **:** Gives the summary, conclusion, implication, limitations and recommendations for the study

REVIEW OF LITERATURE

A literature review surveys existing research from scholarly articles, books, dissertations and conference proceedings that are relevant to the area of study. A literature review is not a summary; rather it is an evaluation of each work. It seeks for the relationships between different works and how they relate the present study.

The literature is classified into four sessions
i)   Literature related to post operative pain
ii)   Literature related to effect of Music therapy on pain
iii)   Literature related to benefits of Mozart music
iv)   Literature related to nursing care and pain management

(i) Literature related post operative pain

Alison Twycross et al., (2013), conducted a study on children's perceptions about the quality of postoperative pain management. Most children experienced moderate to severe pain postoperatively. Participants appeared satisfied with the care provided despite experiencing moderate to severe pain. This may be attributable to beliefs that nurses would do everything they could to relieve pain and that some pain is to be expected post-surgery.

Liu Weiran et al., (2013) conducted a study on postoperative pain management using 128 questionnaire to assess postoperative pain on 120 samples. 82.8% of study participants claimed that their postoperative pain was relieved within 3 days of their operations. while 91.4% of surveyed children experienced moderate to severe pain, 51.6% received no treatment for their postoperative pain, and 14.9% complained that medical personnel failed to manage their pain. 20.2%

were unsatisfied with their pain management, indicating that treatment did not meet their expectations.

Dr Marion Good of the National Institute of Nursing Research (NINR) (2012) studied three groups of children undergoing surgeries. Along with the conventional pain medications one of the groups received jaw relaxation technique, another listened to music, and the third group underwent a combination of relaxation and music. The three groups reported much reduced pain than the control group which received only the pain medications.

Vecihe Duzel et al., (2012) conducted a study to evaluate the skills of nurses to evaluate pain among postoperative children. Investigator selected 47 nurses and 94 post operative children as samples. The investigator concluded that nurses and the children evaluated the postoperative pain in the same sense. Pain evaluation investigations are recommended to be done with the attendance of more nurses and children, and their results should be shared with all nurses.

Masaaki Machino et al., (2010) conducted a prospective randomized study for postoperative pain relief. Fifty consecutive children were enrolled and were divided into two groups for comparative results. Twenty-two children were assigned to a morphine group. The other 28 children were assigned to a control group. Pain intensity was assessed using the Visual Analog Scale (VAS). During the initial 12 h after surgery, the VAS score was significantly lower in the morphine group ($p<0.05$). The use of supplemental analgesic drugs was significantly less in the morphine group. Although the use of morphine requires appropriate postoperative care, an intrathecal morphine injection can be an attractive analgesic for the postoperative pain of lower extremity fractures.

Apfelbaum JL et al., (2003), stated that an understanding of children attitudes and concerns about postoperative pain is important to improve postoperative care. 250 clients who had undergone surgical procedures were asked about the severity of postsurgical pain. 80% of children experienced acute pain after surgery. 25% of children who received pain medications experienced adverse effects; however, almost 90% of them were satisfied with their pain medications. Approximately two thirds of children reported that a health care professional talked with them about their pain. Despite an increased focus on pain management programs and the development of new standards for pain management are required to improve children' perspective on postoperative pain experience.

Chung JW et al., (2003), published a survey on current pain intensity and postoperative pain management, and differences regarding pain and satisfaction levels. Among 294 postoperative children approximately 85% complained about varying degrees of pain. Most children complained of mild to moderate pain (median = 2 on a 10-point scale). 80% of the clients indicated that the nurses reminded them to report pain when it occurred. Only 143 (48.6%) agreed that the nurses sufficiently emphasized the importance of pain relief. Those who received acute pain services, reported lower levels of current pain intensity.65% of the subjects were satisfied with all levels of health care providers, regarding their postoperative pain management.

(ii) Literature related to effectiveness of music therapy on pain.

Esra Akın Korhan et al., (2014), conducted a quasi experimental study to evaluate the effectiveness of relaxing music therapy among children with post operative pain. The sample size was 30 children. Convenient sampling technique was used. Samples received 60 minutes of music therapy. The study concluded that the inclusion of

music therapy in the routine care of post operative children could provide nurses with an effective practice for reducing children' pain intensity.

Kelly D. Allred et al., (2010) conducted a comparative study to evaluate the effectiveness of Music therapy and quiet rest period to reduce pain among post operative patient. Fifty-six samples were randomly assigned ; 28 in each group. A visual analog scale was used to measure pain and anxiety. Physiologic measures, including blood pressure, heart rate, oxygen saturation, and respiratory rate, were also obtained. This research provided evidence that Music therapy alleviated post operative pain than quiet rest period. Hence nurses can offer music as an intervention to decrease pain.

Jeffrey A et al., (2008) conducted clinical trial to evaluate the effectiveness of music therapy on reducing post operative pain among children. 1513 subjects were selected under 19 trials. When analysed by outcome, music therapy reduced anxiety (SMD- 0.39; 95% CI,-0.76 to -0.03;5 studies; n=284 I2=52.4%) and Pain (SMD-0.39;95% CI,- 0.66to- 0.11;5 studies; N=465;I2=49.7%). The study concluded that music is effective in reducing pain among post operative children. Thus Music can be considered an adjunctive therapy in clinical situations that produces pain.

Thamine P et al., (2004) a randomized clinical trial to evaluate the effectiveness of classical music therapy among post operative children below 16 years of age. The sample size was 84 children. The investigator recorded heart rate, blood pressure, mean blood pressure, respiratory rate, temperature and oxygen saturation, plus a facial pain score. Statically significant differences were observed between two groups after the intervention in the subjective facial pain scale and the objective parameters heart rate and respiratory rate

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(p<0.001, p=0.04 and p=0.02, respectively). The study concluded that music therapy benefits to alleviate pain.

(iii)   Literature related to benefits of Mozart music therapy

Salene Ostuni et al., (2014), states that Forty-two children were enrolled randomly assigned to the music-group or the non-music group .Slow classical Mozart music and pauses were recorded and played via ambient speakers. Heart rate, blood pressure, oxygen saturation, glucose and cortisol levels, faces pain scale and face, legs, activity, cry, consolability (FLACC) Pain Scale were considered as indicators of response to stress and pain experience. The non-music group showed progressive increasing values of glycemia; in music-group the curve of glycemia presented a plateau pattern (P<0.001). Positive impact on reactions to pain was noted using the FLACC scale. Music improved cardiovascular parameters, and is more evident in older children.

Harmat L et al., (2008), conducted a study to investigate the effects of Mozart music on insomnia among students. 94 samples were selected. Participants listened for 45 minutes either to relaxing classical music (Group 1) or an audiobook (Group 2) at bedtime for 3 weeks. The control group (Group 3) received no intervention. Sleep quality was measured using the Pittsburg Sleep Quality Index. Repeated measures anova revealed a main effect of TIME (P < 0.0001) and an interaction between TIME and GROUPS (P < 0.0001). Post hoc tests with Bonferroni correction showed that Mozart music statistically significantly improved sleep quality (P < 0.0001). The study concluded that Mozart Relaxing classical music is an effective intervention in reducing sleeping problems.

Maratos AS et al., (2008) examined the efficacy of Mozart music therapy with standard care compared to standard care alone among people with depression and to compare the effects of music therapy for people with depression against other psychological or pharmacological therapies. The primary outcome was reduction in symptoms of depression, based on a continuous scale. Five studies met the inclusion criteria of the review. Four of the five studies individually reported greater reduction in symptoms of depression among those randomised to music therapy than to those in standard care conditions. The fifth study, in which music therapy was used as an active control treatment, reported no significant change in mental state for music therapy compared with standard care.

Labbé E et al., (2007) States that Listening to classical Mozart music and self-selected relaxing music after exposure to a stressor should result in significant reductions in anxiety, anger, and sympathetic nervous system arousal, and increased relaxation compared to those who sit in silence or listen to heavy metal music. 56 children, 15 males and 41 females, were exposed to different types of music genres after experiencing a stressful test. Several 4 x 2 mixed design analyses of variance were conducted to determine the effects of music and silence conditions and time on emotional state and physiological arousal. Results indicated listening to self-select or Mozart classical music, after exposure to a stressor, significantly reduces negative emotional states and physiological arousal compared to listening to heavy metal music or sitting in silence.

Teng XF et al., (2007) conducted a study to evaluate the effectiveness of Mozart music in lowering Blood pressure among hypertensive patient. Thirty subjects aged 63-93 years participated in the study and were randomly assigned into either a music group (n=15) or a control group (n=15). Subjects in the music group listened to selected

music, 25 min every day for 4 weeks. After 4 weeks, the average decrease for the music group (n=12) in systolic BP (SBP) and diastolic BP (DBP) was 11.8 mmHg (p=0.008) and 4.7 mmHg (p=0.218) respectively. The results suggested that listening to a certain type of music serves to reduce high SBP and therefore Mozart music therapy may be an alterative for hypertension treatment.

Nilsson U et al., (2005) conducted a clinical trial to evaluate the Mozart music therapy to reduce stress and immune response among post operative clients. The sample size was 75. They were randomly selected. Stress response was assessed by determining the plasma cortisol and blood glucose levels. Immune function was evaluated by studying immunoglobulin A (IgA) levels. There was a significantly greater decrease in the level of cortisol in the postoperative music group vs. the control group (206 and 72 mmol L(-1) decreases, respectively) after 2 h in the post anesthesia care unit. The postoperative music group had less anxiety and pain and required less morphine than control group.

Bryant-Jones et al., (2003) This report describes a program for increasing math achievement through the use of musical interventions including repeated exposure to Mozart classical music and introduction to teacher-made songs that introduces mathematical concepts in the music classroom. The students of the targeted second and fourth grade classes exhibited low levels of achievement according to local and national standards. Post intervention data indicated a significant increase in students' mathematics achievement in the targeted skills for both second and fourth grades, including students with disabilities. Motivation and classroom climate were also noted.

Khalfa S et al., (2003) conducted a comparative study to determine whether Mozart music (as compared to silence) might facilitate recovery from a psychologically stressful task. To this aim, changes in salivary

cortisol levels were regularly monitored in 24 children before and after the Trier Social Stress Test. The data showed that in the presence of music, the salivary cortisol level ceased to increase after the stressor, whereas in silence it continued to increase for 30 minutes. The study concluded that Mozart music was more effective compared to silence.

Bodner M et al., (2001) states that a wide range of behavioural experiments showed that listening to a Mozart Sonata (K.448) gave subsequent enhancements. An EEG coherence study gave evidence for a carryover from that Mozart Sonata listening condition to the subsequent spatial-temporal task in specific cortical regions. The article presents fMRI studies comparing cortical blood flow activation by the Mozart Sonata vs. other music. In addition to expected temporal cortex activation, it reported statistically significant differences in activation by the Mozart Sonata in comparison to Beethoven's Fur Elise and piano music.

J S Jenkins (2001) made the surprising claim that, after listening to Mozart's sonata from two pianos (K448) for 10 minutes, normal subjects showed significantly better spatial reasoning skills than after periods of listening to relaxation instructions designed to lower blood pressure or silence. The mean spatial IQ scores were 8 and 9 points higher after listening to the music than in the other two conditions. The enhancing effect did not extend beyond 10-15 minutes. These results proved controversial. Some investigators were unable to reproduce the findings but others confirmed that listening to Mozart's sonata K448 produced a small increase in spatial-temporal performance, as measured by various tests derived from the Stanford—Binet scale such as paper-cutting and folding procedures or pencil-and-paper maze tasks.

Hetland et al., (2000) has demonstrated that 10 min exposure to classical Mozart music can influence performance on a spatial task. The

effect, however, has not been robust, suggesting sensitivity to individual differences and task operation. 16 female and 16 male completed two equivalent spatial tests, one following a control procedure and one following the presentation of Mozart's Sonata for two pianos in D major. Performance showed a small but significant improvement immediately following presentation of the music.

(iv) Literature related to Nursing Care and Pain management

Panagiotis Kiekkas et al., (2015) conducted a descriptive, cross-sectional study to investigate knowledge and attitudes on postoperative pain of surgical department nurses. 182 questionnaires were used. Average scores were 45.35% for modified KASRP tool; 28.57% for pain assessment; 55.44% for general pain management; and 47.13% for use of analgesics. Four of the five most commonly missed items referred to use of analgesics. More previous personal experience of postoperative pain (p = .002) and being a registered nurse (p = .015) predicted higher modified KASRP tool score. The knowledge deficits and negative attitudes of the nurses toward postoperative pain high lightened the role of pregraduate and continuing education, appropriately specialized for each surgical department.

Mimi Mun Yee Tse et al., (2014) conducted a quasi experimental pretest and posttest study to examine the effectiveness of a pain management program (PMP) in enhancing the knowledge and attitudes of health care workers in pain management. 4 nursing homes with 88 samples joined the 8-week pain management program. A deficit in knowledge and attitudes related to pain management was prominent before the pain management program, and there was a significant increase in pain knowledge and attitudes from 7.9 ± SD 3.52 to 19.2 ± SD4.4 (p < .05) after the 8-week pain management program. A pain management program can improve the knowledge and attitudes of

nursing staff and enable them to provide adequate and appropriate care to persons in pain. Pain management program for nurses and all health care professionals are important in enhancing care in provision of pain management.

Sandra L. Siedlecki et al., (2014) states that 30% of the population suffered from some form of chronic pain. Therefore, it is likely that 30% of children who are admitted to the hospital for acute care needs also have an underlying chronic pain issue. Nurses dealing with pain in the acute care setting may limit their assessment and management of pain to acute pain. Though there is a significant body of research related to the management of acute pain and the management of chronic pain. The purpose of this study was to develop a theoretical understanding of nurses' assessment and decision-making behaviors related to the care of children with chronic pain.

Barbara Voshall et al., (2013) conducted a descriptive correlational design to examine nursing faculty knowledge and attitudes in pain management. 96 nursing faculty participated from 16 schools of nursing. Findings identified that most of the nursing faculty recalled being taught about pain management in their basic education, but less than one-half felt adequately prepared. Most respondents said that they taught pain management, yet fewer than one-half identified that they used specific pain management guidelines. Faculty demonstrated adequate knowledge on pain assessment, spiritual/cultural issues, and pathophysiology. Areas of weakness were found in medications, interventions, and addiction. Younger nursing faculty remembered being taught pain management in nursing school and felt more adequately prepared than older nursing faculty. Faculty that reported practicing for longer periods of time felt less prepared in pain management than faculty who practiced for shorter periods of time. More continuing education in pain management may be needed for older nurses.

Lavonia Francis et al., (2013) conducted a study to determine nurses' knowledge and attitudes regarding postoperative pain and identify postoperative children' pain intensity experiences. The assessment and management of acute postoperative pain is important in the care of postoperative surgical children. Inadequate relief of postoperative pain can contribute to postoperative complications such as atelectasis, deep vein thrombosis, and delayed wound healing. A pilot study with an exploratory design was conducted at a large teaching hospital in the eastern United States. The convenience samples included 31 nurses from the gastrointestinal and urologic surgical units and 14 first- and second-day adult postoperative open and laparoscopic gastrointestinal and urologic children who received patient-controlled analgesia (PCA). The Knowledge and Attitudes Survey Regarding Pain was used to measure nurses' knowledge about pain management. The Short-Form McGill Pain Questionnaire (SF-MPQ) was used to measure children' pain intensity. The nurses' mean score on the Knowledge and Attitudes Survey Regarding Pain was 69.3%. Children experienced moderate pain, as indicated by the score on the SF-MPQ. The findings revealed that there is a need to increase nurses' knowledge of pain management.

Wang HL (2013) Conducted a cross-sectional study among intensive care unit nurses (n = 370). They were recruited from 16 hospitals chosen by stratified sampling. Data were collected on nurses' knowledge of pain management using the Nurses' Knowledge and Attitudes Survey-Taiwanese version, rate for the knowledge scale was 53.4%, indicating poor knowledge of pain management. Knowledge of pain management was significantly and negatively related to perceived barriers to pain management. In addition, scores for knowledge and perceived barriers differed significantly by specific intensive care unit. Knowledge also differed significantly by nurses' education level,

clinical competence level (nursing ladder) and hospital accreditation category. Results indicate an urgent need to strengthen pain management education by including case analysis for intensive care nurses.

According to the International Council of Nurses [ICN] (2006) the nurses' primary responsibility is towards people who need nursing care. The nurses shall provide nursing care with respect for the human rights and concern about people's values, customs and beliefs. According to Ministry of Health and Social Welfare (2008) in Tanzania the nurses' main focus is to use objective information, sound reasoning with measurable and observable result. The process of nursing is used to identify, diagnose and treat children and includes assessment, nursing diagnose, planning, implementation and evaluation. Nurses' responsibility is to assess the children' state of health by taking health history and examine the children' behavior and physical status (Ministry of Health and Social Welfare, 2008). The nursing process is used as a tool to encourage the nurses and allows them to differentiate their work from other health care professionals, e.g. physicians. According to Ministry of Health and social welfare the aim of nursing is to logically and methodically assist children to cope with problems which are a threat to their normal physical and mental functioning. The need of care is universal and it is in the nature of care to respect the human rights, the rights of culture, the right to life, to dignity and to be treated with respect (ICN, 2006).

RESEARCH METHODOLOGY

Research methodology is the overall plan for addressing the research problem. It covers multiple aspects of the study's structure. It acts as a guide for planning, implementation and analysis of the study. It includes the descriptions of the research approaches, research design, dependent and independent variables, sampling design, sampling criteria, description of the tool, pilot study, and a planned format for data collection and a plan for data analysis.

3.1 RESEARCH APPROACH

The research approach used in this study was Quantitative research approach in accordance to the nature of the problem and to accomplish the objectives of the study.

3.2 RESEARCH DESIGN

The design selected for the present study is true experimental design to assess the effectiveness of Mozart music therapy on post operative pain among children undergoing surgery in selected hospitals at Chennai.

3.3 VARIABLES

3.3.1 Independent Variable

The independent variable of this study was Mozart music therapy.

3.3.2 Dependent Variable

The dependent variable of this study was postoperative pain among children.

3.3.3 Extraneous variables

The extraneous variables of this study include age, sex, religion, education of the child, father's education, mother's education, father's occupation, mother's occupation, family income, previous Surgery experience, play activities of the child during hospitalization.

3.4 SETTING

The study was conducted in the Chettinad Hospital, Chennai. The Hospital was randomly selected in which the experimental group samples were selected. The control group samples were obtained from the same hospital.

3.5 POPULATION

All the children admitted in the postoperative ward between the age group of 6-12 years were considered as the population of the study.

3.5.1 Target population

The target population of the study included all the postoperative children in the age group of 6-12 years.

3.5.2 Accessible population

The accessible population of the study included the postoperative children between the age group of 6-12 years at selected hospitals.

3.6 SAMPLE

30 Children admitted in the pediatric ward at Chettinad Hospital who satisfied the inclusion criteria were allotted to experimental and control group for the first 2 weeks followed by allotment of 30 Children for control group in the following next 2 weeks.

3.7 SAMPLE SIZE

The total number of samples was 60 out of which 30 samples were experimental group and 30 samples were control group.

3.8 CRITERIA FOR SAMPLE SELECTION

3.8.1 Inclusion criteria
- Children who have undergone surgery in the age group of 6-12 years.
- Both male and female children.
- Willingness of the parents and the child.
- Children who are in the 1st post operative day.

3.8.2 Exclusion criteria
- Children who are mentally retarded.
- Children with hearing impairment.
- Children who are not interested in listening to music.
- Children who are under strict isolation.

3.9 SAMPLING TECHNIQUE

Simple random sampling technique by using lottery method was adopted for both experimental and control group.

3.10 DEVELOPMENT AND DESCRIPTION OF THE TOOL

Section A

Baseline Proforma: This section consists of questions which seek information regarding demographic data such as age, sex, religion, education of the child, fathers education, mothers education, fathers occupation, mothers occupation, family income, previous surgery experience, play activities of the child during hospitalization..

Section B

Wong-Baker FACES Pain Rating Scale.

The investigator followed Wong-Baker FACES pain Rating Scale

Score interpretation

The score were interpreted as given below

- **Face 0** is very happy because he doesn't hurt at all.

- **Face 2** hurts just a little bit.

- **Face 4** hurts a little more.

- **Face 6** hurts even more.

- **Face 8** hurts a whole lot.

- **Face 10** hurts as much as you can imagine, although you don't have to be crying to feel this bad

3.11 CONTENT VALIDITY

The content validity was ascertained from the following field of expertise

Child health nursing specialists - 3

Pediatrician   - 1

Statistician   - 1

All the modifications were done in the tool, all experts gave their consensus and the tool was finalized.

3.12 ETHICAL CONSIDERATION

The study was approved by institutional Ethics Committee which was held on 04.03.2014 at Venkateswara Nursing College and the ethical principles followed were:

1. BENEFICIENCE

The investigator followed the fundamental ethical principal of beneficence by adhering to

a. **The right to freedom from harm and discomfort**

The study was beneficial for the participants as it reduced the perception of pain by listening to Mozart music.

b. **The right to protect from exploitation**

The investigator explained the procedures and nature of the study to the participants and ensured that none of the participants in both experimental and control group would be exploited or denied fair treatment.

2. RESPECT FOR HUMAN DIGNITY

The investigator followed the second ethical principle of respect for human dignity. It includes the right to self-determination and the right to self-disclosure.

a. **The right to self determination**

The investigator gave full freedom to the participants to decide voluntarily weather to participate in the study or to withdraw from the study and the right to ask questions.

b. **The right to full disclosure**

The researcher has fully described the nature of the study, the person's right to refuse participation and the researcher's responsibility based on which both oral and written consent was obtained from the participants.

3. JUSTICE

The researcher adhered to the third ethical principle of justice, it includes participant's right to fair treatment and right to privacy.

a. **Right to fair treatment**

The researcher selected the study participants based on the research requirements. The investigator followed hospital routine for control group, during the period of data collection and administered the intervention to the postoperative children in the control group after the completion of post test.

b. **Right to privacy**

The researcher maintained the study participant's privacy throughout the study.

4. CONFIDENTIALITY

The researcher maintained confidentiality of the data provided by the study.

3.1.3 RELIABILITY

Reliability of the tool was tested by using split half spearman Brown prophesy formula.

$$\text{Reliability- } 2r/1tr = 0.08$$

During the pilot study, practicability and feasibility were tested. The parents who accepted for Mozart music therapy alone were included for the main study.

3.14 PILOT STUDY

The ethical clearance was obtained from Venkateswara Nursing College ethical committee. After getting content validity from Nursing and Medical experts, the pilot study was conducted in Chettinad Hospital Chennai.

A sample of six children who met the inclusion criteria were selected by simple random technique. The investigator introduced himself to the subjects and socio-demographic data was collected from each subjects. Pre-test was conducted for both the group using Wong-Baker Scale. On the same day Mozart Music therapy was given for 10 minutes to the experimental group for 3 consecutive days. The post test was conducted after Mozart music therapy for both the groups. The results were analysed based on the scores obtained using Wong-Baker scale.

3.15 PROCEDURE FOR DATA COLLECTION

After obtaining the permission from the Dean of Chettinad University and HOD of pediatric department, the main study was conducted. The children were selected using simple random technique using lottery method in the post operative ward of Chettinad Hospital and were allotted as experimental and control group. The investigator introduced himself to the subjects and developed good rapport with them. Confidentiality was maintained for each sample while collecting data from each child. Pre test pain score was assessed both in experimental and control group by using Wong-Baker pain scale. Each hospitalized children was given Mozart music therapy at the duration of 10 minutes for 3 consecutive days. The post test of pain in experimental and control group were assessed on the third day using Wong-Baker pain scale. Each day 6-8 samples were given Mozart Music therapy. The collection of data was performed within the stipulated time of 4 weeks.

3.16 PLAN FOR DATA ANALYSIS

Both descriptive and inferential statistics were used to analyse and interpret the data.

3.16.1 Descriptive Statistics

- Frequency and percentage distribution were used to analyse the demographic variables.
- Mean and standard deviation were used to analyse the level of Pain in pre and post test scores.

3.16.2 Inferential Statistics

- Paired "t" test and independent 't' test was used for analysing the effectiveness of Mozart music therapy on post operative children between experimental and control group.
- Chi- Square test was used to find out the association of demographic variables on level of pain in experimental group.
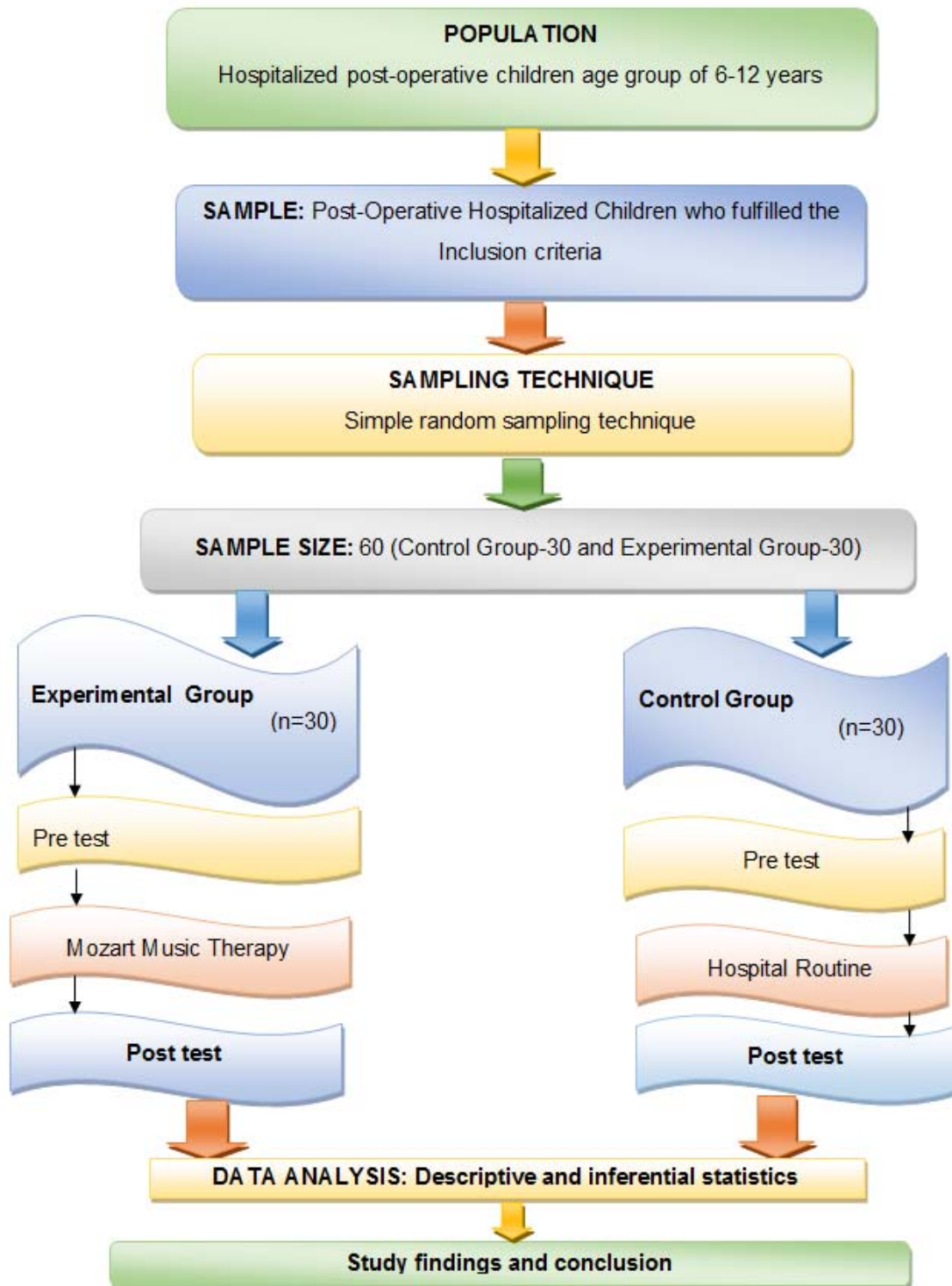
FIGURE 2: SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY

DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of the data collected from 60 children undergoing surgery at selected hospital. The data collected was organized, tabulated and analyzed according to the objectives. The findings based on the descriptive and inferential statistical analysis are presented under the following sections.

ORGANISATION OF THE DATA

Section A: Description of demographic variables of children undergoing surgery in the experimental and control group.

Section B: Assessment of pretest and post test level of pain among children undergoing surgery in the experimental and control group.

Section C: Effectiveness of Mozart Music Therapy on post operative pain among children undergoing surgery within and between the experimental and control group.

Section D: Association of post test level of pain among children with selected demographic variables.

SECTION A: DESCRIPTION OF DEMOGRAPHIC VARIABLES OF CHILDREN UNDERGOING SURGERY IN THE EXPERIMENTAL AND CONTROL GROUP.

Table 4.1: Frequency and percentage distribution of demographic variables of the children undergoing surgery in the experimental and control group

N = 60

Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
Age of the child				
6 - 8 years	5	16.67	4	13.33
9 - 10 years	17	56.67	12	40.00
11 - 12 years	8	26.67	14	46.67
Sex				
Male	13	43.33	11	36.67
Female	17	56.67	19	63.33
Religion				
Hindu	11	36.67	16	53.33
Muslim	9	30.00	6	20.00
Christian	10	33.33	8	26.67
Others	0	0.00	0	0.00
Education of the child				
Primary	22	73.33	16	53.33
Secondary	8	26.67	14	46.67
Father's education				
Graduate	19	63.33	23	76.67
Secondary education	8	26.67	7	23.33
Primary education	3	10.00	0	0.00
Mother's education				
Graduate	21	70.00	19	63.33
Secondary education	8	26.67	8	26.67
Primary education	1	3.33	3	10.00
Father's occupation				

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Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
Government employee	3	10.00	5	16.67
Private employee	24	80.00	18	60.00
Self-employed	3	10.00	7	23.33
Mother's occupation				
Government employee	2	6.67	4	13.33
Private employee	13	43.33	16	53.33
Self-employed	4	13.33	3	10.00
Homemaker	11	36.67	7	23.33
Family income				
<Rs.10,000/month	6	20.00	7	23.33
Rs.10,000 to Rs.20,000/month	10	33.33	11	36.67
Rs.21,000 to Rs.30,000/month	6	20.00	5	16.67
Above Rs.30,000/- month	8	26.67	7	23.33
Previous experience of surgery				
Yes	4	13.33	7	23.33
No	26	86.67	23	76.67
Play activity of the child during hospitalization				
Yes	9	30.00	4	13.33
No	21	70.00	26	86.67

The table 4.1 shows that in the experimental group, majority 17(56.67%) were in the age group of 9 – 10 years, 17(56.67%) were female, 11(36.67%) were Hindus, 22(73.33%) were studying in primary, 19(63.33%) fathers were graduates, 21(70%) mothers were graduates, 24(80%) fathers were working in private organization, 13(43.33%) mothers were working in private organization, 19(33.33%) had family monthly income of Rs.10,000 to Rs.20,000/month, 27(86.67%) had no

previous surgery experience and 21(70%) had no play activity during hospitalization.

Whereas in the control group, majority 14(46.67%) were in the age group of 11 – 12 years, 19(63.33%) were female, 16(53.33%) were Hindus, 16(53.33%) were studying in primary, 23(76.67%) fathers were graduates, 19(63.33%) mothers were graduates, 18(60%) fathers were working in private organization, 16(53.33%) mothers were working in private organization, 11(36.67%) had family monthly income of Rs.10,000 to Rs.20,000/month, 23(76.67%) had no previous surgery experience and 26(86.67%) had no play activity during hospitalization.

SECTION B: ASSESSMENT OF PRETEST AND POST TEST LEVEL OF PAIN AMONG CHILDREN UNDERGONE SURGERY IN THE EXPERIMENTAL AND CONTROL GROUP.

Table 4.2: Frequency and percentage distribution of pretest and post test level of pain among children undergoing surgery in the experimental group

n=30

Pain	No Pain (0)		Mild Pain (1 – 3)		Moderate Pain (4 – 6)		Severe Pain (7 – 10)	
	No.	%	No.	%	No.	%	No.	%
Pretest	0	0	0	0	30	100.0	0	0
Post Test	0	0	22	73.33	8	26.67	0	0

The table 4.2 shows that in the pretest, almost all 30(100%) of children had moderate pain in the experimental group and whereas in the post test after the Mozart Music therapy majority 22(73.33%) had mild pain and 8(26.67%) had moderate pain in the experimental group.
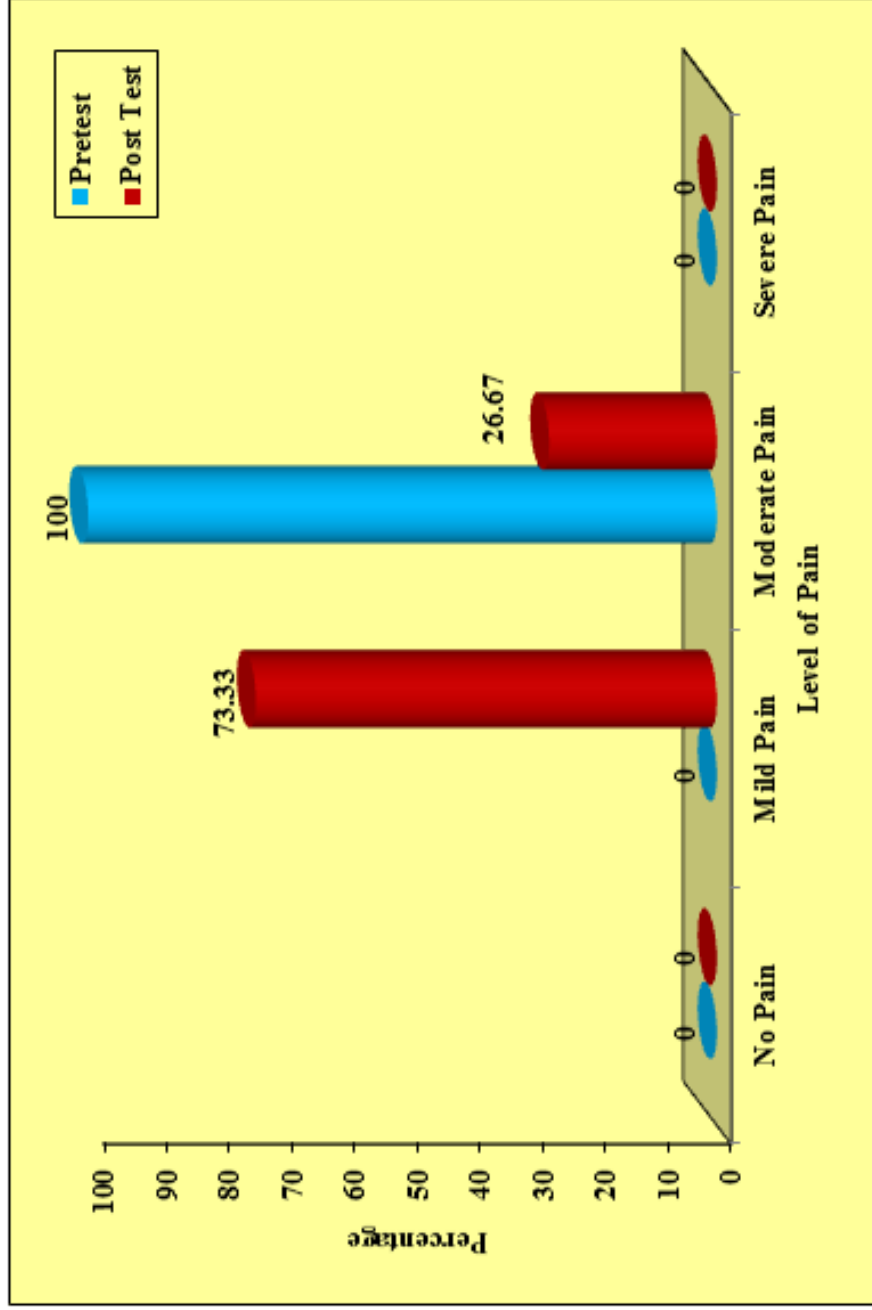
FIGURE 3: PERCENTAGE DISTRIBUTION OF PRETEST AND POST TEST LEVEL OF PAIN AMONG CHILDREN UNDERGONE SURGERY IN THE EXPERIMENTAL GROUP

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Table 4.3: Frequency and percentage distribution of pretest and post test
level of pain among children undergone surgery in the control
group

n=30

Pain	No Pain (0)		Mild Pain (1 – 3)		Moderate Pain (4 – 6)		Severe Pain (7 – 10)	
	No.	%	No.	%	No.	%	No.	%
Pretest	0	0	0	0	30	100.0	0	0
Post Test	0	0	0	0	30	100.0	0	0

The table 4.3 shows that both in the pretest and post test, almost all 30(100%) of children had moderate level of pain in the control group.
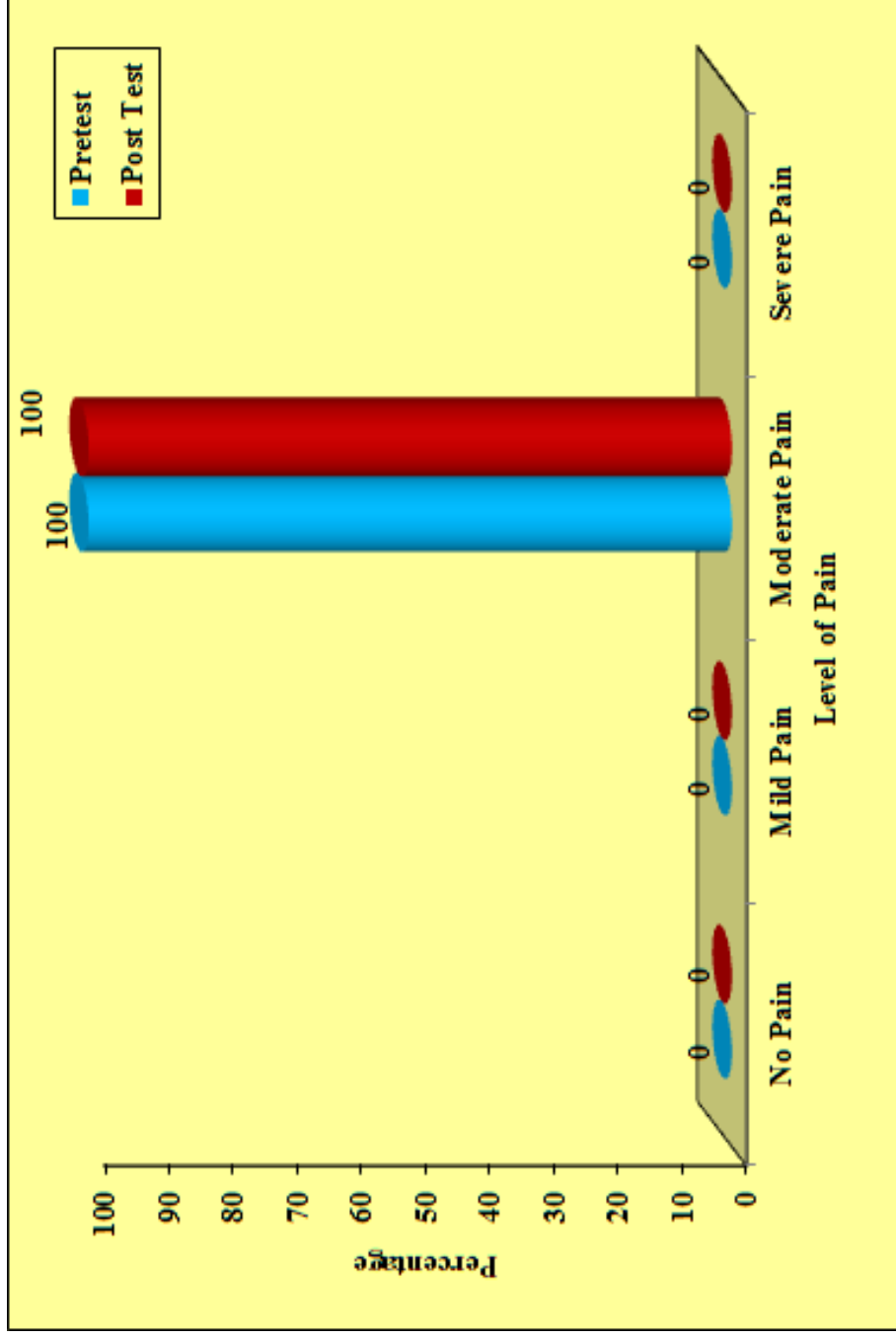
FIGURE 4: PERCENTAGE DISTRIBUTION OF PRETEST AND POST TEST LEVEL OF PAIN AMONG CHILDREN UNDERGONE SURGERY IN THE CONTROL GROUP

SECTION C: EFFECTIVENESS OF MOZART MUSIC THERAPY ON POST OPERATIVE PAIN AMONG CHILDREN UNDERGOING SURGERY WITHIN AND BETWEEN THE EXPERIMENTAL AND CONTROL GROUP.

Table 4.4: Comparison of pretest and post test pain scores among children undergoing surgery in the experimental group.

n = 30

Pain	Mean	S.D	Paired 't' Value
Pretest	5.43	0.50	t = 11.366
Post Test	3.10	1.06	p = 0.000, S***

***p<0.001, S – Significant

This table 4.4 shows that the pretest mean score of pain among children under surgery was 5.43 with S.D 0.50 and the post test mean score of pain was 3.10 with S.D 1.06. The calculated paired 't' value of t = 11.366 was found to be statistically significant at p<0.001 level. This clearly indicates that after the administration of Mozart Music therapy the post operative pain was considerably reduced among children who underwent surgery and this clearly indicates that Mozart music therapy was found to be effective in reducing the pain among children in the experimental group.

Table 4.5: Comparison of pretest and post test pain scores among children undergoing surgery in the control group.

n = 30

Pain	Mean	S.D	Paired 't' Value
Pretest	5.43	0.50	-
Post Test	5.43	0.50	

The table 4.5 shows that the pretest mean score of pain among children under surgery was 5.43 with S.D 0.50 and the post test mean score of pain was 5.43 with S.D 0.50. Since there was no difference in the mean and S.D 't' value cannot be computed which clearly indicates that there was no significant decrease in the level of pain among children in the control group.

Table 4.6: Comparison of post test pain scores among children undergoing surgery between the experimental and control group.

N = 60(30+30)

Post Test Pain	Mean	S.D	Unpaired 't' Value
Experimental Group	3.10	1.06	t = 10.873
Control Group	5.43	0.50	p = 0.000, S***

***p<0.001, S – Significant

The table 4.6 shows that the post test mean score of pain among children in the experimental group was 3.10 with S.D 1.06 and the post test mean score of pain among children in the control group was 5.43 with S.D 0.50. The calculated unpaired 't' value of t = 10.873 was found to be statistically significant at p<0.001 level. This clearly indicates that after the administration of Mozart Music Therapy among children in the experimental group there was a significant reduction in the level of pain than the children in the control group who underwent normal hospital routine measures.

SECTION D: ASSOCIATION OF POST TEST LEVEL OF PAIN AMONG CHILDREN WITH SELECTED DEMOGRAPHIC VARIABLES.

Table 4.7: Association of post test level of pain among children undergoing surgery with their selected demographic variables in the experimental group.

n = 30

Demographic Variables	Mild Pain		Moderate Pain		Chi-Square Value
	No.	%	No.	%	
Age of the child					$\chi^2 = 0.551$ d.f = 2 p = 0.759 N.S
6 - 8 years	3	10.0	2	6.7	
9 - 10 years	13	43.3	4	13.3	
11 - 12 years	6	20.0	2	6.7	
Sex					$\chi^2 = 0.197$ d.f = 1 p = 0.657 N.S
Male	9	30.0	4	13.3	
Female	13	43.3	4	13.3	
Religion					$\chi^2 = 2.025$ d.f = 2 p = 0.363 N.S
Hindu	8	26.7	3	10.0	
Muslim	8	26.7	1	3.3	
Christian	6	20.0	4	13.3	
Others	-	-	-	-	
Education of the child					$\chi^2 = 0.015$ d.f = 1 p = 0.901 N.S
Primary	16	53.3	6	20.0	
Secondary	6	20.0	2	6.7	
Father's education					$\chi^2 = 1.124$ d.f = 2 p = 0.570 N.S
Graduate	13	43.3	6	20.0	
Secondary education	7	23.3	1	3.3	
Primary education	2	6.7	1	3.3	
Mother's education					$\chi^2 = 0.414$ d.f = 2 p = 0.813 N.S
Graduate	15	50.0	6	20.0	
Secondary education	6	20.0	2	6.7	
Primary education	1	3.3	0	0	
Father's occupation					$\chi^2 = 9.759$

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Demographic Variables	Mild Pain		Moderate Pain		Chi-Square Value
	No.	%	No.	%	
Government employee	0	0	3	10.0	d.f = 2 p = 0.008 S**
Private employee	19	63.3	5	16.7	
Self-employed	3	10.0	0	0	
Mother's occupation					$\chi^2 = 5.996$ d.f = 3 p = 0.112 N.S
Government employee	2	6.7	0	0	
Private employee	10	33.3	3	10.0	
Self-employed	1	3.3	3	10.0	
Homemaker	9	30.0	2	6.7	
Family income					$\chi^2 = 2.173$ d.f = 3 p = 0.537 N.S
<Rs.10,000/month	4	13.3	2	6.7	
Rs.10,000 to Rs.20,000/month	6	20.0	4	13.3	
Rs.21,000 to Rs.30,000/month	5	16.7	1	3.3	
Above Rs.30,000/- month	7	23.3	1	3.3	
Previous experience of surgery					$\chi^2 = 1.285$ d.f = 1 p = 0.257 N.S
Yes	2	6.7	2	6.7	
No	20	66.7	6	20.0	
Play activity of the child during hospitalization					$\chi^2 = 0.292$ d.f = 1 p = 0.589 N.S
Yes	6	20.0	3	10.0	
No	16	53.3	5	16.7	

**p<0.01, S – Significant, N.S – Not Significant

The table 4.7 shows that the demographic variable father's occupation had shown statistically significant association with the post test level of pain among children at p<0.01 level and the other demographic variables had not shown statistically significant association with the post test level of pain among children underwent surgery in the experimental group.

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DISCUSSION

This chapter deals with discussion of the results of data analyzed based on the objectives of the study. The problem statement of the study is to assess the effectiveness of Mozart music therapy on post-operative pain among children undergone surgery at Chettinad Hospital, Chennai. A total number of 60 samples were selected. The study was done over a period of 4 weeks. True experimental design was used for this study. The samples were selected by Simple random sampling technique using lottery method.

5.1 THE RESULTS ARE DISCUSSED AS FOLLOWS:

Analysis of frequency and percentage of demographic variables.

The study revealed that in experimental group, out of 30 samples, 5(16.67%) were in the age group of 6 – 8 years, 17(56.67%) in the age group of 9 – 10 years and 8(26.67%) were in the age group of 11 – 12years.In sex, among 30 samples, most of them were females 17(56.67%) and 13(43.33%) were male children. In religion out of 30 samples 11(36.67%) belongs to Hindu religion, 9(30.00%) belongs to Muslim religion and 10(33.33%) belongs to Christianity. In education of the child most of them belonged to primary 22(73.33%) & 8(26.67%) in secondary. According to fathers education status, most of them were graduate 19(63.33%), 8(26.67%) had secondary education and 3(10.00%) had primary education. According to mothers education most of them belonged to graduate 21(70.00%), 8(26.69) belonged to secondary &1(3.33) belongs to primary education. In father's occupation, most of them were private employe 24(80.00%), government employee were 3(10.00%) & self-employed were 3(10.00%). In mother's occupation, most of them were private employe

13(43.33),government employee 2(6.67) , self-employed were 4(13.3) & under home maker 11(36.67).The family income of the samples who had Rs.10,000 to 20,000/-month were 10(33.33%),< Rs.10,000/-month were 6(20.00%), Rs.21,000 to Rs.30,000/-month 6(20.00%).Considering the sample previous surgery experience most of them came under the category No 26(86.67%) & 4(13.33%) under Yes category. In play activity of the child during hospitalization most of the samples came under the category of No 21(70.00%) & in Yes 9(30.00%).

The study reveals that in control group, out of 30 samples, 4(13.3%) were in the age group of 6 – 8 years, 12(40.00%) in the age group of 9 – 10 and 14(46.67%) were in the age group of 11 – 12 years of age .In sex, among 30 samples, most of them were females 19(63.33%) and 11(36.67%) were males. In religion out of 30 samples 16(53.33%) belongs to Hindu religion, 6(20.00%) belongs to Muslim religion and 8(26.67%) belonged to Christianity. In education of the child most of them belonged to primary 16(53.33%) & in secondary 14(46.67%). According to fathers education status, most of them belonged to graduate 23(76.67%), 7(23.33%) belonged to secondary & none of them were in primary education. According to mothers education most of them belonged to graduate 19(63.33%), 8(26.69%) belonged to secondary & 3(10.00%) belonged to primary education. In father's occupation, most of them were private employe 18(60.00%), government employee were 5(16.67%) & self-employed were 7(23.33%). In mother's occupation, most of them were private employe 16(53.33%),government employee were 4(13.33%) , self-employed were 3(10.00%) & 7(23.33%) were under home maker. The family income of the samples who had Rs.10,000 to 20,000/-month were 11(36.67%),< Rs.10,000/-month were 7(23.33%), Rs.21,000 to Rs.30,000/-month were 5(16.67%).Considering the samples previous surgery experience most of them came under the category No 23(76.67%) & 7(23.33%) under the

Yes category. In play activity of the child during hospitalization most of the samples came under the category of No 26(86.67) & 4(13.33) in Yes category

5.2 THE FINDINGS OF THE STUDY BASED ON THE OBJECTIVES ARE:

5.2.1 The first objective of the study was to assess the pretest level of post-operative pain among children in both experimental and control group.

The analysis depicted that the frequency and percentage distribution of pre-test level of pain in experimental group, showed 30(100%) of them were in moderate pain level & none of them were in no pain level, mild pain level & severe pain level.

The analysis depicted that the frequency and percentage distribution of pre-test level of pain in control group, revealed 30(100%) of them were in moderate pain level & none of them were in no pain level, mild pain level & severe pain level.

5.2.2 The second objective of the study was to assess the posttest level of post-operative pain among children in both experimental and control group.

The analysis depicted that the frequency and percentage distribution of post-test level of pain in experimental group, 8(26.67%) were in moderate pain level, 22(73.33%) were in mild pain level & none of them were in no pain level & severe pain level.

The analysis depicted that the frequency and percentage distribution of pre-test level of pain in control group, 30(100%) were in moderate pain level & none of them were in no pain level, mild pain level & severe pain level.

5.2.3 The third objective of the study was to evaluate the effectiveness of Mozart music therapy on level of pain among post-operative children.

The pre-test mean and standard deviation were 5.43 and 0.50 respectively and in the post-test mean and standard deviation were 3.10 and 1.06 respectively. Hence the hypothesis H_1 stated that there is a significant difference between the level of pain in pre-test and post-test was **accepted**.

5.2.4 The fourth objective of the study was to associate the post level of post operative pain among children in experimental group with the selected demographic variable.

The chi-square test was used to find out the association. The findings revealed that there was a significant association between selected demographic variables and the level of pain in post-test. Hence the corresponding research hypothesis H_2: Stated earlier "There is a significant association between the post-test level of post operative pain among children in experimental group with the selected demographic variable." was **accepted** with one variable.

.

SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS

This chapter deals with the summary, conclusion, implications, recommendations and limitations of the study

6.1 SUMMARY

The objectives of the study,

❖ To assess the pre-test level of post-operative pain among children in both experimental and control group.

❖ To assess the post-test level of post-operative pain among children in both experimental and control group.

❖ To assess the effectiveness of Mozart Music Therapy on post operative pain among children in both experimental and control group.

❖ To associate the post-test level of post-operative pain among children in experimental group with the selected demographic variables.

The research hypothesis,

H1   There is a significant difference between the pre-test and post-test level of post-operative pain among children in experimental group who underwent Mozart music.

H2   There is a significant association in the post test level of post operative pain among children with selected demographic variables.

Review of literature,

i)   Literature related to post operative pain

ii)   Literature related to effect of Music Therapy on pain

iii)   Literature related to benefits of Mozart music

iv)   Literature related to Nursing care and pain management

The Conceptual framework adopted for the present study was based on the Ludwig Von Bertalanffy's general system theory (1972); in order to achieve the objectives of the study. True experimental design was used. And the study was conducted in Chettinad Hospital, Kelambakkam; Chennai. The tool used was Wong-Baker FACES Pain Rating Scale". The tool was validated by 4 experts. The pilot study was conducted among 5 children who underwent surgery at Chettinad hospital, Kelambakkam, Chennai and the findings confirmed the feasibility, reliability and practicability for the main study. The main study was conducted in Chettinad Hospital, Kelambakkam, Chennai. Simple random sampling technique was used to select the sample.

The data was analysed and interpreted based on the objectives using descriptive and inferential statistics.

The findings of the study revealed that after the administration of Mozart Music Therapy the post operative pain was considerably reduced among children who underwent surgery and this clearly indicates that Mozart Music therapy was found to be effective in reducing the pain among children in the experimental group. Among children who have undergone surgery, demographic variables, such as age, sex, religion, education of the child, fathers education, mothers education, fathers occupation, mothers occupation, family income, previous Surgery experience, play activities of the child during hospitalization.

6.2 CONCLUSION

The present study assessed the effectiveness of Mozart music therapy on post-operative pain among children undergone surgery at Chettinad Hospital. The results of the study concluded that Mozart music was effective in reducing the pain among children who underwent surgery.

6.3 IMPLICATIONS

The investigator has derived from following implications which are vital concern in the field of Nursing education, nursing practice, nursing administration and nursing research.

6.3.1 Nursing implication

According to the finding of the study, majority of the children who underwent surgery experienced considerably reduced post operative pain after administration of Mozart music. Therefore, nurses have the responsibility in following pain management techniques in children to reduce post operative pain for which Mozart music therapy will be an effective tool .The findings of the study can be incorporated in nursing education, practice and administration for quality pain management care.

6.3.2 Nursing education

Music therapy is one of the important interventions to reduce post operative pain among children after surgery. Basic education of nursing should include detail aspects of pain management with proper training on the practical application, so that the nursing students will develop proper knowledge and skills on how to provide music therapy as an effective pain management intervention.

6.3.3 Nursing practice

Nursing personal is the best position to impart knowledge in the hospital. Music therapy intervention should be taught to the nurses who are working with post operative children in the surgical department as an effective means of pain management. That encompasses the nurse's role as care giver, educator, role model and health promoter.

6.3.4 Nursing administration

Health personnel have a vital role in pain management of post operative children for which music therapy is an effective technique.. Mozart music is cost-effective. These techniques offer a resource for nurse to use themselves to reduce pain among post operative. Work shop, Seminar, CNE programme should be arranged to educate nurses about providing music therapy interventions for pain management.

6.3.5 Nursing research

Evidence based practice improve the quality of nursing care. This study focuses on reducing pain among children who underwent surgery and thereby improving the quality life. Research adds value to the comprehensive and holistic care. The nurse of service side need to educate on diversion therapy in turn they can educate the nurses and enrich the evidence based care. Nurse can also involve in this type of research.

6.4 RECOMMENDATIONS

Based on findings of the study the investigator proposed the following recommendations,

❖ Similar studies can be conducted for a larger group.

- ❖ A similar study can be conducted at different settings to generalize the study findings.

- ❖ The similar study can be carried out to assess the effectiveness of Mozart music among children undergoing vaccination and painful procedures.

- ❖ Comparative study can be done to assess the effectiveness of Mozart music intervention between children of different age groups.

- ❖ Comparative study can be done to assess the effectiveness of Mozart music with other non-pharmacological interventions for pain management.

6.5 LIMITATIONS

- ❖ The Study limited to a period of four weeks.

- ❖ Only limited literature and studies were obtained from the Indian Context.

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VENKATESWARA NURSING COLLEGE

VELS

(A unit of **VELS** Group, Pallavaram)

Approved by Indian Nursing Council, (Cert. No. 18-29/3458-INC) and Tamil Nadu Nurses & Midwives Council
Affiliated to The Tamil Nadu Dr. M.G.R. Medical University
Thalambur, Off Old Mahabalipuram Road, Near Navalur, Chennai - 603 103
Phone : (91-44) 3253 7098 / 2743 5060 Fax : (91-44) 2743 5059

Prof. Mrs. Kamala Subbian M.Sc. (N), M.A. (Soc.)
Principal
(Former Dy. Director of Medical Education - Nursing)

Institutional Ethics Committee Certificate of Approval

To,

Mr. M. John Livingston,
M.Sc (N) I year,
Venkateswara Nursing College,
(A unit of VELS, Group, Pallavaram),
Thalambur, Chennai – 603103

Dear Mr. M. John Livingston,

The Institutional Ethics Committee of Venkateswara Nursing College reviewed and discussed your application for the approval of the proposal entitled "A study to assess the Effectiveness of Mozart music therapy on pain among children undergone surgery at Child Trust Hospital, Chennai."

The following members of Ethics committee were present in the meeting held on 04.03.14 at Venkateswara Nursing College, Chennai-603103.

Ethics Committee

Chair Person	Prof. Kamala Subbian	
	Principal, Venkateswara Nursing College, Chennai	
Member Secretary	Dr. N. Jaya	– Professor & HOD, OBGN & Research, VNC
Members	Dr. G. Ilangovan	– Medical Director, Shri Isari Velan Mission Hospital
	Dr. Lodd Mahendra	– Principal SVDC&H
	Dr. R.S. Rajalakshmi	– Professor & HOD, Bio chemistry SVDC&H
	Dr. P. Govindaraj	– Special Officer Vels University
	Dr. R. Sivakumar	– Writer
	Mr. C. Saravanan	– Advocate – Legal Expert
	Dr. P. Senthil Selvam	– Principal – BPT Vels University
	Mr. V. S Ravi	– AO - SVDC&H & VNC
	Mr. D. Sathish	Social Science Representative

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study, any changes in the protocol and patient information /informed consent and asks to be provided a copy of the final report.

Member Secretary, Ethics Committee

Anna Salai (Opp. G.H. Complex), Nandanam, Chennai - 600 035.
Phone/Fax : (91-44) 2431 5541 / 2431 5542

APPENDIX –B

LETTER SEEKING AND GRANTING PERMISSION FOR CONDUCTING MAIN STUDY

Dean' 623' 17.12.14.

Chettinad

Academy of Research & Education

(Deemed to be University Under sec. 3 of the UGC Act 1956)

Ref. No. 420/Regr./DR – Admin/ 2014- 12   Dated: 17.12.2014

To

The Dean,

Chettinad Hospital and Research Institute.

Sir,

Sub: Chettinad Academy of Research and Education – Chettinad Hospital and Research Institute – Venkateshwara Nursing College – To undergo study in Paediatric Department for their two students – permission requested– Orders issued.

Ref: Letter dated 09.12.2014 received from the Principal, Venkateshwara Nursing College , Thalambur.

---oOo---

In response to the letter forwarded by the Dean, Chettinad Hospital and Research Institute permission is here by accorded to two Students of Venkateshwara Nursing College, Thalambur to undergo study in paediatric Department from 15.12.2014 to 15.01.2015 in Chettinad Hospital & Research Institute on payment of Rs.1,500/- (Rupees One Thousand and Five Hundred only) per student.

This permission is accorded subject to the following conditions:

1. They should not be allowed to take photographs / videographs.

2. They should use only college laboratories and not use the hospital laboratories.

3. They should not violate the rules and regulations of the Chettinad Academy of Research and Education.

4. They are permitted to act as per the Head of the Department instructions in the hospital.

5. They are also instructed that if any damage occurs, the cost shall have to be reimbursed by them.

Yours faithfully,

Registrar

Copy submitted to Vice Chancellor

17/12/14   Copy to:

1. The Finance Officer

2. Medical Superintendent

3. Head – Infrastructure

4. AGM Admin

<div align="center">

APPENDIX –C

(i) LETTER SEEKING EXPERT'S OPINION FOR

CONTENT VALIDITY

</div>

From

     John Livingston. M,

     Msc Nursing I Year,

     Venkateswara Nursing College,

     Thalambur, Chennai.

To

Respected sir/madam,

Subject: Requisition from expert opinion for content validity.

     I am John Livingston. M doing my M.sc nursing I year specializing Child Health Nursing at Venkateswara Nursing College. As a part of my research project to be submitted to the Tamilnadu Dr.M.G.R medical University and in partial fuilfillment of the university requirement for the award of M.sc Nursing degree, I am conducting **"A study to assess the effectiveness of Mozart music therapy on post-operative pain among children undergone surgery at Chettinad Hospital, Chennai."** I have enclosed my intervention tool for your expert guidance and validation. Kindly do the needful.

                        Thanking you,

                           Yours faithfully,

                         (John Livingston.M)

ENCLOSURES:
1. Statement and objective of the study
2. Intervention tool
3. Data collection tool
4. Content validity form
5. Certificate for content validity

(ii)LIST OF EXPERTS
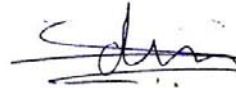
1) **Dr. UMA DEVI. L, M.D., D.C.H**
   Professor & HOD, Dept. of Paediatrics
   Chettinad Hospital and Research Institute,
   Chettinad Health City Campus, Rajiv Gandhi Salai,
   Kelambakkam, Kancheepuram Dist – 603103.

2) **Dr. SUMMANT, MD**
   Kanchi Kamakoti Child Trust Hospital,
   12,A Nageswara Road
   Nungambkkam
   Chennai-600034

3) **Dr. ANITHA RAJENDRABABU, M.Sc (N), PhD,**
   Prinicipal,
   Rajalakshmi college of Nursing,
   Thandalam, Chennai -602105.

4) **PROF. MRS. K. DEEPA M.Sc (N),**
   HOD of Child Health Nursing,
   Mohamed Sathak College of Nursing
   34, Rajiv Gandhi Road,
   Chennai- 603103

5) **PROF.MARY VINOLIN, M.Sc (N),**
   HOD of Child Health Nursing,
   Saveetha College of Nursing,
   Thalambur, Chennai-600130

(iii)CERTIFICATE FOR CONTENT VALIDITY

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by **Mr JOHN LIVINGSTON,** M.sc Nursing II year student of VENKATESWARA NURSING COLLEGE, Thalambur, Chennai- 600130. On thesis entitled study "**A Study to assess the effectiveness of Mozart Music Therapy on post-operative pain among children undergone surgery at selected Hospital Chennai.**" The tool is validated by the undersigned and he can proceed with this tool to conduct the main study.

Signature:

Name : Sumant R Prabhudesai

Seal   KANCHI KAMAKOTI CHILDS TRUST HOSPITAL
        12.A NAGESWARA ROAD
        NUNGAMBKKAM
Date   CHENNAI-600 034,
        29.11.2014,

        29.11.2014

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by **Mr JOHN LIVINGSTON**, M.sc Nursing II year student of VENKATESWARA NURSING COLLEGE, Thalambur, Chennai- 600130. On thesis entitled study "**A Study to assess the effectiveness of Mozart Music Therapy on post-operative pain among children undergone surgery at selected Hospital Chennai.**" The tool is validated by the undersigned and he can proceed with this tool to conduct the main study.

Signature: _5.12.2014_

Name   Dr ANITHA RAJENDRABABU, M Sc (N) Ph.D

PRINCIPAL

Seal   RAJALAKSHMI COLLEGE OF NURSING

THANDALAM, CHENNAI-602 105

Date   :

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by **Mr JOHN LIVINGSTON**, M.sc Nursing II year student of VENKATESWARA NURSING COLLEGE, Thalambur, Chennai- 600130. On thesis entitled study "**A Study to assess the effectiveness of Mozart Music Therapy on post-operative pain among children undergone surgery at selected Hospital Chennai.**" The tool is validated by the undersigned and he can proceed with this tool to conduct the main study.

Signature: Deepa

Name : K. Deepa.

Seal :

Date : 6.12.14.

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by **Mr JOHN LIVINGSTON**, M.sc Nursing II year student of VENKATESWARA NURSING COLLEGE, Thalambur, Chennai- 600130. On thesis entitled study "**A Study to assess the effectiveness of Mozart Music Therapy on post-operative pain among children undergone surgery at selected Hospital Chennai.**" The tool is validated by the undersigned and he can proceed with this tool to conduct the main study.

Signature: *J. Klinolis*

Name : *J. Mary Ninolio*

Seal :
HEAD OF THE DEPARTMENT
DEPARTMENT OF CHILD HEALTH NURSING
SAVEETHA COLLEGE OF NURSING
SAVEETHA UNIVERSITY
THANDALAM-602 105

Date :

5/12/14

APPENDIX-D

CERTIFICATE FOR ENGLISH EDITING

CERTIFICATE OF ENGLISH EDITION

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation work "A STUDY TO ASSESS THE EFFECTIVENESS OF MOZART MUSIC THERAPY ON POST-OPERATIVE PAIN AMONG CHILDREN UNDERGONE SURGERY IN A SELECTED HOSPITAL, CHENNAI. Done by Mr,John Livingston, M.Sc(N) IIyear, Venkateswara Nursing College, Thalambur, Chennai-600130, has been edited by me and the use of English in this dissertation is found appropriate.

S.JANARTHANAN
M.Sc.,M.Ed.,M.Phil.,
HEADMASTER
Govt.Boys Hr.Sec.School
Thirukkazhukundram-603109
Kancheepuram Dist.

Signature

(i) INFORMED CONSENT REQUISITION FORM

Good Morning!

I am john Livingston. M studying M.sc (Nursing) at Venkateswara Nursing College, Thalambur, Chennai. As a part of fuilfillment of the programme, I am conducting **"A study to assess the effectiveness of Mozart music therapy on post-operative pain among children undergone surgery at Chettinad Hospital, Chennai."**

I request you to participate in this study by giving your written consent and valuable responses to the questions asked. Your responses will be kept confidential and will be used only for the research study.

Thanking you,

Signature of the Investigator

(John Livingston.M)

(ii) INFORMED CONSENT FORM

      I understand that I am being asked to participate in a research study conducted by Mr. John Livingston M, M.sc (N) student of Venkateswara Nursing College. This research study will evaluate the effectiveness of Mozart music therapy on post-operative pain among children undergone surgery at Chettinad Hospital, Chennai. If I agree to participate in the study and no identifying information will be included when it is transcribed. I understand that there are no risks associated with this study.

      I realize that I may participate in the study if I am younger than 18 years of age with consent from my parents/ guardian. I have been explained about Mozart Music therapy. It has been informed that the intervention is not going to cause any harm to me. I understand that all the personal information about me will be maintained confidentially and I can withdraw from the study at any time where I feel uncomfortable. I am willing to participate in your study.

Consent:

      The above information regarding the study has been read by me and has been explained to me by the investigator from the Venkateswara Nursing College. Having understood the same, I hereby give my consent to participate in the study. I affixing my signature to indicate my consent and willingness that I will cooperate in this study.

_____   _____

Signature of the participant: **Date:**

_____   _____

Signature of the Investigator: **Date:**

SECTION A: DEMOGRAPHIC DATA

1. Age of the Child

    a) 6-8 years

    b) 9-10 years

    c) 11-12 years

2. Sex

    a) Male

    b) Female

3. Religion

    a) Hindu

    b) Muslim

    c) Christian

    d) Others

4. Education of the child

    a) Primary

    b) Secondary

5. Father's education

    a) Graduate

    b) Secondary education

    c) Primary education

6. Mother's education

    a) Graduate

    b) Secondary education

    c) Primary education

7. Father's occupation

    a) Government employee

    b) Private employee

    c) Self-employed

8. Mother's occupation

    a) Government employee

    b) Private employee

    c) Self-employment

    d) Home maker

9. Family income

    a) Rs.<10000/ month

    b) Rs.10000 to Rs.20,000/ month

    c) Rs21,000 to Rs.30,000/ month

    d) Above Rs.30,000/ month

10. Previous Surgery experience

    a) Yes

    b) No

11. Play activities of the child during hospitalization

    a) Yes

    b) No

SECTION B: WONG-BAKER FACES PAIN RATING SCALE.

0	2	4	6	8	10
NO HURT	HURTS LITTLE BIT	HURTS LITTLE MORE	HURTS EVEN MORE	HURTS WHOLE LOT	HURTS WORST

Score interpretation

The score were interpreted as given below

- **Face 0** is very happy because he doesn't hurt at all.

- **Face 2** hurts just a little bit.

- **Face 4** hurts a little more.

- **Face 6** hurts even more.

- **Face 8** hurts a whole lot.

- **Face 10** hurts as much as you can imagine, although you don't have to be crying to feel this bad

APPENDIX-G

PLAGIARISM REPORT

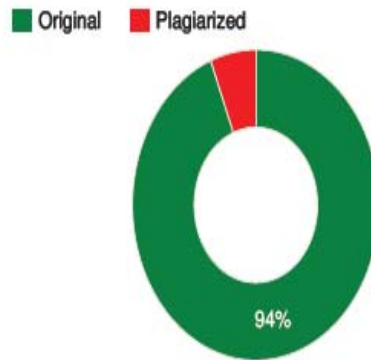Plagiarism-Checker.org - Originality Report:

Analyzed document:

plagerism.docx

Plagiarism\Original\Referenced relations chart:

■ Original ■ Plagiarized

94%

Distribution graph:

Important Notes:			
Wikipedia: ?	Google Books: ?	Ghost Services: ?	Cheating: ?
WIKIPEDIA	Google Book Search		
[not detected]	[not detected]	[not detected]	[not detected]

APPENDIX-H

CODING FOR DEMOGRAPHIC VARIABLES

Demographic Data   **Code No.**

1. Age of the Child

    a) 6-8 years   1

    b) 9-10 years   2

    c) 11-12 years   3

2. Sex

    a) Male   1

    b) Female   2

3. Religion

    a) Hindu   1

    b) Muslim   2

    c) Christian   3

    d) Others   4

4. Education of the child

    a) Primary   1

    b) Secondary   2

5. Father's education

    a) Graduate   1

    b) Secondary education   2

    c) Primary education   3

6. Mother's education

    a) Graduate   1

    b) Secondary education   2

    c) Primary education   3

7. Father's occupation

    a) Government employee   1

    b) Private employee   2

    c) Self-employed   3

8. Mother's occupation

    a) Government employee   1

    b) Private employee   2

    c) Self-employment   3

    d) Home maker   4

9. Family income

    a) Rs.<10000/ month   1

    b) Rs.10000 to Rs.20,000/ month   2

    c) Rs21,000 to Rs.30,000/ month   3

    d) Above Rs.30,000/ month   4

10. Previous Surgery experience

    a) Yes   1

    b) No   2

11. Play activities of the child during hospitalization

    a) Yes   1

    b) No   2

APPENDIX-I

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S.No	Content	Item	Total Item	Percentage
1	Demographic Variables	1-11	11	100%
2	Wong-Baker Faces Pain Rating Scale.	0-10	11	100%

Baker-Wong FACES Pain Rating Scale

This tool is appropriate for use with children age 3 years and older.

Brief word instructions: Point to each face using the words to describe the pain intensity. Ask the child to choose face that best describes how he/she is feeling. **Original instructions:** Explain to the person that each face is for a person who feels happy because he has no pain (hurt) or sad because he has some or a lot of pain. Ask the person to choose the face that best describes how he/she is feeling.

- **Face 0** is very happy because he doesn't hurt at all.

- **Face 2** hurts just a little bit.

- **Face 4** hurts a little more.

- **Face 6** hurts even more.

- **Face 8** hurts a whole lot.

- **Face 10** hurts as much as you can imagine, although you don't have to be crying to feel this bad