EFFECTIVENESS OF ICE COMPRESS APPLICATION UPON THE LEVEL OF PAIN AMONG PATIENTS WITH CHEST DRAINAGE

BY

SANDHYA.R

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

APRIL 2013

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DECLARATION

I hereby declare that the present dissertation entitled **"Effectiveness of Ice Compress Application Upon the Level of Pain Among Patients with Chest Drainage"** is the outcome of the original research work undertaken and carried out by me under the guidance of **Dr.Latha Venkatesan,** M.Sc (N)., M.Phil (N)., Ph.d (N), Principal, Apollo College of Nursing, and **Prof.Lizy Sonia. A**, M.Sc (N), Ph.d (N), Vice Principal, Apollo College of Nursing, Chennai. I also declare that the material of this has not found in anyway, the basis for the award of any degree or diploma in this university or any other university.

II YEAR M.Sc (N)

ACKNOWLEDGEMENT

I thank **God Almighty** for showering his blessings upon me and showing me the way to conduct my work with spirit of enthusiasm throughout my study.

I dedicate my heartfelt thanks and sincere gratitude to our esteemed leader **Dr.Latha Venkatesan**, M.Sc (N)., M.Phil (N)., Ph.D (N), Principal, Apollo College of Nursing for her constant support, valuable suggestions and tireless motivation to carry out my study successfully.

I take this opportunity to express my warm pleasure and deep sense of gratitude to my guide **Prof.Lizy Sonia. A**, M.Sc (N), Ph.D (N), Vice Principal, Apollo College of Nursing for her tremendous help and continuous encouragement and inspiring guidance throughout my study.

My special gratitude to **Prof. K. Vijaya Lakshmi**, M.Sc (N), Ph.D (N), Research Coordinator, Apollo College of Nursing for her timely suggestions and valuable guidance throughout my study.

My genuine gratitude to **Dr.N.Madhu Sankar**, Chief cardio-thoracic surgeon, Apollo hospitals, Ayanambakkam for his valuable suggestions and opinions towards the study.

I owe my special thanks to **Dr.Radha Rajagoplan**, Director of Medical Education, Apollo Main Hospital for permitting me to conduct my study.

I extend my sincere gratitude to **Mrs.Jothi Clara Michel**, Nursing Director, Global Hospitals and Health City, Chennai for her valuable clinical guidance and permitting me to conduct my study in their esteemed institution.

My genuine gratitude to **Mrs.Nesa Sathya Satchi**, M.Sc (N)., Professor and course coordinator for her consecutive ideas and enormous concern.

I also extend my special thanks to all the Faculties **in the Department of Medical Surgical Nursing** for rendering their valuable guidance in completing my study.

I am immensely grateful to all the **Experts** for validating the tool. I am thankful to all the **Head of the Departments**, **Faculties** and my **Colleagues** who helped me directly or indirectly in carrying out my study.

I express my sincere gratitude to the **Librarians** of Apollo College of Nursing and the Tamil Nadu Dr.M.G.R. Medical University, for their help throughout the study.

I thank all the **Participants** of my study for their wonderful participation and cooperation without whom I could not have completed my study. My special gratitude to **Mr.Kannan**, Universal Computers for his constructive and creative efforts in typing the dissertation.

My heartfelt thanks to my parents **Mr.E.Ramachandran** and **Mrs.G.Girija** for their continuous support and encouragement at various stages of my study.

SYNOPSIS

An Experimental Study to Assess the Effectiveness of Ice Compress Application upon the Level of Pain among Patients with Chest Drainage in Global Hospitals and Health City, Chennai.

The Objectives of the Study were,

1. To assess the level of pain before and after ice compress application among the control and experimental group of patients with chest drainage.
2. To evaluate the effectiveness of ice compress by comparing the pre test and post test level of pain among the control and experimental group of patients with chest drainage.
3. To find out the association between selected demographic variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application.
4. To find out the association between the selected clinical variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application.
5. To determine the level of satisfaction among the experimental group of patients with chest drainage before and after ice compress application.

The conceptual framework for the study was developed on the basis of King's Goal Attainment Model, which was modified for the present study. An intensive review of literature and experts guidance laid the foundation to the development of tools such as demographic variable proforma, clinical variable proforma, and patient satisfaction rating scale.

In this study, true experimental research design was adopted. The present study was conducted at Global Hospitals and Health City, Chennai among patients with chest drainage. The sample size for the present study was 60 patients with chest drainage, among which, 30 patients were assigned to control group and 30 patients to experimental group who satisfied the inclusion criteria.

The investigator used the demographic and clinical variable proforma of patients to obtain the baseline data. Standardized Numerical rating pain assessment scale and Mc Gill pain questionnaire were used to assess the level of pain before and after ice compress application and rating scale to assess the level of satisfaction of patient about ice compress application. The data collection tools were validated and reliability was established. After the pilot study, the data collection of the main study was conducted for period of 4 weeks. The collected information was tabulated and analyzed by using appropriate descriptive and inferential statistics.

The Major Findings of the Study

- Most of the patients were in the age group of 41-60 years (40%, 66.67%), were males (53.34%, 86.67%), living in urban region (63.34%, 66.67%), majority were moderate workers (93.34%, 76.67%), were non vegetarians(70%, 90%),most of them had no family history of cardiovascular and respiratory diseases (53.34%, 66.67%), in control and experimental group respectively.
- Majority of the patients in the control and experimental group have undergone cardiac surgery (80%, 73.34%), with both pleural and anterior chest drains (50%, 73.34%) had chest drain for one to three days (90%, 83.34%), a significant percentage of patients were in BMI 20 – 25sq.m (40%, 40%) and all the patients

were on oral NSAIDs (100%, 100%) respectively. Majority of them had no previous experience with chest drainage (96.67%, 90%), and most patients had co morbid illness (60%, 56.67%) in control and experimental group respectively.

- Majority of patients in control group had severe level of pain in pre test as well as in post test (100%, 100%) respectively. In the experimental group almost everybody had severe level of pain in pre test (100%). However after ice compress application, majority of them had mild level of pain (90%) in experimental group of patients.
- Majority of patients in control group had stabbing type of pain(33.34%, 30%), most of them had sharp and burning pain (23.34%, 23.34%) in pre test and post test respectively. In experimental group, majority of patients experienced sharp pain (46.67%, 46.67%), most of them had stabbing type of pain (30%, 20%) in pre test and post test respectively
- ➢ In control group the mean and standard deviation of level of pain measured using Numerical rating scale (M=9.13,7.06 & SD=0.62, 0.77) and Mc Gill pain questionnaire (M=3,2 & SD=0.17, 0.51) before and after chest drain removal, whereas in experimental group mean and standard deviation of level of pain measured using Numerical rating scale (M=9, 1.8 & SD=0.81, 1.11) and Mc Gill pain questionnaire (M=3, 0.1 & SD=0, 0.39) before and after administration of ice compress therapy. The difference was found to be statistically significant at $p<0.001$ and since‘t’ value is higher than the table value; ice compress application is effective in reducing patients pain during chest drainage removal. Hence the null hypothesis Ho2 was rejected.

- Majority of the patients (93.33%) were highly satisfied with the approach of researcher, (90%) of patients were highly satisfied with the method of ice compress application and (93.33%) of patients were highly satisfied with the effectiveness of ice compress application.
- There was no significant association between selected demographic variables namely age, educational status, marital status, type of diet, family history and level of pain in control and experimental group of patients. But there was a significant association between history of smoking and alcoholism (χ^2 =4.80, df=1), ($p<0.05$) and the level of pain in experimental group of patients. Hence the null hypothesis Ho4 was partially rejected with regard to history of smoking and alcoholism.
- There was no significant association between selected clinical variables like type and number of chest drain, BMI, previous experience of chest drainage, ambulation, and level of pain in control and experimental group of patients. But there was a significant association between those who had undergone cardiac surgeries (χ^2 =5.48, df=1), ($p<0.02$) and the level of pain in experimental group of patients. Hence the null hypothesis Ho5 was partially rejected with regard to diagnosis of cardiac surgeries.

Recommendations

- A similar study could be undertaken on larger scale for more valid generalization.
- This study could be replicated in different settings.
- The study could be conducted to compare different non pharmacological methods of pain management.
- Pain management protocol with incorporated ice compress application can be made and put in to practice.

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Introduction

CHAPTER I

INTRODUCTION

Background of the Study

"It is easier to find men who will volunteer to die, than to find those who are willing to endure pain with patience''

- Julis Caesar

In the last two decades of human life, changing lifestyles and patient's rights have been impredictable and thus it plays an important role in physiological and psychological behavior of human life. With an enormous increase in chronic non communicable disorders, the incidence of cardiac and thoracic surgeries has increased throughout with concomitant rise in interventions required to treat these disorders.

The need for relief of pain is of serious health concern of today in this society. The word pain is an unpleasant feeling often caused by intense or damaging stimuli, such as stubbing a toe, burning a finger, putting alcohol on a cut.

The International Association for the Study of Pain's widely used definition states, pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. Pain makes an individual to withdraw from damaging situations, motivates them to protect a damaged body part while it heals, and to avoid similar experiences in the future.

Most pain resolves promptly once the painful stimulus is removed and the body has healed, but sometimes pain persists despite removal of the stimulus and apparent

healing of the body; and sometimes pain arises in the absence of any detectable stimulus, damage or disease.

Pain is the most common reason for physician consultation. It is a major symptom in many medical conditions, and can significantly interfere with a person's quality of life and general functioning. Psychological factors such as social support, hypnotic suggestion, excitement, or distraction can significantly modulate pain's intensity or unpleasantness.

As pain now being a serious matter of concern in the public, health care and global health care organizations like WHO focuses on pain management by implementing pain ladders, therapies of alternative and complimentary, heat and cold application. Cryotherapy and ice massages have gained confidence in reducing the perception of pain by diminishing nervous system response of pain; it increases the blood circulation to the abdominal organs, activates metabolic functions, reduces inflammation and calms the nervous system.

Having an ice pack around can be very useful for relieving everyday pain or discomfort. One of the most common uses for ice packs is to treat injuries. The application of ice to skin helps reduce pain, swelling, bleeding and muscle spasms. Ice massage produces a feeling of comfort and relieves pain and congestion. This has gained potential for usage in controlling pain perception. The three methods of ice application which are practised clinically to minimise pain in most of the physiological situations are ice massage, ice bath and ice pack.

Nursing is not simply a collection of specific skills and the nurse is not simply a person trained to perform specific tasks whereas nursing is a profession. No one factor absolutely differentiates a job from a profession, but the difference is important in terms of how nurses practice. The practice of professional nursing and nursing knowledge has been developed over time through development of nursing theories and research.

In order to provide a high quality of care, it is necessary that nurses should use best available cost effective basic nursing skills to enhance patient comfort and satisfaction without any adverse physiological effects. Thus use of ice compress to relieve pain during chest drain removal can be incorporated into clinical practice and formulate a protocol for chest drain removal.

The nursing care for patients with chest drain includes physical and broadened psychosocial care. Specific standards are needed to provide efficient care for patients with chest drainage. But still relief from pain is a major task for the nurses who handle patients with chest drainage as pain is more a sensory and an emotional experience for a patient.

However use of chemical analgesia has proven to have its own side effects when used regardless of various demographic and clinical categories. Hence there is an increased need for the development of physical analgesia like ice compress which cause numbness of the chest drain site and increase patient's level of comfort and gratification in relieving from pain owing to chest drain removal with no side effects.

Need for the Study

Maintaining individual health and quality of life is dependent upon many variables. One such variable is pain. The presence of pain has been a factor negatively affecting the quality of life (Mason 2009). To alleviate pain quickly many health care providers will prescribe narcotic and non narcotic analgesics.

According to National Institute on Drug Abuse (NIDA 2005), 5, 73,000 people were first time users of pain relievers in the year 1990; by the year 2000, the number increased to 2.5million.

Additionally, according to the face sheets provided by United States drug enforcement agency 2010 prescription for narcotics increased significantly from 88 million in the year 2000 to 130 million prescription by the year 2006. This enormous rise in numbers reflects noticeable increase in use of narcotic pain medications.

The ineffective treatment of pain interferes with rest, sleep, deep respirations; coughing, ambulation, mood and performing general activities (Watt-Watson, 2004).Thus removal of chest tube reduce pain and improve ventilator function independent of surgical access surgical access and particularly in immediate post operative phase. A fast track chest drain removal policy may favour patient's recovery.

Therefore treating pain effectively can improve patient recovery and outcome at an earlier phase of hospitalisation. Pain management is of paramount importance if experience of chest drain to be improved.

Initial nursing researches were focussed on determining just what sensations patients experienced so that interventions could be based on evidence rather than an

assumption that all discomfort was caused by pain. It turned out that in addition to pain, patients described the pulling and burning sensations they felt as equally uncomfortable. Pain management continues to be a major concern in hospitalized patients.

Pain during chest drain removal can be moderately to severely intense and distressing to patients. Patients describe chest tube removal as painful event in postoperative recuperation. No national standards have been set associated with chest tube removal. Little evidence based research has guided clinicians to alleviate pain.

Analgesics are always not effective in eliminating pain and it has its known untoward adverse effects. Utilisation of non pharmacological intervention may assist in alleviating pain with no adverse effects.

Ice is an inexpensive, yet astoundingly effective treatment for pain and swelling. Unfortunately it is a grossly underutilized tool. A big reason for this is that many healthcare providers themselves do not appreciate the benefits of ice packs and other cold treatment modalities for pain or swelling. Some providers simply do not know about the benefits and therapeutic use of ice.

Ice initially constricts local blood vessels and decreases tissue temperature. Overall, ice will decrease inflammation, decrease pain, speed nutrients to the area, promote healing, decrease swelling, decrease tissue damage, decrease muscle spasm.

As per American heart association statistical report on 2011, every year more than 30% patients undergo cardiothoracic surgery, requiring placement of at least one chest tube. Removal of these chest tubes has been described as one of the worst

intensive care unit experiences for these patients. Pain associated with chest tube removal (CTR) has been poorly controlled.

Several epidemiological studies have shown intensity of pain among certain disorders and certain procedures, of which pain perceived by chest drain removal also figures out with 47.9% as per recent report of WHO statistical report on 2010. Removal of chest tubes causes patients to feel pain and interventions used for reducing the pain owing to the removal of chest tubes are not sufficient.

A study with conducted by Nurcan, et al. (2011) with 140 patients was conducted, of whom 70 patients were in the experimental group and 70 patients were in the control group, in a thoracic hospital in Turkey. The Visual Analogue Scale score was measured immediately after the chest tube removal in the experimental group was 3·85, compared with 5·60 in the control group. There were significant differences on pain with cold application between the two groups prior and after the intervention.

Pain is highly individualized. Having knowledge that cold application plays a major role in relaxing muscle, improves blood circulation and numbness of pain respectively intended the investigator to take up this intervention to minimize pain. Moreover this measure is simple, affordable and can be performed by patients too with no side effects.

Nursing services is one of the most components of hospital services. Nurses form a very important group, which is the largest single technical group of personnel engaged in hospital care next to doctors and consume almost one third of hospital cost.

A hospital may be soundly organized; the hospital will fail in its responsibility of providing care.

Thus as a part of nursing care, it is important for nurses to assess the level of pain and relive the patient from pain using clinical assessment and best available nursing skill. Nurses can use their basic available non pharmacological nursing measures to relieve the patient from paint and enhance patient comfort which requires no orders from physician.

Non pharmacological measures lay a first line platform to relive from pain and anxiety. Use of ice application to treat pain are also greatly welcomed by the patients as the effect of ice applications to relieve pain is greatly known and it is a human fact which is ought to reduce pain with no adverse effects.

In short, implementation of ice compress application during chest drain removal effectively minimises pain and improves the quality of nursing care. By implementing ice compress application in clinical practice, the ultimate goal of pain relief for hospitalised patients with chest drainage to improve patient satisfaction to gain better social and economic benefits. Since the ice compress application has more significant effect upon patients undergoing chest drain removal and also it's a new practice used to minimise pain during chest drain removal, the researcher decided to conduct this study.

Statement of the Problem

An Experimental Study to Assess the Effectiveness of Ice Compress upon the Level of Pain among Patients with Chest Drainage in Global hospitals and Health City, Chennai.

Objectives of the Study

1. To assess the level of pain before and after ice compress application among the control and experimental group of patients with chest drainage
2. To evaluate the effectiveness of ice compress by comparing the pre test and post test level of pain among the control and experimental group of patients with chest drainage.
3. To find out the association between selected demographic variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application
4. To find out the association between the selected clinical variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application
5. To determine the level of satisfaction among the experimental group of patients with chest drainage before and after ice compress application.

Operational Definitions

Effectiveness

In this study, effectiveness refers to the reduction in the level of pain perception after ice compress application among experimental group of patients with chest drainage which is assessed by standardized pain assessment scale which includes numerical rating scale and Mc gill pain questionnaire.

Experimental research

It is an objective, systematic, controlled investigation for the purpose of predicting and controlling phenomena and examining probability and causality among

selected variables. In this study ice compress application is an independent variable and level of pain perception is dependent variable.

Ice compress

Ice of 4 degree centigrade is placed within a dry guaze for 10 minutes at 10 minutes interval for four times to minimise the level of pain associated with chest drainage. Ice compress applied to an acute injury for the purpose of decreasing swelling and pain.

Chest drain

A chest tube is a flexible plastic tube that is inserted through the side of the chest into the thoracic cavity either post operatively in a cardio thoracic surgery or for medical treatment for cardio pulmonary disorders.

P**ain**

In this study, pain refers to unpleasant sensory and emotional experience of a patient during chest drainage removal.

Patients

In this study, it refers to patients with chest drainage tubes are taken as population.

Level of satisfaction

It is a feeling of gratification attained or achieved by the patients with chest drainage after application of ice compress as measured by satisfaction rating scale.

Assumptions

The study assumes that,

- Presence of chest drainage causes pain and discomfort.
- Non pharmacological measurements are easily accepted by the patients.
- Pain tolerance and perception differs from patient to patient.
- There are different measures practiced to reduce pain.
- Ice compress causes numbness of the area applied.

Null Hypothesis

The null hypotheses stated are

Ho1: There will be no significant difference in the level of pain perception of control and the experimental group of patients with chest drainage before and after ice compress application. .

Ho2: There will be no significant association selected demographic variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application.

Ho3: There will be no significant association selected clinical variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application.

Delimitations

1. The study was limited to patients with chest drainage.
2. The study was limited to adult patients.
3. The study period was limited to 4 weeks duration.

Conceptual Framework for the study

The conceptual framework deals with the interrelated concepts that are assessable together in some rational scheme by virtue of their relevance to a common theme (Polit and Beck, 2010).

Conceptual framework of present study is based on King's Goal Attainment Theory. According to Imogene King; Nursing is defined as the process of action, reaction, interaction, whereby nurses and clients share the information about their perception. Through perception and communication they identified the problem through which they set goals and take necessary action.

King's goal attainment theory is based on the concepts of personal, interpersonal and social systems including perception, judgement, action, reaction, interaction, transaction and perception.

Perception

A person imports energy from the environment and transforms, processes and stores it. The study assumes that there is an interpersonal relationship between the nurse, investigator and participants. The nurse investigator perceives that there is a need for the development of an alternative nursing care like ice compress therapy around the site of chest drainage to reduce the level of pain perception during chest drainage removal and assessed using standardised pain assessment scale.

Judgement

Analyze the areas of action to be carried out. In this study the nurse investigator judges that ice compress application around the chest drain site cause numbness and reduces the level of pain perception of the patients with chest drainage. Thus the researcher takes decision to implement the ice compress application therapy.

Action

Individuals export the perceived energy demonstrated as observable behaviours by taking physical activity. Nurse investigator takes action by the development of ice compress therapy around the chest drain site to relieve patients from pain owing to chest drainage removal.

Reaction

Reaction is the experience or outcome that are expected as a part of goal attainment. The ice compress therapy around the chest drain in experimental group patients was highly satisfied. The nurse investigator makes the arrangement for disseminating the information regarding ice compress therapy and in turn the patients were benefitted.

Interaction

Refers to verbal and nonverbal behaviour between an individual and the environment or among two or more individuals. It involves goal directed perception and communication.

Action leads to interaction where the nurse investigator executes her ice compress therapy upon the level of pain associated with chest drainage and thereby patient's pain level is reduced.

Transaction

Imogene King says that the transaction is two individuals mutually identify goals and the means to achieve them. They reach an agreement about how to attain these goals and then set about to realise them.

In this study subjects from the experimental group shows highly satisfactory in reduction in the level of pain through ice compress application and developed no complications.

Feedback

Outcome may either be satisfactory or unsatisfactory. Satisfactory shows the effectiveness of ice compress application and reduction in the level of pain perception and for unsatisfactory the activity is planned again. In this study investigator appraise the level of satisfaction about ice compress application through rating scale, if the therapy is satisfactory it can be disseminated and implemented to the control group too. If unsatisfactory the activity is planned again or other best method is adopted.

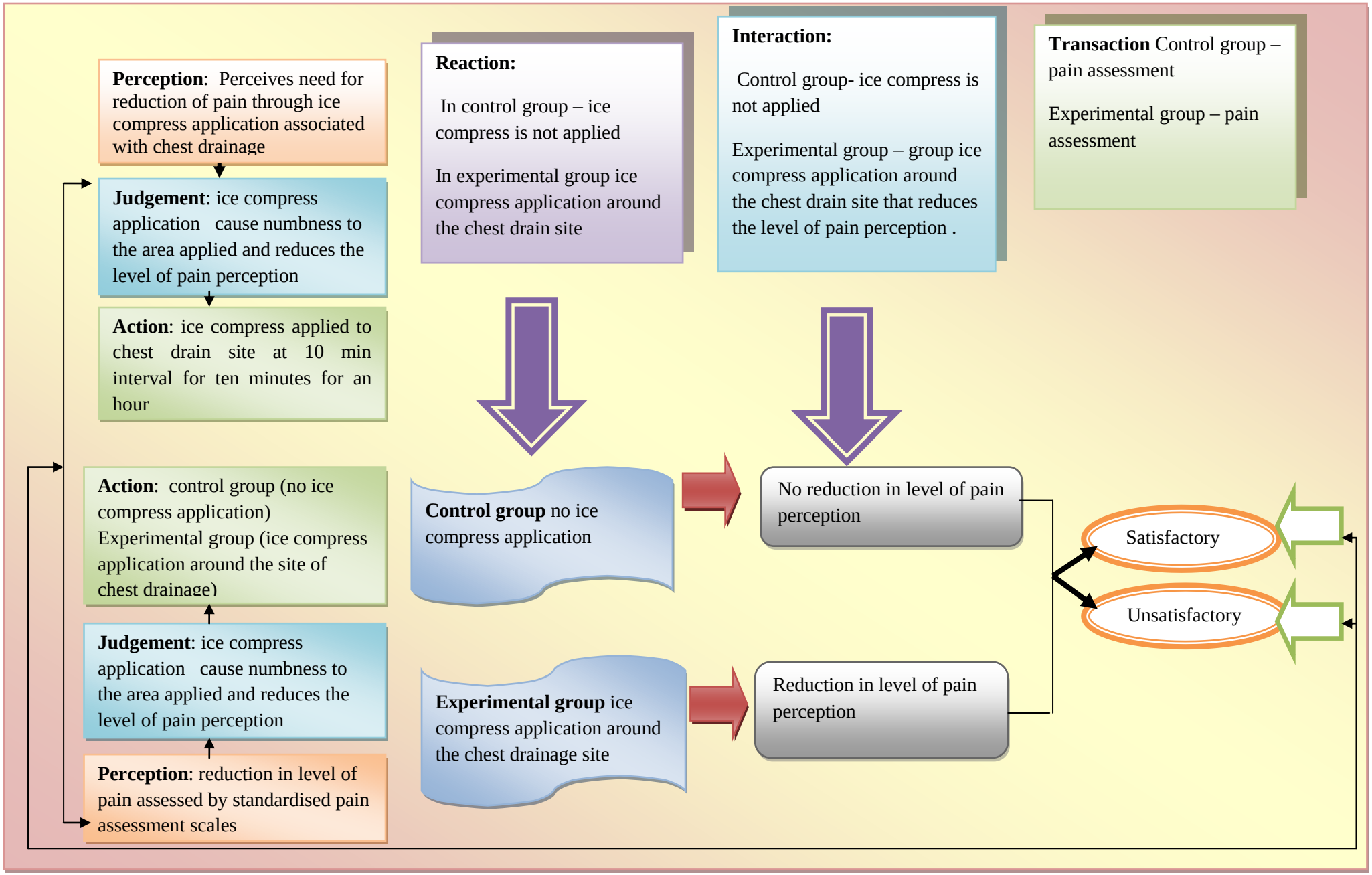

Fig 1: **Conceptual Framework based on Kings Goal Attainment Theory**

Summary

This chapter has dealt with the background, need for the study, and statement of the problem, objectives, operational definitions, assumptions, null hypotheses, delimitations and conceptual framework.

Organization of the report

Further aspects of the study are presented in the following five chapters.

CHAPTER – II Review of literature

CHAPTER – III Research methodology – which includes research approach, design, Setting, population, sample and sampling techniques, tool description, content validity and reliability of tools, pilot study, data collection procedure and plan for data analysis.

CHAPTER – IV Analysis and interpretation of data

CHAPTER – V Discussion

Chapter 2
Review of Literature

CHAPTER -II

REVIEW OF LITERATURE

A literature review is an organized written presentation of what has been published on a topic by scholars (Burns & Groove,2004).The task of reviewing literature involves the identification ,selection, critical analysis and reporting of existing information on the topics of interest. A review acquaints the researcher with what has been done in the field and it minimizes possibilities of unintentional duplications. It justifies the need for replication provides the basis of future investigations and help to relate the findings of one study to another.

This chapter deals with a review of published and unpublished research studies and from related material for the present study. The review helped the investigator to develop an insight into the problem area. This helped the investigator in building the foundations of the study.

The review of literature for this study is presented under the following headings.

1. Literature Related to Sensation and Experience of Pain during for Chest Drainage Removal.
2. Literature Related to Interventions for Pain Management in Patients with Chest Drainage Removal.
3. Literature Related to Ice Application for Pain Management of Patients with Chest Drainage Removal.

Literature Related to Sensation and Experience of Pain during for Chest Drainage Removal

A longitudinal study aimed to determine the impact of chest drain removal on pain and pulmonary function after pulmonary resection was studied by Refai et al. (2012) upon 164 patients. Post operative chest pain was controlled by standardised combination of oral and intravenous non opoids. Static and dynamic pain and forced expiratory capacity at one minute were assessed using numerical rating scale before and one hour after chest drain removal and measurement were compared by wilcoxon sign rank test. The results showed that the pain scores were significantly reduced by 42% and 41% in static and dynamic measurement respectively after chest drain removal and forced expiratory capacity also increased by 12% after chest drain removal.

An exploratory study conducted by Minnaugh, et al. (2002) with 62 hospitalized patients to determine the types and intensity of sensations that patients experience when chest tubes and Jackson Pratt abdominal tubes were removed. Each subject was interviewed after tube removal. Sensations were identified, and intensity of sensation was marked on a Visual Analogue Scale. The most frequently reported sensations were pain which accounted to be 77% on Jackson Pratt tube removal and pulling type of sensation which constituted 90% upon chest drain removal.

An Audit was conducted for 15 patients with chest drainage and for 60 doctors and staff nurses, regarding the experience of chest drain removal and use of analgesia with chest drain in place and removal by using postal questionnaire by Cathy Tooley, et al. (2002). The results revealed that 70% of patients reported to have painful experience

and 47% of staffs recommended use of analgesia and 40 % of the staffs advised to use analgesia as and when required which was supported by 70% of patients.

Owen et al. (2000) conducted a research to understand the patients experience with chest drainage. An exploratory study with convenient sampling of 60 cardio thoracic patients were taken and assessed using numerical rating scale. The results revealed that 68% patients drew attention to the persistent discomfort and pain experienced by patients throughout the entire time that the chest drain remained in situ. 60% of the patients also experienced short lasting but intense pain when the chest drain was removed.

A randomised double blinded study by Mueller et al. (1999) to analyze the duration of chest tube drainage on pain intensity and distribution among 80 patients who had cardiac surgery in two different hospitals were compared. However, in one hospital chest tubes were removed by postoperative day 2 or 3, while in the second hospital all the drains were usually removed on first post operative day. There was a trend toward less pain in the short drainage group, with a statistically significant difference on second post operative day (P=0.047). A policy of early chest drain ablation limits pain sensation and simplifies nursing care, without increasing the need for repeated pleural puncture. Therefore, a policy of short drainage after cardiac surgery should be recommended.

A Study conducted by J Cunningham et al. (1991**)** aimed to determine the sensations during chest drain removal. A sample of 36 patients after thoracic surgery out

of which 24 were men and 12 were women, had either a mediastinal or a pleural tube removal. Sensations were assessed using a visual analogue scale within 15 minutes after tube removal. The most frequently reported sensation during chest tube removal was burning, followed by pain and pulling with mean intensities of 64, 62, and 45, respectively. The sensations and intensities did not differ for those who did and did not receive analgesia or for those having a pleural tube versus a mediastinal tube removed. Women reported pain more frequently than men.

Literature Related to Interventions for Pain Management in Patients with Chest Drainage Removal.

A prospective, randomized and double-blind study was conducted by Golmohammadi et al. (2010) among 80 patients by comparing 1.5µg/kg Fentanyl or 0.15µg/kg Sufentanil, 10 minutes before removal of chest tube. Pain intensity was assessed by measuring visual analogue scale (VAS), 10 minutes before, during, and 5 and10 minutes after removing chest tubes. Level of sedation, heart rate, arterial blood pressure, and oxygenation saturation were recorded at each stage by a blinded observer. The results revealed that Mean pain intensity scores 10 minutes before removal of chest tube in Fentanyl, and Sufentanil groups were 29.5±12.1 and 31±11.2 respectively. Pain scores during chest tube removal were significantly more reduced in Fentanyl (17.21) than in Sufentanil group (21.51). Sedation scores remained low in two groups. Both Fentanyl and Sufentanil provide adequate analgesia for chest tube removal without increasing untoward side effects.

A randomized study conducted by Christina Ryan, et al. (2007) compared two methods of pain management during chest drain removal for 27 post operative cardio surgical patients Pharmacological measures like injection.Ketorolac versus injection. Midazolam were compared as against injection. Morphine and injection. Midazolam and pain intensity were measured using observational pain scale at 15 minutes later chest drain removal. The results revealed that a combination of injection.Ketorolac and injection.Midazolam significantly lowered the pain. The differences in pain score from 4.43 to 0.94 in a combination of injection.Ketorolac and injection.Midazolam and 5.63 to 1.29 when injection.Morphine and injection.Midazolam was administered was found statistically and clinically significant.

Shirley, et al. (2006) found that the deep-breathing relaxation techniques can help patients cope with pain and anxiety during a medical procedure following coronary bypass surgery. A sample of 40 patients at three acute-care facilities was divided into two groups. Subjects either closed their eyes or focused on an object in the room and practiced the technique for 5 minutes before healthcare workers removed the chest tube dressing and sutures. During the actual chest tube removal, subjects held their breath. After the procedure, researchers encouraged patients to continue the deep breathing as long as they preferred. Both groups experienced high levels of pain both before and during the procedure. However, members of the deep-breathing group reported significantly lower pain ratings during the 15-minute period after the procedure. The value of this finding is that deep breathing is inexpensive, has no adverse side effects and is easy to teach.

A randomized double blinded controlled trial was undertaken upon 74 patients who underwent cardiac surgery by Puntillo et.al (2006) to assess the pharmacological and non pharmacological interventions to alleviate pain during chest tube removal. Four interventions were tested as injection. Morphine and procedural information; injection. Ketorolac and procedural information; injection. Morphine plus procedural and sensory information; and Inj. ketorolac plus procedural and sensory information. Pain intensity and pain distress were measured before analgesic administration, immediately after chest tube removal, and 20 minutes later .Using ANNOVA the results revealed that procedural pain intensity (mean 3.26, SD 3.00) and pain distress (mean 2.98, SD 3.18) scores for all were low. The pre education significantly reduces patient anxiety and pain distress.

A meta analyses by Bruce et al. (2006) aimed to analyse critically the published research on chest drain removal pain and its management, non-pharmacological intervention studies were summarized and studies of analgesic efficacy were critiqued in depth. Fourteen studies were reviewed, including five descriptive studies; three studies of non-pharmacological interventions; and six randomized controlled trials of morphine, local anaesthetics and Entonox. The majority of studies indicated that patients experienced moderate to severe pain during chest drain removal, even when morphine or local anaesthetics were given. Morphine alone does not provide satisfactory analgesia for chest drain removal pain. Non-steroidal anti-inflammatory drugs, local anaesthetics and inhalation agents may have a role to play in providing more effective analgesia for this procedure.

Broscious et al. (2004) demonstrated the effects of music therapy for pain during chest tube removal after open heart surgery upon 156 patients which consisted of control group, white noise, or music. The patient's heart rate and blood pressure were measured; pain intensity was measured using numeric rating scale. The patients rated their pain immediately after the chest tube removal and 15 minutes later. Physiological variables were assessed every 5 minutes until 15 minutes after the chest tubes were removed. The results revealed that the pain intensity, physiological responses, after the chest tube removal did not differ significantly among the 3 groups, whereas most subjects enjoyed listening to the music, and therefore the use of music as an adjuvant to other therapies may be an appropriate nursing intervention.

A comparative study was conducted to assess the effectiveness of relaxation techniques with opoids and opoids alone to reduce pain during chest drain removal by Stacy et al. (2000).A quasi experimental study with convenient sampling of 40 CABG patients were undertaken and pain was measured using visual analogue scale before chest drain removal , immediately after chest drain removal and at 15 minutes later chest drain removal. The data was analysed using ANNOVA and results revealed that relaxation exercise along with use of opoids have shown significant reduction in pain from 0.995% to 0.006%.This shows relaxation exercises play a vital role in pain reduction and management**.**

Literature Related to Ice Compress Application for Pain Reduction in Patients with Chest Drainage.

A single blinded randomized study by Leyla et al. (2012) to investigate the effect of cold application on pain and anxiety during chest tube removal in 90 patients who had undergone cardiac surgery. The application of cold, placebo, or control therapies was randomized into three different groups. Sixty minutes before chest tube removal was scheduled, 10mg/kg paracetamol intravenously was given to all study subjects. Cold and warm packs covered with gauze dressing were applied to the area surrounding the chest tubes for 20 minutes. Pain intensity, pain quality and situational anxiety for chest tube removal were measured using visual analogue scale and Mill Gill pain inventory. The data showed that patients in the cold group had significantly lower pain intensity than the placebo group. The application of cold prolonged the length of time until analgesics were needed after chest tube removal. Thus the results showed that cold application reduced patient's intensity of pain due to chest tube removal but did not affect anxiety levels or the type of pain.

A controlled clinical trial with 140 patients were undertaken to study the effect of cold application on the pain owing to chest tube removal for patients with single pleural chest tube Nurcan, et al. (2011) in a thoracic hospital ,Turkey. Data were collected by patients demographic and health history and Visual Analogue Scale. Cold was applied to patients in the experimental group prior to chest tube removal. In the experimental group, skin temperature and pain intensity was measured for each patient at four time points. In the control group, pain intensity was evaluated for each patient at three time points. The results has shown that the Visual Analogue Scale score was

measured immediately after the chest tube removal in the experimental group was 3·85, compared with 5·60 in the control group. There were significant differences on pain with cold application between the two groups prior and after the intervention. Age, gender, the number of days the chest tube was inserted and the chest tube insertion indication had no effect on the pain owing to chest tube removal.

A study was conducted by Demir, et al. (2010) to evaluate the effectiveness of the use of ice for the control of pain associated with chest tube irritation. A sample of 40 patients who underwent thoracotomy with chest tube placement was taken. Ice in the form of flexible and bendable cold gel packs wrapped in fine cloth sheaths was applied to the chest tube insertion site at the 24th, 28th, 36th, and 40th postoperative hours for 20 minutes. To assess the effectiveness of ice application, Verbal Category Scale and Behavioural Pain Scale methods were used to measure the severity of pain. Average pain severity scores during the mobilization activities, including coughing and walking, were compared and found to be significantly lower in the study group patients who received cold therapy than in the control group patients ($p < .05$). Additionally, analgesic consumption was lower in the study group than in the control group patients ($p < .05$). As a result, the application of ice to the chest tube insertion site reduced pain associated with irritation along with the need for analgesics.

Sauls J, et al. (2010) aimed to use the ice for pain associated with chest tube removal among fifty post cardiac surgery patients. The experimental group received ice therapy before CTR, whereas control subjects received a placebo. Pain intensity and pain distress were measured on a numeric rating scale, and pain quality was measured

using the McGill Pain Questionnaire. A significant change in pain over time was noted in both groups, with pain intensity and distress being most severe during actual chest tube removal. Both groups used all the quality descriptors on the MPQ-SF for the sensory and affective components of pain, with cramping and gnawing as the most frequently chosen words.

Summary

This chapter has dealt with review of literature related to the problem stated. It has helped the researcher to understand the impact of the problem under study. It has also enabled the investigator to design the study, develop the tool, and plan the data collection procedure and to analyze the data.

Chapter 3
Research Methodology

CHAPTER III

RESEARCH METHODOLOGY

The methodology of the research study is defined as the way the client information is gathered in order to answer the research question or analyze the research problem.

The present study was conducted to assess the effectiveness of ice compress application and the level of pain perception among chest drainage patients. It deals in brief the different steps undertaken by the investigator for the study. It includes research approach, research design, the setting, population, sample and sampling techniques, development and description tool, validity, reliability, pilot study, data collection procedure and plan for data analysis.

Research Approach

Research approach is the most significant part of any research. The appropriate choice of the research approach depends on the purpose of the research study which is undertaken. According to Polit and Beck (2004) evaluate research is an extremely applied form of research and involves finding out how well a programme, the practice or policy is working. Its goal is to evaluate the success of the programme. In this study, the investigator assessed the effectiveness of ice compress application and the level of pain perception by using experimental research design.

Research Design

A research design is the most important methodological design that a researcher works in conducting a research study (Polit and Hungler 1999)

The research design of nurses is represented diagrammatically as follows:

R O1 O2 O3 O4

R O1 x O2 O3 O4

X - Application of ice compress around the chest drainage site

O1 – pre-test to assess the baseline level of pain.

O2 – post test before chest drain removal.

O3 – post test immediately after chest drain removal.

O4 – post test 15 minutes after chest drain removal.

Variables

Independent variable

The variable that is believed to cause or influence the dependent variable is the independent variable (Polit and Beck, 2008).In this study, the independent variable was Ice compress application intended to relieve pain during chest drainage removal.

Dependent variable

The variable hypothesized to depend on or be caused by another variable is the dependent variable. In this study, the level of pain is considered as dependent variables.

Attribute variables

Variables that describe the study sample characteristics are termed as attribute variables (Polit and beck, 2008). In this study, the attribute variables were all demographic characteristics of patients with chest drainage.

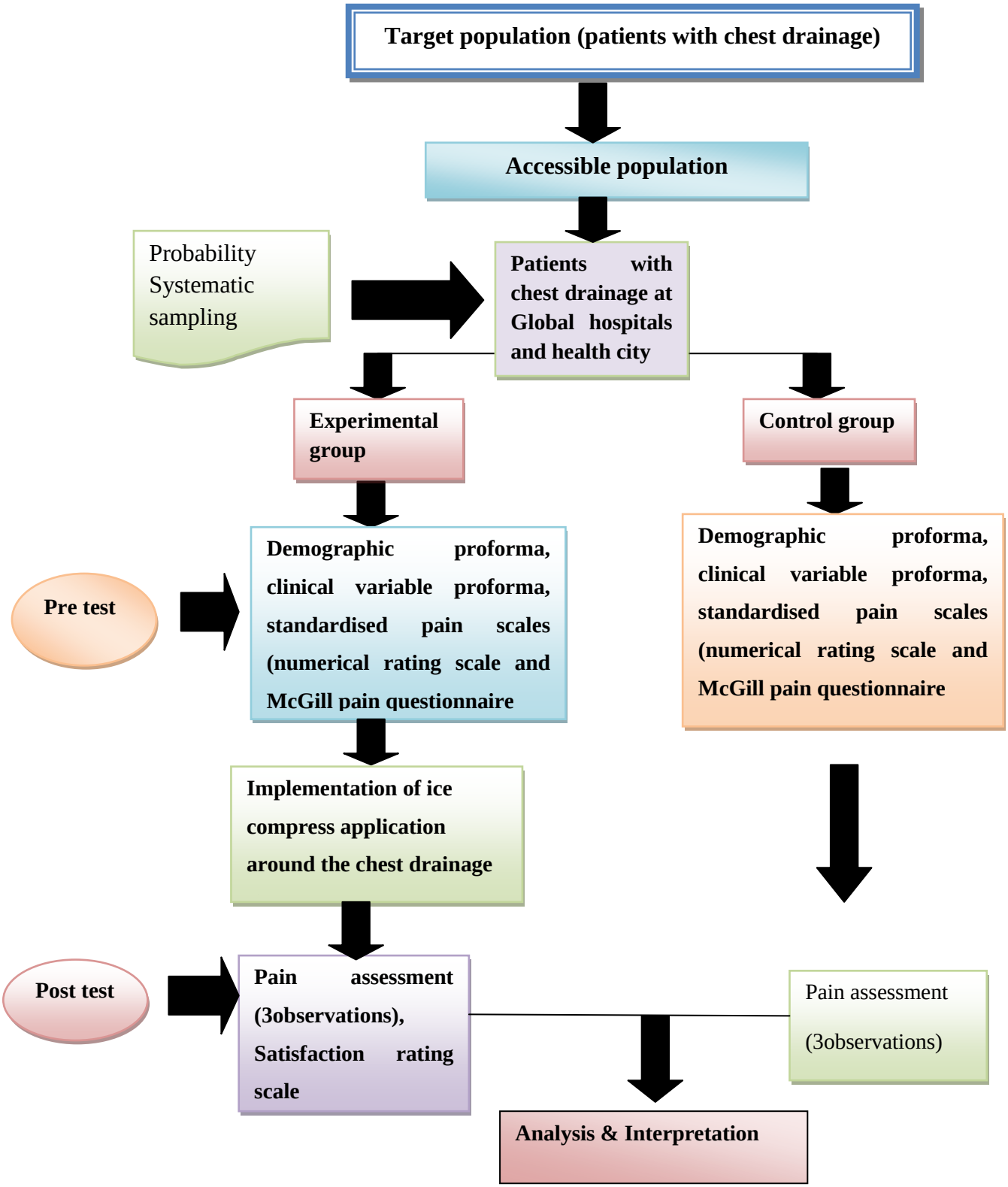

Fig. 2: Schematic Representation of Research design

Research Setting

Settings are the most specific places where data collection will occur (Polit& Beck 2006). The present study was conducted at Global Hospitals and Health City in Sholinganallur, Chennai. This is an NABH accredited hospital and specializes in multi speciality surgical procedures; approximately 3 to 5 cardiothoracic surgeries are performed every day. The study was conducted in cardio-thoracic intensive care unit, which has 23 beds with all advanced equipments necessary to receive post operative cardiac thoracic patients .The hospital also performs heart and lung transplants . Setting was chosen on feasibility in terms of availability of adequate subjects.

Population

Population is the entire aggregation of cases which meet designated set of criteria (Polit & Beck 2004).

Target population is the group of population the researcher aims to study and to whom the study findings will be generalized. In this study the target population comprises of all patients with chest drainage.

Accessible population is the list of population that the researcher finds in the study area. The accessible population in this study was the patients with chest drainage in Global Hospitals and Health City, Chennai.

Sample

Sample consists the subset of the units that comprises the population. (Polit & Beck 2006).

A sample of 60 patients with chest drainage were selected for the study out of which 30 were assigned to experimental group .Among 60 patients, 30 were assigned to control group and sampling is done by systematic sampling method.

Sampling Criteria

Inclusion criteria

1. Post operative cardiac patients with chest drain
2. Post operative thoracic patients with chest drain
3. Patients on medical treatment with chest drain
4. Those who are willing to participate in study
5. Those who are available at the time of data collection
6. Both male and female
7. Patients aged between 20 to 60 yrs.

Exclusion criteria

1. Patients with low GCS.
2. Patients on sedations and anesthesia on mechanical ventilation.
3. Not willing to participate in the study.
4. No paediatric population.

Selection and Development of Study Instruments

The study is aimed at evaluating the effectiveness of ice compress upon pain perception on chest drain removal. The data collection instruments were developed through an extensive review of literature in consultation with opinion of experts and guidance from faculty members. The instruments used in this study are,

1. Demographic Variable Proforma.
2. Clinical Variable Proforma.
3. Standardized Pain scale to assess pain distress, intensity, sensory and affective component by using Numerical rating scale and Mc Gill pain questionnaire.
4. Level of Satisfaction rating scale.

Demographic variable proforma

This includes age , gender , marital status , education , occupation , income , type of work,dietary pattern,lifestyle,family history .

Clinical variable proforma

This includes diagnosis, type of chest drain, number of chest drainage and days, BMI, co morbid, treatment for pain, ambulation of patient with chest drain and previous experience.

Standardized pain scale to assess pain distress, intensity, sensory and affective component

(Numerical rating scale and Mc Gill pain questionnaire)

Scoring interpretation (Numerical rating scale)

Score	**Interpretation**
0	No pain
1 – 3	Mild pain
4 – 6	Moderate pain
7 – 10	Severe pain

Scoring interpretation (Mc Gill pain questionnaire)

Score	Interpretation
0 – 11	No pain
11 – 22	Mild pain
22 – 33	Moderate pain
33 – 45	Severe pain

Satisfaction rating scale

The patient's satisfaction on ice compress application was assessed by using rating scale. This scale had 20 statements regarding the effects of the therapy; the method of ice compresses application and the approach of the researcher. The responses extend as highly satisfied (score = 4), moderately satisfied (score = 3), just satisfied (score = 2) and dissatisfied (score = 1).

Scores	Percentage	Level of satisfaction
4 - 10	<25%	Dissatisfied
11 - 20	25 – 50%	Just satisfied
21 - 30	51-75%	Moderately Satisfied
31 - 40	> 75%	High satisfied

Psychometric Properties of the Instruments

Validity

Content validity refers to the adequacy of the sampling of the domain being studied. The content validity of the tool was obtained by getting opinion from five experts in the field of medical surgical nursing. The validation was with suggested some

specific modifications in the objectives and rating scale. The modifications and suggestions of experts were incorporated in the final preparation of the project.

Reliability

Reliability is the degree of consistency with which an instrument measures the attribute it intended to measure (Polit & Beck,2009).The reliability of the tools was determined by using inter rater technique and split half method and Karl pearson's 'r' was computed for finding out the reliability.

Standardised numerical pain scale - Inter rater technique (r = 0.88)

Standardised McGill pain inventory - Inter rater technique (r = 0.85)

Rating scale on patient satisfaction – Split half method (r = 0.80)

Pilot study

According to Polit and Hungler (2006), a pilot study is a miniature or some part of the actual study, in which the instrument is administered to the subjects drawn from the population. It is a small scale version or trial run, done in preparation for the major study. The purpose is to find out the feasibility to conduct the main study.

Pilot study was conducted with twelve patients with chest drainage in Global Hospitals and Health City, Chennai. Standardised pain assessment scale was used and ice compress application was implemented and found to be feasible be feasible.

Protection of Human Rights

- The study was conducted after obtaining clearance from medical guide and ethical committee, Apollo hospitals and Global hospitals, Chennai
- Consent was obtained from all the participants before the data collection.
- Confidentiality was maintained throughout the study.

Data Collection Procedure

The investigator collected the data from Global Hospitals and Health City , Chennai .The study participants were selected using systematic sampling method.

Step 1: Administration of demographic and clinical variable proforma and standardized pain assessment scale as a pretest to know the baseline pain level.

Step 2: Ice compress was applied around the site of chest drainage for ten minutes at an interval of ten minutes for one hour to the experimental group of patients.

Step 3: The level of pain was assessed by using standardized pain assessment scales before chest drain removal for control and experimental group respectively.

Step 4: The level of pain was assessed by using standardized pain assessment scales immediately after chest drain removal for control and experimental group respectively.

Step 5: The level of pain was assessed by using standardized pain assessment scales at 15 minutes later after chest drain removal for control and experimental group respectively.

Problems Faced During the Study

The problems faced during the data collection were,

- Few patients were not willing for the study
- Few patients felt that the temperate of ice compress was not sufficient enough.

Plan for Data Analysis

Data analysis is the systematic organization and synthesis of research data and testing of null hypotheses by using the obtained data (Polit & Beck,2004).Data analysis and interpretation were carried out using descriptive and inferential statistics like mean, standard deviation, paired 't' test and chi square

Summary

This chapter dealt with the selection of research approach, research design, setting, population, sample and sampling technique, sampling criteria, selection and development of study instruments, validity and reliability of study instruments, pilot study, data collection procedure, and plan for data analysis.

Chapter 4
Analysis and Interpretation

CHAPTER 1V

ANALYSIS AND INTERPRETATION

Data analysis is conducted to reduce, organize and give meaning to the data. The results obtained from data analyses require interpretation to be meaningful. Interpretation of data involves examining the results from data analysis forming conclusions, considering the implications for nursing, exploring the significance of the findings and suggesting further studies (Polit & Beck, 2010).

This chapter deals with analysis and interpretation of data including both descriptive and inferential statistics. The data were analysed according to the objectives and hypothesis of the study. Analysis of the data was compiled after all the data was transferred to the master coding sheet. The data were analyzed, tabulated and interpreted using appropriate descriptive and inferential statistics.

Organisation of Findings

The findings of the study was organised and presented under the following headings.

- Frequency and percentage distribution of selected demographic variables in the control and experimental group of patients with chest drainage.
- Frequency and percentage distribution of clinical variables in the control and experimental group of patients with chest drainage.
- Frequency and percentage distribution of level of pain before and after ice compress application in the control and experimental group of patients with chest drainage.

- Frequency and percentage distribution of level of satisfaction scores of ice compress application in the experimental group of patients with chest drainage.
- Comparison of mean and standard deviation of level of pain before ice compress application between control and experimental group of patients with chest drainage and after ice compress application of patients with chest drainage.
- Association between the selected demographic variables and the level of pain before and after ice compress application in the control and experimental group of patients with chest drainage.
- Association between the selected clinical variables and the level of pain before and after ice compress application in the control and experimental group of patients with chest drainage.

Table. 1

Frequency and Percentage Distribution of Demographic Variables in the Control and Experimental Group of Patients with Chest Drainage.

Demographic Variables	Control Group (n=30)		Experimental Group (n=30)	
	n	p	n	p
Age (in years)				
< 40	12	40	7	23.34
41-60	12	40	20	66.67
>61	6	20	3	10
Area of residence				
Urban	19	63.34	20	66.67
Suburban	8	26.67	8	26.67
Rural	3	10	2	6.67
Education				
Illiterate	0	0	6	20
Primary	6	20	3	10
Secondary	11	36.67	12	40
Higher secondary	5	16.67	7	23.34
Graduate and above	8	26.67	8	26.67
Occupation				
Profession	6	20	7	23.34
Non professional	24	80	23	76.67

Annual income(Rs)				
1lakh – 3lakh	11	36.67	9	30
3lakh – 5lakh	15	50	14	46.67
Above 5lakh	4	13.34	7	23.34
Marital status				
Unmarried	6	20	1	3.34
Married	23	76.67	29	96.67
Widow	1	3.34	0	0
Divorcee	0	0	0	0
Type of diet				
Vegetarian	9	30	3	33.34
Mixed	21	70	27	90
Frequency of consuming Non veg foods				
Once a week	11	36.67	10	33.34
Twice	6	20	9	30
Often	4	13.34	3	10
Rare	4	3.34	2	6.67
History of smoking and alcoholism				
Smoking	4	13.34	1	3.34
Alcoholism	3	10	5	16.67
Both	4	13.34	6	20
None	19	63.34	18	60

Family history of cardio vascular and respiratory diseases				
Yes	14	46.67	10	33.34
No	16	53.34	20	66.67

It can be noted in table 1 that, most of the patients were in the age group of 41-60 years (40%, 66.67%), living in urban region (63.34%, 66.67%), majority were non vegetarians(70%, 90%),most of them had no family history of cardiovascular and respiratory diseases (53.34% ,66.67%), in control and experimental group respectively.

Fig.3 shows that majority of them were males (53%, 86%), and significant percentage of them were females (46%, 13%) in control and experimental group respectively.

Fig.4 depicts that majority of patients were moderate workers (93%, 76%) and significant percentage of patients were sedentary workers (6%, 16%) and heavy workers (6%, 0%) in control and experimental group respectively.

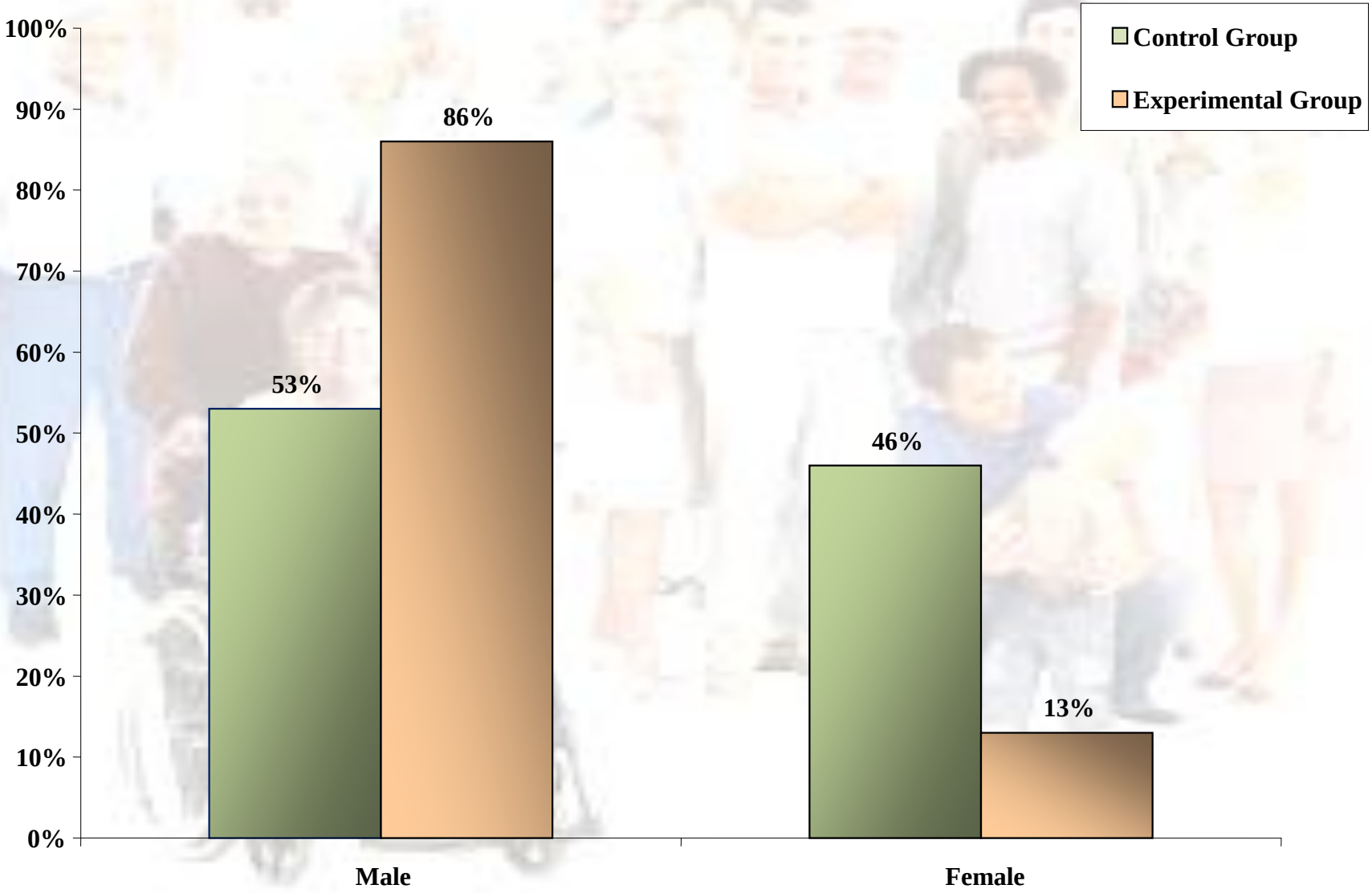

Fig.3 Percentage distribution of Gender in Control and Experimental group of patients with Chest drainage.

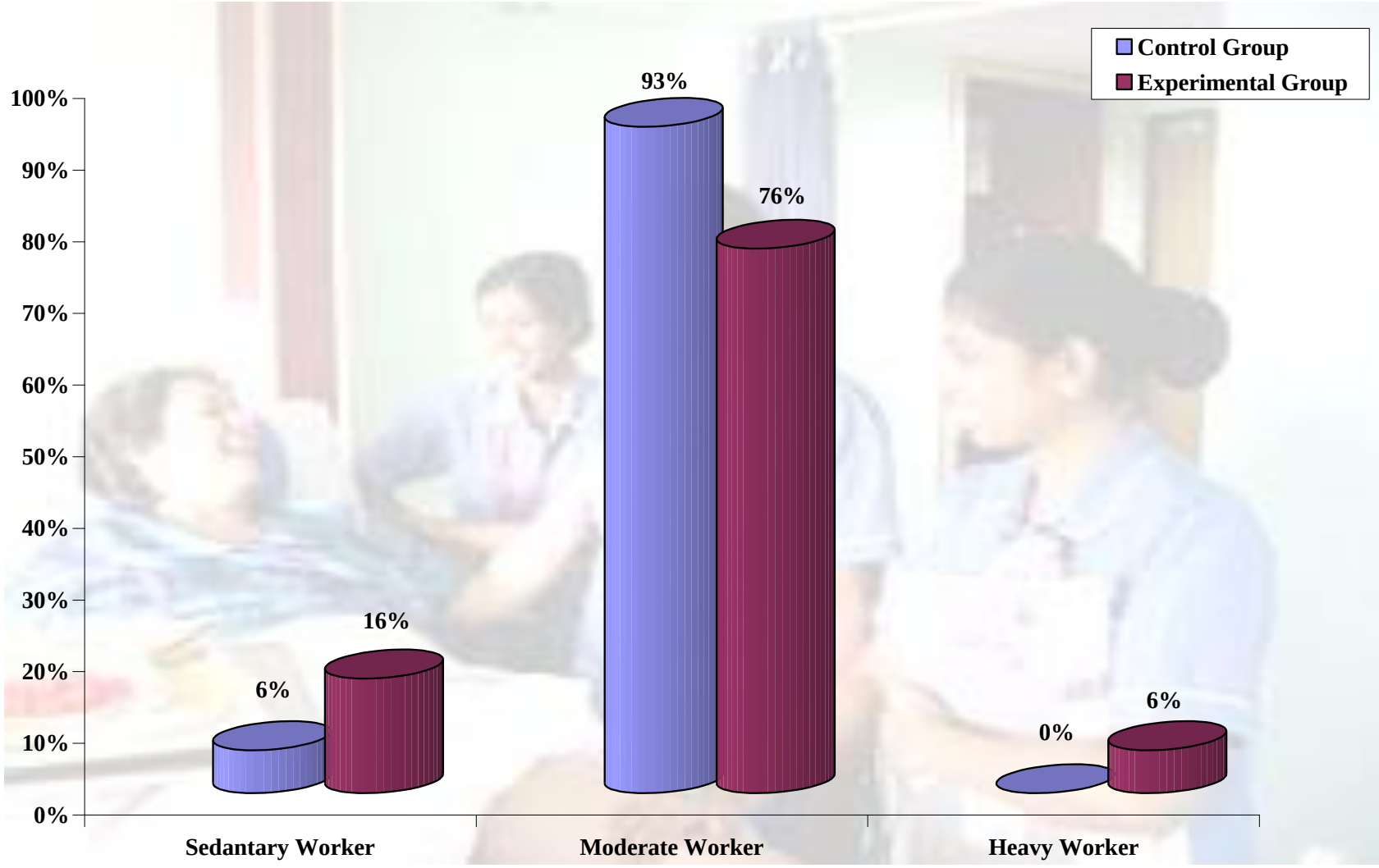

Fig. 4 Percentage Distribution of Nature of Work in Control and Experimental Group of Patients with Chest Drainage

Table. 2

Frequency and Percentage Distribution of Clinical Variables in the Control and Experimental Group of Patients with Chest Drainage.

Clinical Variables	Control Group (n=30)		Experimental Group (n=30)	
	n	p	n	p
Diagnosis				
Undergone cardiac surgery	24	80	22	73.34
Undergone thoracic surgery	6	20	8	26.67
On medical treatment for cardio vascular or pulmonary disorders	0	0	0	0
Any other	0	0	0	0
Number of days on chest drainage				
< 1 day	2	6.67	2	6.67
1 – 3 days	27	90	25	83.34
More than 3 days	1	3.34	3	10
Number of chest drainage tubes				
One	7	23.33	1	3.34
Two	12	40	8	26.67
Three	11	36.67	21	70
More than three	0	0	0	0
BMI in Sq.m				
< 20	12	40	7	23.34
20 - 25	12	40	12	40
25 – 30	6	20	11	36.67
>30	0	0	0	0

Treatment for pain				
Oral NSAIDs	30	100	30	100
Parenteral NSAIDs	0	0	0	0
Narcotic analgesics	0	0	0	0
On NSAIDs and narcotics	0	0	0	0
Previous experience of chest drainage				
Yes	1	3.34	3	10
No	29	96.67	27	90
Ambulated with chest drainage				
Yes	4	13.34	4	13.34
No	26	86.67	26	86.67
Co morbid illness				
Yes	18	60	17	56.67
No	12	40	13	43.34

It can be inferred from table 2 that, majority of the patients in the control and experimental group have undergone cardiac surgery (80%, 73.34%), had chest drain for one to three days (90%, 83.34%),a significant percentage of patients were in BMI 20 – 25sq.m (40%, 40%) and all the patients were on oral NSAIDs (100%, 100%) respectively.

Majority of them had no previous experience with chest drainage (96.67%, 90%), and most patients had co morbid illness (60%, 56.67%) in control and experimental group respectively.

Fig.5 reveals that, majority of patients had both anterior and pleural drain (50%, 73%), most of the patients had pleural drain (33%, 20%) and significant percentage of them had anterior drains (16%, 6%) in control and experimental group respectively.

Fig 6 reveals that majority of patients had increased level of pain during chest physiotherapy (63.34%, 63.34%)

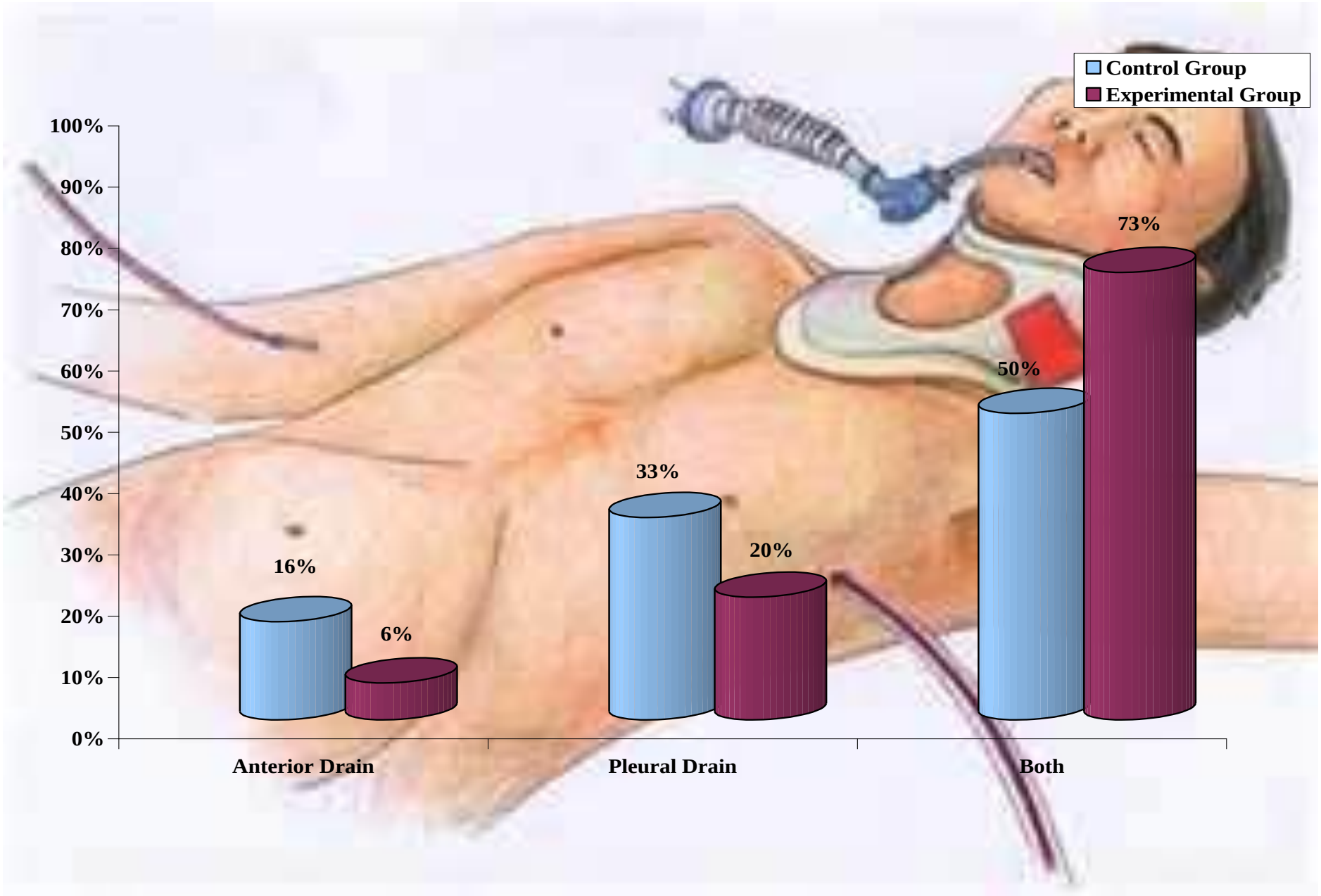

Fig. 5 Percentage Distribution of the Type of Chest Drain Tube in Control and Experimental group of Patients

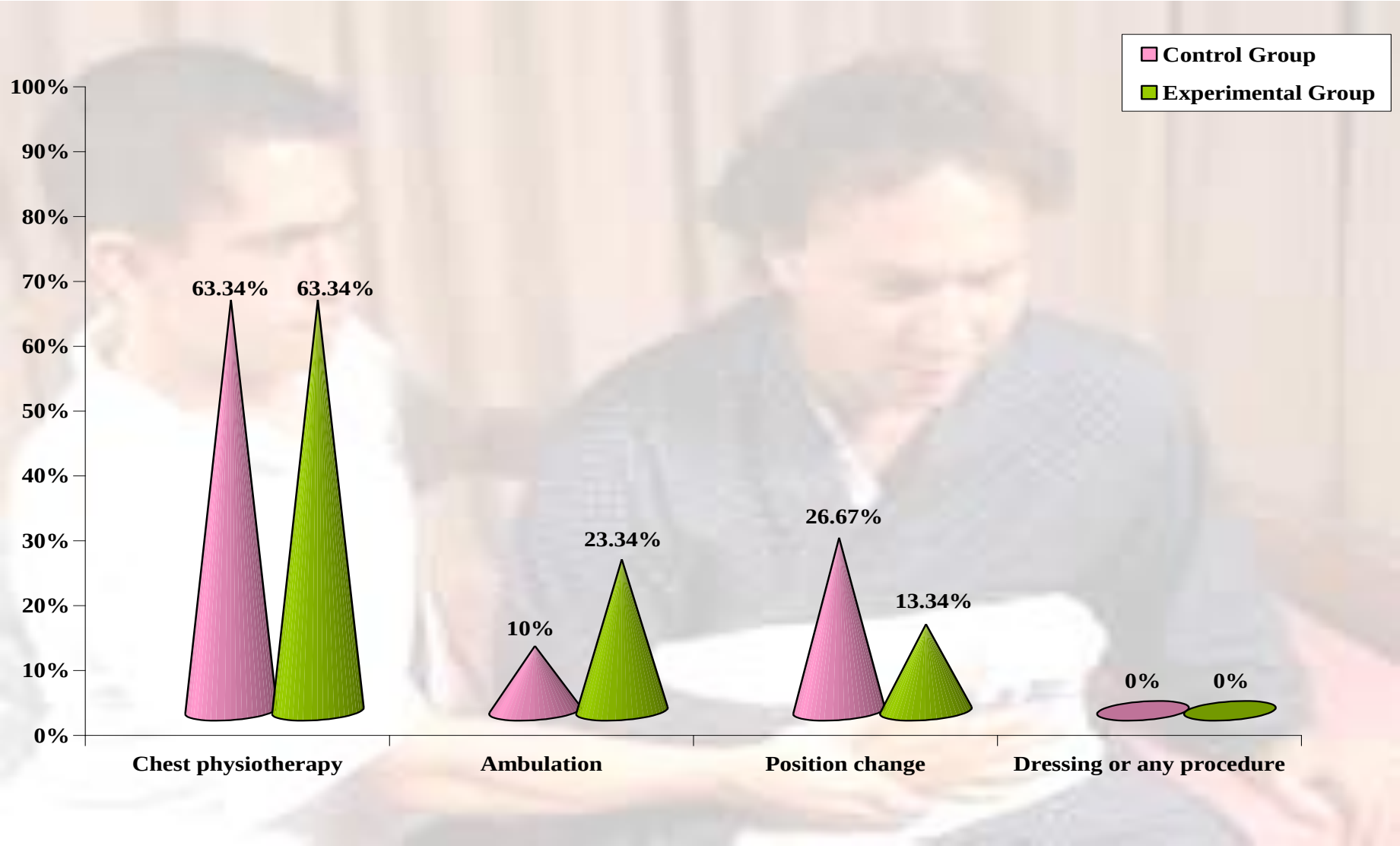

Fig. 6 Percentage Distribution of the Type of Physical Activity that Increase Pain in Control and Experimental Group of Patients with Chest Drainage

Table. 3

Frequency and Percentage Distribution of Level of Pain in the Control and Experimental Group of Patients with Chest Drainage before and after Ice Compress Application.

Variables	Control Group (n=30)				Experimental Group (n=30)			
	pretest		posttest		pretest		posttest	
	n	p	n	p	n	p	n	p
PAIN								
None	0	0	0	0	0	0	1	3.34
Mild	0	0	0	0	0	0	27	90
Moderate	0	0	0	0	0	0	2	6.67
Severe	30	100	30	100	30	100	0	0

Table 3 reveals that majority of patients in control group had severe level of pain in pre test as well as in post test (100%, 100%) respectively. In the experimental group almost everybody had severe level of pain in pre test (100%). However after ice compress application, majority of them had mild level of pain (90%) in experimental group of patients.

Table 4.

Frequency and Percentage Distribution of Type of Pain Assessed using Mc Gill Questionnaire in Control and Experimental Group of Patients with Chest Drainage Before and After Ice Compress Application.

Pain Description	Control Group (n=30)				Experimental Group (n=30)			
	pretest		posttest		pretest		posttest	
	n	p	n	p	n	p	n	p
Sharp	7	23.34	7	23.34	14	46.67	14	46.67
Stabbing	10	33.34	9	30	9	30	6	20
Burning	7	23.34	7	23.34	2	6.67	1	3.34
Fearfull	3	10	1	3.34	1	3.34	1	3.34
Aching	1	3.34	1	3.34	1	3.34	1	3.34
Heavy	1	3.34	-	-	-	-	-	-
Tender	1	3.34	1	3.34	-	-	-	-
Cruel	-	-	-	-	3	10	3	10

Data from table 4 reveals that, majority of patients in control group had stabbing type of pain(33.34%, 30%), most of them had sharp and burning pain (23.34%, 23.34%) in pre test and post test respectively. In experimental group, majority of patients experienced sharp pain (46.67%, 46.67%), most of them had stabbing type of pain (30%, 20%) in pre test and post test respectively

Table.5

Comparison of Mean and Standard Deviation of Level of Pain before Ice Compress Application between Control and Experimental Group of Patients with Chest Drainage and after Ice Compress Application of Patients with Chest Drainage.

Level of pain	Control group (n = 30)		Experimental group (n = 30)		't' test
	Mean	Standard deviation	Mean	Standard deviation	
Numerical rating scale					
Pre test	9.13	0.61	9	0.81	1.34
Post test	7.06	0.77	1.8	1.11	35.39***
Mc Gill pain questionnaire					
Pre test	3	0.17	3	0	0
Post test	2	0.51	0.1	0.39	31.67***

***p< 0.001

Data from table 5 shows that, in control group the mean and standard deviation of level of pain measured using Numerical rating scale (M=9.13,7.06 & SD=0.62, 0.77) and Mc Gill pain questionnaire (M=3,2 & SD=0.17, 0.51) before and after chest drain removal, whereas in experimental group mean and standard deviation of level of pain measured using Numerical rating scale (M=9, 1.8 & SD=0.81, 1.11) and Mc Gill pain questionnaire (M=3, 0.1 & SD=0, 0.39) before and after administration of ice compress therapy. The difference was found to be statistically significant at p<0.001 and since't'

value is higher than the table value; ice compress application is effective in reducing patients pain during chest drainage removal. Hence the null hypothesis Ho2 was rejected.

Table.6

Frequency and Percentage Distribution of Level of Satisfaction Scores of Ice Compress Application in the Experimental Group of Patients with Chest Drainage.

(N = 30)

Domain	Experimental group							
	Highly Satisfied		Moderately Satisfied		Just Satisfied		Dis satisfied	
	n	P	n	p	n	p	n	p
Researcher	28	93.33	2	6.67	-	-	-	-
Ice compress application	27	90.00	3	10.00	-	-	-	-
Effectiveness of ice compress application	28	93.33	2	6.67	-	-	-	-

It can be inferred from table 6 that majority of them (93.33%) were highly satisfied with the approach of researcher, (90%) of patients were highly satisfied with the method of ice compress application and (93.33%) of patients were highly satisfied with the effectiveness of ice compress application.

Table. 7

Association between the Selected Demographic Variables and the Level of Pain before and after Ice Compress Application in the Control and Experimental Group of Patients with Chest Drainage.

Demographic Variables	Control Group (n=30)						Experimental Group (n=30)					
	pretest			posttest			pretest			posttest		
	Up to mean	Above mean	χ^2	Up to mean	Above mean	χ^2	Up to mean	Above mean	χ^2	Up to mean	Above mean	χ^2
Age (in years)												
≤ 40	7	3	0.08	15	4	0.835	3	3	2.08	1	6	0.54
> 40	15	5	(df =1)	7	4	(df =1)	9	9	(df =1)	12	11	(df =1)
Gender												
Male	10	6	2.05	12	5	0.27	18	8	1.67	10	16	0.192
Female	12	2	(df =1)	8	5	(df =1)	4	0	(df =1)	2	2	(df =1)
Area of residence												
Urban	13	6	0.639	15	4	0.835	14	6	0	7	13	0.25
Suburban & Rural	9	2	(df =1)	7	4	(df =1)	7	3	(df =1)	5	5	(df =1)
Education												
Primary& Secondary	13	4	0.197	12	5	0.27	11	4	0	6	19	0
Higher secondary & graduate	9	4	(df =1)	8	5	(df =1)	11	4	(df =1)	6	9	(df =1)

Occupation												
Professional	3	3	2.08	5	4	3.75	4	3	0.359	3	4	0.03
Non Professional	19	5	(df =1)	18	6	(df =1)	17	6	(df =1)	9	14	(df =1)
Nature of Work												
Sedandary & Heavy	1	1	0.596	2	0	1.07	6	1	0.417	2	5	0.496
Moderate	21	7	(df =1)	18	10	(df =1)	17	6	(df =1)	10	13	(df =1)
Annual income(Rs)												
3-5lakh	10	4	0.300	11	4	0.6	8	6	0.423	5	9	0.200
Others	12	3	(df =1)	9	6	(df =1)	13	3	(df =1)	7	9	(df =1)
Marital status												
Unmarried	4	3	1.223	3	4	2.329	21	8	0.376	2	18	1.55
Married	18	5	(df =1)	17	5	(df =1)	1	0	(df =1)	1	0	(df =1)
Type of Diet												
Vegetarian	8	7	1.590	16	6	1.363	2	1	0.017	1	2	0.06
Mixed	14	7	(df =1)	4	4	(df =1)	19	8	(df =1)	11	16	(df =1)
History of smoking & alcoholism												
Smoking & alcoholism	8	3	0.0003	5	6	0.0007	2	4	**4.80***	1	5	1.703
Both & None	14	5	(df =1)	15	4	(df =1)	19	5	(df =1)	11	13	(df =1)
Family history												
Yes	10	4	0.048	9	5	0.06	8	2	0.714	6	4	2.5
No	12	4	(df =1)	11	5	(df =1)	13	7	(df =1)	6	14	(df =1)

*$p < 0.05$.

It could be inferred from Table 7 that there was no significant association between selected demographic variables namely age, educational status, marital status, type of diet, family history and level of pain in control and experimental group of patients. But there was a significant association between history of smoking and alcoholism and the level of pain in experimental group of patients. Hence the null hypothesis Ho4 was partially rejected with regard to history of smoking and alcoholism.

Table. 8

Association between the Selected Clinical Variables and the Level of Pain before and after Ice Compress Application in the Control and Experimental Group of Patients with Chest Drainage.

Clinical Variables	Control Group (n=30)						Experimental Group (n=30)					
	Pretest			Posttest			Pretest			Posttest		
	Up to mean	Above mean	χ^2	Up to mean	Above mean	χ^2	Up to mean	Above mean	χ^2	Up to mean	Above mean	χ^2
Diagnosis												
Undergone cardiac surgery	19	5	2.08	16	8	0	18	4	**5.48****	10	12	1.022
Undergone thoracic surgery	3	3	(df =1)	4	2	(df =1)	3	5	(df =1)	2	6	(df =1)
Type of chest drain												
Anterior & pleural	10	5	0.68	11	4	0.06	4	4	2.077	2	6	1.022
Both	12	3	(df =1)	4	6	(df =1)	17	5	(df =1)	10	12	(df =1)
Number of days on chest drainage												
1-3 days	2	0	0.77	2	0	1.07	4	1	0.285	2	3	0.027
Others	20	8	(df =1)	18	10	(df =1)	17	8	(df =1)	11	14	(df =1)

Number of chest drainage tubes												
1 &2	13	5	0.004	11	7	0.62	5	4	0.105	3	6	0.238
3 &4	9	3	(df =1)	9	3	(df =1)	13	8	(df =1)	9	12	(df =1)
BMI												
< 25	7	5	2.30	7	5	0.62	15	4	0.835	17	12	0.215
> 25	15	3	(df =1)	13	5	(df=1)	7	4	(df =1)	5	6	(df =1)
Physical activity that increase pain												
Chest physio	15	4	0.83	13	6	2.4	14	5	0.33	8	11	0.03
Ambulation & position change	7	4	(df =1)	7	4	(df =1)	7	4	(df =1)	5	6	(df =1)
Previous experience												
Yes	1	0	0.37	1	0	0.51	2	1	0.017	1	2	0.061
No	21	8	(df =1)	19	10	(df =1)	19	8	(df =1)	11	16	(df =1)
Ambulated with chest drainage												
Yes	3	1	0.006	3	1	0.14	3	1	0.05	2	2	0.192
No	19	7	(df =1)	17	9	(df =1)	18	8	(df =1)	10	16	(df =1)
Co morbid illness												
Yes	12	6	0.811	11	7	0.62	13	4	0.78	8	4	0.814
No	9	2	(df =1)	9	3	(df =1)	8	5	(df =1)	4	9	(df =1)

**p < 0.02.

It could be inferred from the table 8 that there was no significant association between selected clinical variables like type and number of chest drain, BMI, previous experience of chest drainage, ambulation, and level of pain in control and experimental group of patients. But there was a significant association between those who had undergone cardiac surgeries and the level of pain in experimental group of patients. Hence the null hypothesis Ho5 was partially rejected with regard to diagnosis of cardiac surgeries.

Summary

This chapter has dealt with the analysis and interpretation of the data obtained by the researcher. The analysis of the results showed that the level of pain was decreased after ice compress application when compared to the level of pain before ice compress application. This can be credited to the effectiveness of ice compress application therapy.

Chapter 5
Discussion

CHAPTER V

DISCUSSION

An Experimental Study to Assess The Effectiveness of Ice Compress upon the Level o f Pain among Patients with Chest Drainage in Global Hospitals and Health City, Chennai.

Objectives of the study

1. To assess the level of pain before and after ice compress application among the control and experimental group of patients with chest drainage.
2. To evaluate the effectiveness of ice compress by comparing the pre test and post test level of pain among the control and experimental group of patients with chest drainage.
3. To find out the association between selected demographic variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application
4. To find out the association between the selected clinical variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application
5. To determine the level of satisfaction among the experimental group of patients with chest drainage before and after ice compress application.

The discussion is presented as follows

- Demographic variables in the control and experimental group of patients with chest drainage.

- Clinical variables in the control and experimental group of patients with chest drainage.
- Level of pain before and after ice compress application in the control and experimental group of patients with chest drainage.
- Type of pain assessed using Mc Gill questionnaire in control and experimental group of patients with chest drainage before and after ice compress application.
- Comparison of mean and standard deviation of level of pain before ice compress application between control and experimental group of patients with chest drainage and after ice compress application of patients with chest drainage.
- level of satisfaction scores of ice compress application in the experimental group of patients with chest drainage.
- Association between the selected demographic variables and the level of pain before and after ice compresses application in the control and experimental group of patients with chest drainage.
- Association between the selected clinical variables and the level of pain before and after ice compresses application in the control and experimental group of patients with chest drainage.

Demographic variables in the control and experimental group of patients with chest drainage.

In this present study, most of the patients were in the age group of 41-60 years (40%, 66.67%). Age is one of the critical factors affecting a person's physical and psychological state of health. In this study, a significant percentage of patients belong to the age group of 41 – 60yrs in control and experimental group. This shows that the

incidence of lifestyle disorders especially cardiac disorders requiring cardiac surgeries increases with increasing age. Also, pain tolerance and threshold reduces and severity of pain gradually increases with aging. This reduced tolerance to pain may be due to age related deterioration of nervous system which senses pain much more and elicits an increased response to pain. The response may also depend upon the frequency, duration and the severity of pain.

In this study, most of them were males (53.34%, 86.67%), living in urban region (63.34%, 66.67%) and majority of them were non vegetarians (70%, 90%).Males are more prone for lifestyle disorders especially myocardial infarction,COPD and most of them requiring cardiothoracic surgery, especially those who are living in urban areas and consume non vegetarian foods are at greatest risk due to modified lifestyle. Chances are more common for the people in urban areas to seek medical advice immediately and follow up as required than those who live in rural areas. Thus it is understood that male gender which those who live in urban areas and those who consume non vegetarian are contributing factors for more number of hospitalisation for cardiac surgeries.

In the present study, majority were moderate workers (93.34%, 76.67%), most of them had no family history of cardiovascular and respiratory diseases (53.34%, 66.67%), in control and experimental group respectively. Cardio thoracic disorders are strongly related to activity and family history. But in this study most of them had no family history of cardio thoracic disorders. Yet, a significant percentage of hereditary carries a risk of posing next generation to these disorders. So sedentary lifestyle and

family history also plays an important role in the incidence of patients undergoing cardiothoracic surgeries.

Clinical variables in the control and experimental group of patient with chest drainage.

Majority of the patients in the control and experimental group have undergone cardiac surgery (80%, 73.34%), with both pleural and anterior chest drains (50%, 73.34%) had chest drain for one to three days (90%, 83.34%) in control and experimental group respectively. The incidence of patients undergoing cardiac surgeries is quite high in developing countries.

Cardiac surgeries have been a major determining factor for chest drainage tube insertion which poses a risk for psychological state of decrease in threshold of pain. In this study, a significant percentage of patients in control and experimental group have undergone cardiac surgeries having pleural and anterior chest drains (mediastinal and pericardial chest drain) for one to three days postoperatively. Pleural drainage is associated with increased intensity and severity of pain physiologically and that threshold decreases with age.

Chest drains are removed either at first or second post operative day as a routine protocol by the time the amount of drainage is reduced or stopped. The Intensity and duration of pain increases as long as the chest tube is in situ.The patients also comes off sedation by first or second post operative day when the chest tube is in place and thus they would experience an intense pain due to chest drainage and during its removal.

This shows that type of surgery, place of chest drain insertion and duration of chest drain in place and its removal increases the intensity and severity of pain experienced by the patient.

In the present study, a significant percentage of patients were in BMI 20 – 25sq.m (40%, 40%) and all the patients were on oral NSAIDs (100%, 100%) and experienced increased intensity of pain during chest physiotherapy (63.34%, 63.34%). Majority of them had no previous experience with chest drainage (96.67%, 90%) in control and experimental group respectively

Subcutaneous muscle and fat is an important factor which determines the pain threshold. Obese, overweight patients may elicit reduced response to pain. Thus the study indicates that subcutaneous fat plays a contributory role in determining the pain threshold. Post operative patients will be started with some form of analgesics to minimise the level of pain, but still patients experience pain during physical activities like physiotherapy, ambulation, and position change dressing. So in this present study also all the patients were on NSAIDs and have experienced increase in level of pain during chest physiotherapy.

Pain intensity and severity also varies with experience.Patients who have experienced a chest tube placement prior would have accustomed to the level of pain with chest tube in situ and removal. Thus is correlates with present study findings that majority of patients who experience an intense level of pain had no previous history of experience with chest drainage.

In this present study, most patients had co morbid illness (60%, 56.67%) in control and experimental group respectively. aging patients with symptomatic cardiovascular and respiratory disorders are at increased risk of associated medical disorders. Pain threshold may vary according to the associated illness or either may aggravate or may reduce the level of pain perception. It is the responsibility of the nurse to collect the history of co-morbid illness and its treatment once after the admission. In this study, most of them had a co morbid illness in both control and experimental group, a contributing factor in relation with threshold of pain.

Level of pain in the control and experimental group of patients with chest drainage before and after ice compress application.

Majority of patients in control group had severe level of pain in pre test as well as in post test (100%, 100%) respectively. In the experimental group almost everybody had severe level of pain in pre test (100%). However after ice compress application, majority of them had mild level of pain (90%) in experimental group of patients.

Nurcan et al (2011) conducted a study to measure the level of pain associated with chest tube removal by using ice pack. It was found that there was a reduction in the level of pain with ice pack application. Similar findings were obtained by the investigator in the present study.

Demir et al (2010) evaluated the effectiveness of use of ice for control of pain associated with chest tube irritation and its results proved that there is a significant reduction in the level of pain associated with chest drainage. This is consistent with the present study findings.

Thus the present study concludes that pain intensity and severity can be altered with ice compress or cold application at the site of chest drainage to relive the irritation associated with chest tube in situ and also minimise the severity of pain during chest drain removal by numbing the site or area of chest tube placement.

Type of pain assessed using Mc Gill questionnaire in control and experimental group of patients with chest drainage before and after ice compress application

Majority of patients in control group had stabbing type of pain (33.34%, 30%), most of them had sharp and burning pain (23.34%, 23.34%) in pre test and post test respectively. In experimental group, majority of patients experienced sharp pain (46.67%, 46.67%), most of them had stabbing type of pain (30%, 20%) in pre test and post test respectively.

Sauls et al (2010) aimed to use ice for pain associated with chest tube removal concluded that there was a significant change in pain by the use of ice and cramping and gnawing were the most frequently used words to describe the pain. But, in this present study majority of patients described pain associated with chest drainage as stabbing and sharp type of pain. The type of pain may vary with the type and size of drain used, patient sense of perception, type and dosage of analgesics that are administered, sedation level of the patient, and Ice temperature.

Comparison of mean and standard deviation of level of Pain before ice compress application between control and experimental group of patients with chest drainage and after ice compress application of patients with chest drainage.

In control group, the mean and standard deviation of level of pain measured using Numerical rating scale (M=9.13,7.06 & SD=0.62, 0.77) and Mc Gill pain questionnaire (M=3,2 & SD=0.17, 0.51) before and after chest drain removal, whereas in experimental group mean and standard deviation of level of pain measured using Numerical rating scale (M=9, 1.8 & SD=0.81, 1.11) and Mc Gill pain questionnaire (M=3, 0.1 & SD=0, 0.39) before and after administration of ice compress therapy. The difference was found to be statistically significant at $p<0.001$.

The investigator's finding were consistent with the study conducted by Leyla et al (2012) who investigated the effect of cold application on pain and anxiety during chest drain removal. The study results showed that cold application reduced the intensity of pain due to chest drain removal.

This shows that ice compress application is effective in minimising pain during chest drain removal. By incorporating ice compress application in chest drain removal protocol can help nurses to achieve patient satisfaction and comfort by reducing the level of pain without any adverse effects as this acts as a physical analgesia.

Level of satisfaction scores of ice compress application in the experimental group of patients with chest drainage.

Majority of them (93.33%) were highly satisfied with the approach of researcher, (90%) of patients were highly satisfied with the method of ice compress application and (93.33%) of patients were highly satisfied with the effectiveness of ice compress application.

The health care system is basically a service based industry and job satisfaction is very much important to obtain a positive outcome. Nursing care is a key determinant to obtain a healthier positive outcome and also to acquire overall patient satisfaction. Nursing power depends on gaining and applying professional knowledge and skills. If hospital nursing services has to provide the highest possible quality nursing care in terms of total patient needs, then the basic nursing care has to be strengthened.

Thus application of basic nursing skills like use of ice pack to reduce pain is cost effective; increases patient satisfaction also enhances nurse patient relationship and thus provides nurses a better job satisfaction with regard to implementation of best available nursing skills to minimise pain without adverse effects.

Association between the selected demographic variables and the level of pain before and after ice compresses application in the control and experimental group of patients with chest drainage.

There was no significant association between selected demographic variables namely age, educational status, marital status, type of diet, family history and level of pain in control and experimental group of patients.

The investigator findings were supported by the study conducted by Nurcan et al (2011) to study the effect of cold application on pain owing to chest drain removal. The study thus concluded that there was a significant difference on pain with cold application prior to and after the intervention. The study also indicated that age, gender, education has no effect on pain during chest drain removal.

This shows that everybody elicit quite a brisk response to pain and irritation with chest tube removal. Demographic characteristics have got no role to play with presence of pain and its intensity. Thus ice compress can be applied to reduce the level of pain during chest drainage removal regardless of age, sex, and other demographic variables.

But, in this present study, there was a significant association between history of smoking and alcoholism (χ^2 =4.80, df=1), ($p<0.05$) and the level of pain in experimental group of patients. So history of smoking and alcoholism has a little impact on the pain perception. So it is the responsibility of nurses to pay special attention to patients with positive history of smoking and alcoholism, measure their level of pain appropriately and apply ice compress judiciously.

Association between the selected clinical variables and the level of pain before and after ice compresses application in the control and experimental group of patients with chest drainage

There was no significant association between selected clinical variables like type and number of chest drain, BMI, previous experience of chest drainage, ambulation, and level of pain in control and experimental group of patients. Application of ice compress

at the site of chest drain before its removal can be made common for all patients with chest drain in situ to minimise the level of pain improve patients comfort regardless of type of chest drain and other clinical variables. The common outcome criteria and tool can be used for all patients to evaluate the level of pain.

So ice compress application can be incorporated in chest drain removal protocol and used in general for all patients with chest drain tubes.

But in this present study, there was a significant association between those who had undergone cardiac surgeries (χ^2 =5.48, df=1), ($p<0.02$) and the level of pain in experimental group of patients. This indicates that pain correlates with the patients who have undergone cardiac surgeries. Thus cardiac surgeries play a contributing role and have an impact on pain owing to chest drain and its removal. Hence nurses should incorporate clinical assessment and judgement skill to identify and measure the level of pain perception and relieve patients from pain and enhance their comfort.

Summary

This chapter dealt with the discussion of findings in the present study which includes demographic variables of patient, clinical variables of patients, level of patient satisfaction, and effectiveness of ice compress application and level of pain of patients with chest drainage.

Chapter 6
Summary, Conclusion, Implications And Recommendations

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATION

This is the most creative and demanding part of the study. This chapter gives a brief account of the present study including the conclusion drawn from the finding, recommendations, limitations of the study, suggestions for the study and nursing implications.

Summary

The present study was indented to analyze the effectiveness of ice compress application and the level of pain in patients with chest drainage at Global Hospitals and Health City, Chennai.

Objectives of the Study

1. To assess the level of pain before and after ice compress application among the control and experimental group of patients with chest drainage
2. To evaluate the effectiveness of ice compress by comparing the pre test and post test level of pain among the control and experimental group of patients with chest drainage.
3. To find out the association between selected demographic variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application
4. To find out the association between the selected clinical variables and the level of pain of control and the experimental group of patients with chest drainage before and after ice compress application

5. To determine the level of satisfaction among the experimental group of patients with chest drainage before and after ice compress application.

Null Hypotheses

Ho1: There will be no significant difference in the level of pain perception of control and the experimental group of patients with chest drainage before and after ice compress application.

Ho2: There will be no significant association selected demographic variables and the level of pain perception of control and the experimental group of patients with chest drainage before and after ice compress application.

Ho3: There will be no significant association selected clinical variables and the level of pain perception of control and the experimental group of patients with chest drainage before and after ice compress application.

The conceptual framework for the study was developed on the basis of King's Goal Attainment Model, which was modified for the present study. An intensive review of literature and experts guidance laid the foundation to the development of tools such as demographic variable proforma, clinical variable proforma, and patient satisfaction rating scale.

In this study, true experimental research design was adopted. The present study was conducted at Global Hospitals and Health City, Chennai among patients with chest drainage. The sample size for the present study was 60 patients with chest drainage, among which, 30 patients were assigned to control group and 30 patients to experimental group who satisfied the inclusion criteria.

The investigator used the demographic and clinical variable proforma of patients to obtain the baseline data.Standardised Numerical rating pain assessment scale and Mc Gill pain questionnaire was used to assess the level of pain before and after ice compress application and rating scale to assess the level of satisfaction of patient about ice compress application. The data collection tools were validated and reliability was established. After the pilot study, the data collection of main study was conducted for period of 4 weeks. The collected information was tabulated and analyzed by using appropriate descriptive and inferential statistics.

The Major Findings of the Study

Demographic variables in the control and experimental group of patients with chest drainage.

Most of the patients were in the age group of 41-60 years (40%, 66.67%), were males (53.34%, 86.67%), living in urban region (63.34%, 66.67%), majority were moderate workers (93.34%, 76.67%), were non vegetarians(70%, 90%),most of them had no family history of cardiovascular and respiratory diseases (53.34%, 66.67%), in control and experimental group respectively.

Clinical variables in the control and experimental group of patient with chest drainage.

Majority of the patients in the control and experimental group have undergone cardiac surgery (80%, 73.34%), with both pleural and anterior chest drains (50%, 73.34%) had chest drain for one to three days (90%, 83.34%), a significant percentage

of patients were in BMI 20 – 25sq.m (40%, 40%) and all the patients were on oral NSAIDs (100%, 100%) respectively.

Majority of them had no previous experience with chest drainage (96.67%, 90%), and most patients had co morbid illness (60%, 56.67%) in control and experimental group respectively.

Level of pain in the control and experimental group of patients with chest drainage before and after ice compress application.

Majority of patients in control group had severe level of pain in pre test as well as in post test (100%, 100%) respectively. In the experimental group almost everybody had severe level of pain in pre test (100%). However after ice compress application, majority of them had mild level of pain (90%) in experimental group of patients.

Type of pain assessed using Mc Gill questionnaire in control and experimental group of patients with chest drainage before and after ice compress application

Majority of patients in control group had stabbing type of pain (33.34%, 30%), most of them had sharp and burning pain (23.34%, 23.34%) in pre test and post test respectively. In experimental group, majority of patients experienced sharp pain (46.67%, 46.67%), most of them had stabbing type of pain (30%, 20%) in pre test and post test respectively

Comparison of mean and standard deviation of level of Pain before ice compress application between control and experimental group of patients with chest drainage and after ice compress application of patients with chest drainage.

In control group the mean and standard deviation of level of pain measured using Numerical rating scale (M=9.13,7.06 & SD=0.62, 0.77) and Mc Gill pain questionnaire (M=3,2 & SD=0.17, 0.51) before and after chest drain removal, whereas in experimental group mean and standard deviation of level of pain measured using Numerical rating scale (M=9, 1.8 & SD=0.81, 1.11) and Mc Gill pain questionnaire (M=3, 0.1 & SD=0, 0.39) before and after administration of ice compress therapy. The difference was found to be statistically significant at $p<0.001$ and since 't' value is higher than the table value; ice compress application is effective in reducing patients pain during chest drainage removal. Hence the null hypothesis Ho2 was rejected.

Level of satisfaction scores of ice compress application in the experimental group of patients with chest drainage.

Majority of them (93.33%) were highly satisfied with the approach of researcher, (90%) of patients were highly satisfied with the method of ice compress application and (93.33%) of patients were highly satisfied with the effectiveness of ice compress application.

Association between the selected demographic variables and the level of pain before and after ice compresses application in the control and experimental group of patients with chest drainage.

There was no significant association between selected demographic variables namely age, educational status, marital status, type of diet, family history and level of pain in control and experimental group of patients. But there was a significant association between history of smoking and alcoholism (χ^2 =4.80, df=1), ($p<0.05$) and the level of pain in experimental group of patients. Hence the null hypothesis Ho4 was partially rejected with regard to history of smoking and alcoholism.

Association between the selected clinical variables and the level of pain before and after ice compresses application in the control and experimental group of patients with chest drainage.

There was no significant association between selected clinical variables like type and number of chest drain, BMI, previous experience of chest drainage, ambulation, and level of pain in control and experimental group of patients. But there was a significant association between those who had undergone cardiac surgeries (χ^2 =5.48, df=1), ($p<0.02$) and the level of pain in experimental group of patients. Hence the null hypothesis Ho5 was partially rejected with regard to diagnosis of cardiac surgeries.

Conclusion

Ice compress therapy is proposed as a means of relieving pain in a timely and cost effective manner. The findings of the study indicated that it will relieve pain and improve the patient level of satisfaction and comfort in regard with chest drain removal.

Implications

The findings of the study has implications in the different branches of nursing profession i.e. nursing practice, nursing education, nursing administration and nursing research.

Nursing practice

Nurses have a major role in assessing and providing pain relief after chest drain is removed. All the clinical nurses should attend short term courses and update their knowledge regarding pain assessment and pharmacological and non pharmacological management of pain which would thereby help in providing quality and efficient care to the patients.

Nursing theory

The conceptual and theoretical models exclusively for pain relief during chest drain removal are yet to be developed by nursing theorists. The clinical framework of the present study is based on king's goal attainment model. This model provide framework to identify needs of the patient in an organized manner and it can be used to intervene the patients appropriately and evaluate the patient outcome and satisfaction

Nursing education

The emerging health care trends of nursing education must focus on non pharmacological nursing methods of pain management which will help to enhance nursing care. Our nursing students should be made aware of different methods of

relieving and managing pain, as it greatly influences the patients' outcome. Nurse educators should take initiatives to publish articles in journals related to pain management during chest drain removal.

Nursing administration

The nurse administrators have responsibility to provide nurses with substantive continuing education opportunities. This will enable the nurses to update their knowledge, acquire special and demonstrate high quality care.

Nursing administrators should take the initiative in organizing educational programs on pain management for the nursing personnel in the hospital to gain adequate knowledge. Nurse administrators should also conduct periodical review meetings to evaluate the quality of pain management.

Nursing administrator should collaborate with governing bodies in formulating policies and protocols for pain management to emphasize nursing care and plan for material, methods and time to conduct successful and useful education programs of pain reduction strategies.

Nursing research

There is a need for extensive and intensive research in this area. It opens a big avenue for research on comparison of pharmacological and non pharmacological methods of pain relief and comparison can also be made between different non pharmacological methods to relieve pain. Dissemination of the findings of the research

through conferences, seminars, publications in national and international nursing journals will benefit a wider community.

Recommendations

- A similar study could be undertaken on larger scale for more valid generalization.
- This study could be replicated in different settings.
- The study could be conducted to compare different non pharmacological methods of pain management.
- Pain management protocol with incorporated ice compress application can be made and put in to practice.

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Appendices

APPENDIX I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

Apollo College of Nursing

(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0281/12 ***11.06.12***

To

The Nursing Director
Global hospitals and health city
439 , Cheran Nagar
Perumbakkam
Chennai – 600100.

Respected Sir / Madam,

Sub.: *To request permission for research study – Reg.*

Greetings! *As part of the curriculum requirement our 2nd year M. Sc. (N) student Ms. R.Sandhya, has selected the following title for her research study.*

"An experimental study to assess the effectiveness of ice compress application upon the level of pain among patients with chest drainage at selected hospital, Chennai."

So I kindly request your good selves to permit her to conduct study in your esteemed institution.

Thanking You,

Dr. LATHA VENKATESAN

PRINCIPAL

IS/ISO 9001:2000

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.
Ph. : 044 - 2653 4387 Tele fax : 044 - 2653 4923 / 044- 2653 4386

Apollo College of Nursing

(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0281/12 **14.06.12**

To

Dr.N.Madhu sankar
Chief cardio thoracic surgeon
Global hospitals and health city
439 , cheran nagar
Perumbakkam
Chennai - 600100

Respected Sir / Madam,

Sub.: To request permission for research study – Reg.

Greetings! As part of the curriculum requirement our 2nd year M. Sc. (N) student Ms.R.Sandhya, has selected the following title for her research study.

"An experimental study to assess the effectiveness of ice compress application upon the level of pain among patients with chest drainage at selected hospital, Chennai."

So I kindly request your good selves to permit her to conduct study in your esteemed institution.

Thanking You,

Dr. LATHA VENKATESAN
PRINCIPAL

IS/ISO 9001:2000

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.
Ph. : 044 - 2653 4387 Tele fax : 044 - 2653 4923 / 044- 2653 4386

APPENDIX II

Dr.C. Emmanuel
M.Sc, M.Phil (Genetics), M.Phil (Cardiac Sci), Ph.D
Director – Academics and Research

GLOBAL HEALTH CITY
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21.07.2012

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. SANDHYA R.,** Second Year M.Sc Nursing student of Apollo College of Nursing, Chennai has completed a research study on "**An experimental study to assess the effectiveness of ice compress application upon the level of pain among patients with chest drainage at selected hospital, Chennai**" in Nursing Department, at Global Hospitals and Health City, Chennai from 22.06.2012 to 21.07.2012 (30 days).

During the tenure her conduct was good and exemplary in character. I appreciate her commitment and fine nursing skill. She was highly motivated with creativity and originality during the study period.

Dr. C. Emmanuel

GLOBAL HOSPITAL & HEALTH CITY
No. 439, Cheran Nagar, Perumbakkam, CHENNAI-100

Global Health City, #439, Cheran Nagar, Off OMR,
Sholinganallur - Medavakkam Road, Perumbakkam, Chennai - 600 100
Ph.: **+91 44 2277 7000 / 2277 2234 / 2277 7777 / 4477 7000** Fax: +91 44 2277 7100
A Unit of Ravindranath GE Medical Associates Pvt. Ltd.
Email: info@globalhealthcity.net www.globalhospitalsindia.com
CHENNAI | Bangalore | Hyderabad | Mumbai
Emergency : 24 24 24 24

APPENDIX III

ETHICAL COMMITTEE CLEARANCE LETTER

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INSTITUTIONAL ETHICS COMMITTEE

Reg. No. IRB00007889

Chairperson
Mr. M. Leon Raymont
(Advocate)

Member Secretary
Dr. C. Emmanuel

Clinician
Dr. V. Kanagaraj

BioMedical Scientists
Dr. I. A. Ranjit Kumar
Dr. P. P. Vijaya

Social Scientist
Mr. G. Ayyappan

Philoşopher
Rev. Dr. Ignacimuthu

Lay Person
Mrs. Latha A.Kumaraswami
Mr. P. Kandasamy

Date : 27th June 2012 and 02nd July 2012
Project Number : HR/2012/MS/008
Project Title : An experimental study to access the effectiveness of ice compress application upon the level of pain among patients with chest drainage at selected hospital.
Chief Investigator : Dr. Jothi Clara
Student : Ms. Sandhya.R.
Approved : From: 02nd July 2012 to 01st January 2013.

Ref: An experimental study to access the effectiveness of ice compress application upon the level of pain among patients with chest drainage at selected hospital.

Sub: Ethics Committee approval

Dear Doctor

The Institutional Ethics committee, Global Hospitals & Health City, Chennai, reviewed and discussed your application dated 11th June 2012 to conduct Research Study.

Risk of Research - NIL

The research involve the use of any drugs - No

The study documents were unanimously approved with 9 votes in favour of the study, 0 votes as against the study. We confirm that the applicant and her guide / guides did not participate in the deliberations of the ethics committee for this study and did not vote on the proposal for this study.

Please read TERMS OF APPROVAL enclosed.

Thank you.

Mr. M. Leon Raymont
Chairperson

Dr. C. Emmanuel
Member Secretary

To: **Dr. Jothi Clara**
Director of Nursing
Global Hospitals and Health City, Chennai

INSTITUTIONAL ETHICS COMMITTEE CHENNAI - 600 100 GLOBAL HOSPITALS No. 439, Cheran Nagar, Perumbakkam CHENNAI-600 100

Hernandes
Nurse Executive
Quality & Research

Global Health City, #439, Cheran Nagar, Off OMR,
Sholinganallur - Medavakkam Road, Perumbakkam, Chennai - 600 100
Ph.: +91 44 2277 7000 / 2277 2234 / 2277 7777 / 4477 7000 Fax: +91 44 2277 7100
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INSTITUTIONAL ETHICS COMMITTEE

Reg. No. IRB00007889

Date	: 27th June 2012 and 02nd July 2012
Project Number	: HR/2012/MS/008
Project Title	: An experimental study to access the effectiveness of i compress application upon the level of pain among patier with chest drainage at selected hospital.
Chief Investigator	: Dr. Jothi Clara
Student	: Ms. Sandhya R.
Approved	: From: 02nd July 2012 to 01st January 2013.

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to Institutional Ethics Committee – Global Hospitals and Health City (IEC-GHHC) before any data collection can occur at the specified organization. Failure to provide permission letters to IEC-GHHC before data collection commences is in breach of the guidelines of ICMR/IRB for Human Research.

2. It is the responsibility of the Chief Investigator to ensure that all investigators / Research Candidates are aware of the terms of approval and to ensure the project is conducted as approved by IEC-GHHC.

3. You should notify IEC-GHHC immediately of, if any, serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.

4. The Explanatory Statement must be on Global Hospitals and Health City letterhead and the Global Hospitals and Health City complaints clause must contain your project number..

5. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to IEC-GHHC and must not begin without written approval from IEC-GHHC. Substantial variations may require a new application.

GLOBAL HOSPITALS CHENNAI-600 100. No. 439, Cheran Nagar, Perumbakkam

Global Health City, #439, Cheran Nagar, Off OMR,
Sholinganallur - Medavakkam Road, Perumbakkam, Chennai - 600 100
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Emergency : 24 24 24 24

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NURSE EXECUTIVE
QUALITY & RESEARCH

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6. **Future correspondence:** Please quote the project number and project title above in any further correspondence.

7. **Annual reports:** Continued approval of this project is dependent on the submission of your Report. This is determined by the date of your letter of approval.

8. **Final report:** A Final Report should be provided at the conclusion of the project. IEC-GHHC should be notified if the project is discontinued before the expected date of completion.

9. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by IEC-GHHC at any time.

10. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

Mr. M. Leon Raymont
Chairperson - IEC

INSTITUTIONAL ETHICS COMMITTEE * CHENNAI - 600 100 * GLOBAL HOSPITAL HEALTH CITY

Dr. C. Emmanuel
Member Secretary - IEC

To: **Dr. Jothi Clara**
Director of Nursing
Global Hospitals and Health City, Chennai

GLOBAL HOSPITALS * No.439, Cheran Nagar, Perumbakkam * CHENNAI-600 100.

Fernandus
NURSE EXECUTIVE
QUALITY & RESEARCH

Ethics Committee

Apollo HOSPITALS
TOUCHING LIVES

30th August 2012

To,

Ms. R. Sandhya
2nd Year M.Sc (Nursing),
Department of Medical Surgical Nursing,
Apollo College of Nursing,
Chennai.

Ref: Effectiveness of Ice compress application upon the level of pain among patients with chest drainage

Sub: Approval of the above referenced project and its related documents.

Dear Ms. R. Sandhya,

Ethics Committee-Apollo Hospitals has received the following document submitted by you related to the conduct of the above-referenced study.

- Project proposal.
- Participant consent form.

The Ethics Committee-Apollo Hospitals reviewed and discussed the study proposal documents submitted by you related to the conduct of the above referenced study at its meeting held on 29th August 2012.

The following Ethics Committee Members were present at the meeting held on 29th August 2012.

Name	Profession	Position in the committee
Mr. S. S. Narayanan	Ethicist	Chairman
Dr. Rema Menon	Clinician	Member Secretary
Dr. Radha Rajagopalan	Clinician	EC-Member
Dr. Krishnakumar	Clinician	EC-Member
Dr. Vijaya Kumar	Clinician	EC-Member
Dr. Clive Fernandes	Consultant Clinical Pharmacologist	Basic Medical Scientist
Dr. Nalini Roa	Social Worker	EC-Member
Ms. N. Suseela	Retired English Teacher	Layperson
Ms. Maimoona Badsha	Lawyer	Lawyer

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai - 600 006
Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449
E - Mail : ecapollochennai@gmail.com

Ethics Committee

Apollo HOSPITALS
TOUCHING LIVES

Dr. Paul Dilipkumar	Clinician	EC-Member
Dr. V. Balaji	Clinician	EC-Member
Dr. M. A. Raja	Consultant Medical Oncologist	EC-Member

After due ethical and scientific consideration, the Ethics Committee has approved the above presentation submitted by you.

The EC review and approval of the report is only to meet their academic requirement and will not amount to any approval of their conclusions / recommendations as conclusive, deserving adoption and implementation, in any form, in any healthcare institution.

The Ethics Committee is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

With Regards,

Date: 30/8/12

Rema Menon

Dr. Rema Menon,
Ethics Committee-Member Secretary,
Apollo Hospitals, Chennai,
Tamil Nadu, India.

Dr. REMA MENON
MEMBER SECRETARY
ETHICS COMMITTEE, APOLLO HOSPITALS
APOLLO HOSPITALS ENTERPRISE LIMITED
CHENNAI-600 006, TAMILNADU

Apollo Hospitals Enterprise Limited
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E - Mail : ecapollochennai@gmail.com

APPENDIX IV

LETTER SEEKING PERMISSION FOR CONTENT VALIDITY

From
Ms. Sandhya.R
M.Sc(Nursing) Second Year,
Apollo College of Nursing,
Chennai – 600 095.

To

Forwarded Through:
Dr. Latha Venkatesan,
Principal,
Apollo College of Nursing.

Sub: **Requesting for opinions and suggestions of experts for establishing content validity for research tool**.

Respected Madam,

I am a postgraduate student of the Apollo College of Nursing. I have selected the below mentioned topic for research project to be submitted to The Tamil Nadu Dr. M.G.R Medical University, Chennai as a partial fulfillment of Masters of Nursing Degree.

An experimental study to assess the effectiveness of ice compress application upon the level of pain among patients with chest drainage in Global hospitals and health city, Chennai.

With regards may I kindly request you to validate my tool for its appropriateness and relevancy. I am enclosing the Background, Need for the study, Statement of the problem, Objectives of the study, Demographic Variable Proforma, Clinical Variable Proforma, Standardized pain assessment tools and rating scale on the satisfaction of patients. I would be highly obliged and remain thankful for your great help if you could validate and send it as soon as possible.

Thanking you,

Date: **Yours sincerely,**
Place: **(Sandhya.R)**

APPENDIX V

LIST OF EXPERTS

1. **Dr. Latha Venkatesan, M.Sc(N), M.Phil(N)., Ph.D(N),**

   Principal and HOD of Maternity Nursing,

   Apollo College of Nursing,

   Chennai- 600 095

2. **Prof. Lizy Sonia. A, M.Sc(N)., Ph.D(N),**

   Vice Principal and HOD of Medical Surgical Nursing,

   Apollo College of Nursing,

   Chennai-600 095

3. **Prof. K. Vijayalakshmi, M.Sc(N)., Ph.D(N),**

   HOD of Psychiatric Nursing,

   Apollo College of Nursing,

   Chennai- 600 095

4. **Prof. Shobana, M.Sc(N),**

   HOD of Community Health Nursing,

   Apollo College of Nursing,

   Chennai- 600 095

5. **Prof. Nesa Sathya Satchi, M.Sc(N),**

   HOD of Pediatric Nursing,

   Apollo College of Nursing,

   Chennai- 600 095

6. **Mrs. Jaslina Gnana Rani .J, M.Sc(N),**

Reader in Medical Surgical Nursing,

Apollo College of Nursing,

Chennai- 600 095

7. **Mrs. Sasi Kala, M.Sc(N),**

Reader in Medical Surgical Nursing

Apollo College Of Nursing

Chennai-600 095

8. **Mrs. Kanchana, M.Sc (N)., M.Sc(Psy),**

Reader in Medical Surgical Nursing,

Apollo College of Nursing,

Chennai-600 095

9. **Mrs. Kasthuri, M.Sc (N),**

Lecturer in Medical Surgical Nursing,

Apollo College of Nursing, Chennai- 600 095

APPENDIX VI

CERTIFICATE FOR CONTENT VALIDITY TO WHOMSOEVER IT MAY CONCERN

This is to certify that tools and content for the research study developed by II year M.Sc. (Nursing) student of Apollo College of Nursing for her dissertation "An experimental study to assess the effectiveness of ice compress application upon the level of pain among patients with chest drainage in Global hospitals and health city, Chennai".was validated.

Signature of the Expert

APPENDIX VII

RESEARCH PARTICIPANT CONSENT FORM

Dear participant/ bystander,

I am Sandhya. R. a M.Sc Nursing student of Apollo College of Nursing, Chennai. As a part of my study, a research on **An Experimental Study To Assess The Effectiveness Of Ice Compress Application Upon The Level Of Pain Among Patients With Chest Drainage.**

I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in response. The information obtained will be kept confidential and anonymity will be maintained.

Signature of the researcher

I ……..Hereby consent to participate my relative in this study

Place:

Date:

Signature of the participant/ bystander.

APPENDIX VIII

CERTIFICATE FOR ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation, "An Experimental Study To Assess The Effectiveness Of Ice Compress Upon The Level Of Pain Among Patients With Chest Drainage In Selected Hospitals, Chennai." by Ms R.SANDHYA, II year M.Sc (N) Student, Apollo College of Nursing, was edited for English Language appropriateness.

P. Thangaraj 13/12/2012

Signature

P. THANGARAJ,
M.A., M.Ed., M.Phil.,
BT. ASSISTANT (ENGLISH)
CORPORATION HIGH SCHOOL,
Ganesapuram, Chennai-600 039.

APPENDIX IX

Certificate for Tamil editing

To whom so ever it may concern

This to certify that the dissertation, "An Experimental Study To Assess The Effectiveness Of Ice Compress Upon The Level Of Pain Among Patients With Chest Drainage In Selected Hospitals, Chennai." by Ms.R.SANDHYA, M .Sc Nursing II year student, Apollo College Of Nursing ,was edited for tamil language appropriateness .

S.R.Jayanthi 18/12/12

Signature

Headmistress
CHENNAI HIGH SCHOOL
88, Mc Nichol's Road,
Chetpet, Chennai - 600 031

APPENDIX X

PLAGIARISM DETECTOR ORIGINALITY REPORT

Plagiarism Detector - Originality Report

Plagiarism Detector Project: [http://plagiarism-detector.com] Application core verrsion: 557

This report is generated by the unregistered Plagiarism Detector Demo version!

- 600 initial words analysis only
- partial plagiarism detection
- some important results are excluded
- no external file processing

Register the software - get the complete functionality!

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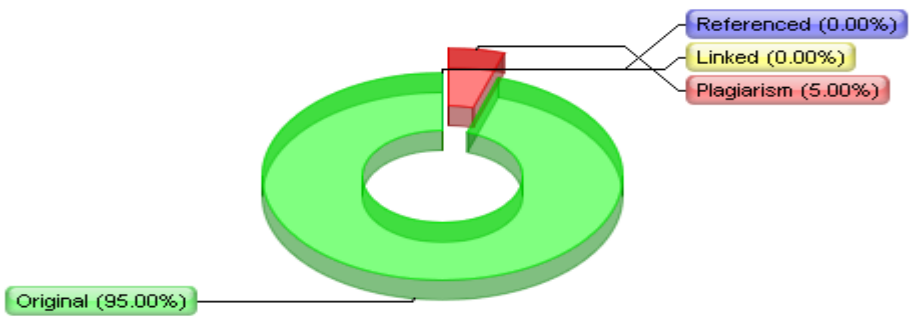
Plagiarism Detection Chart:



<=""">

Referenced 0% / Linked 0%

Original - 95% / 5% - Plagiarism

APPENDIX XI

DEMOGRAPHIC PROFORMA

Purpose

This proforma is used by the researcher to collect information on demographic variables such as age, gender, education, occupation, income, marital status, area of residence, type of diet and nature of work.

Instruction

The researcher will collect information and select appropriate answers according to the collected information and place the correct option in the given box. Please feel free and frank in answering these questions. The Collected information will be kept confidential and anonymity will be maintained throughout the study.

Sample no:

1. **Age in years**

   1.1 Less than 40 ☐

   1.2 40 – 60 ☐

   1.3 > 60yrs ☐

2. **Gender**

   2.1 Male ☐

   2.2 Female ☐

3. **Area of residence**

   3.1 Urban ☐

   3.2 sub urban ☐

   3.3 Rural ☐

4. Education

4.1 Illiterate ☐

4.2 Primary ☐

4.3 Secondary ☐

4.4 Higher secondary ☐

4.5 Graduate and above ☐

5. Occupation

5.1Profession ☐

5.2 Non professional ☐

6. Nature of work

6.1 Sedentary ☐

6.2 Moderate ☐

6.3 Heavy ☐

7. Annual Income

7.1 Rs.1 lakh – Rs.3 lakh ☐

7.2 Rs.3 lakh – Rs.5 lakh ☐

7.3 Above Rs.5 lakh ☐

8. Marital status

8.1 Unmarried ☐

8.2 Married ☐

8.3 widow ☐

8.4 Divorce ☐

9. Type of diet

9.1 Vegetarian ☐

9.2 Mixed ☐

10. If Non vegetarian, how often it is consumed

10.1. Once a week ☐

10.2 Twice a week ☐

10.3 Often ☐

10.4 Rare ☐

11. History of smoking and alcoholism

11.1 Smoking ☐

11.2 Alcoholism ☐

11.3 Both ☐

11.4 No ☐

12. Family history of cardio vascular and respiratory diseases

12.1 Yes ☐

12.2 No ☐

சமூக மற்றும் குடும்ப விவரங்களின் மாறுபட்ட குறிப்புகளை அறியும் மாதிரிப்படிவம்

நோக்கம்

இப்பட்டியல் பலவகையான வேறுபாடுகளை அளவு செய்கிறது. அவை வயது, இனம் (ஆண்/பெண்), கல்வித் தகுதி, செய்யும் தொழில், திருமணமாவரா, குடும்ப மாத வருமானம், மதம், குடும்ப நிலை மற்றும் உணவு இருப்பிடம்.

முன்குறிப்பு

கீழ்கண்ட கேள்விகளுக்கு விடை அளிக்கவும். இத்தகவல்களை ஆராய்ச்சியாளர் பூர்த்தி செய்வார். திறந்த மனதுடன் ஒளிவு மறைவில்லாமல் பதிலளக்கவும். இத்தகவல்கள் ரகசியமாக வைக்கப்படும்.

தன் நிலை விளக்கம்

1. வயது (ஆண்டுகளில்) ☐

1.1 40 வயதுக்குக் கீழ்

1.2 40 – 60

1.3 60 வயதுக்கு மேல்

2. பாலினம் ☐

2.1 ஆண்

2.2 பெண்

3. குடியிருக்கும் இடம் ☐

3.1 நகரம்

3.2 புறநகர்

3.3 கிராமம்

4. கல்வித் தகுதி

4.1 படிப்பறிவில்லாதவர்

4.2 தொடக்கக்கல்வி

4.3 மேல்நிலை

4.4 உயர்நிலை

4.5 பட்டப்படிப்பு மற்றும் அதற்கு மேல்

5. வேலை

5.1 தொழிலறிஞர்

5.2 தொழில் அறியாதவர்

6. வேலையின் தன்மை

6.1 மிதமான வேலை

6.2 கடின வேலை

7. குடும்பத்தின் ஆண்டு வருமானம்

7.1 ரூ.1 – 3 லட்சம்

7.2 ரூ.3 – 5 லட்சம்

7.3 ரூ.5 லட்சத்திற்கு மேல்

8. திருமணத் தகுதி

8.1 திருமணமாகாதவர்

8.2 திருமணமானவர்

8.3 மனைவி / கணவரை இழந்தவர்

8.4 விவாகரத்தானவர்

9. உணவுப்பழக்கம்

9.1 சைவம்

9.2 அசைவம்

10. அசைவம் சாப்பிடுவீர்களானால், எவ்வளவு நாட்களுக்குகொரு முறை

10.1 வாரத்தில் ஒருமுறை

10.2 வாரத்தில் இருமுறை

10.3 வாரத்தில் பலமுறை

10.4 எப்பொழுதாவது

11. மது அருந்தும் மற்றும் புகைப்பிடிக்கும் பழக்கம் உள்ளதா?

11.1 புகைப்பிடித்தல்

11.2 மது அருந்துதல்

11.3 இரண்டும்

11.4 எதுவுமில்லை

12. குடும்பத்தில் எவருக்கேனும் இருதயம் மற்றும் நுறையீரல் நோய் உள்ளதா?

12.1 ஆம்

12.2 இல்லை

APPENDIX XII

CLINICAL VARIABLE PROFORMA

Purpose

This proforma is used by the researcher to collect information on clinical variables such as diagnosis, number of chest drains, and type of chest drain, number of days of chest drainage, associated treatment for pain, co morbid illness, and previous experience of chest drainage.

Instructions

The researcher will collect information and select appropriate answers according to the collected information and place the correct option in the given box. Please feel free and frank in answering these questions. The Collected information will be kept confidential and anonymity will be maintained throughout the study.

Sample no

1. Diagnosis

1.1 Undergone cardiac surgery ☐

1.2 Undergone thoracic surgery ☐

1.3 On medical treatment for cardiovascular or pulmonary disorders ☐

1.4 Any other ☐

2. Type of chest drain present

2.1 Anterior drain ☐

2.2 Pleural drain ☐

2.3 All the above ☐

3. Number of days on chest drainage

3.1 Less than one day ☐

3.2 One to three days ☐

3.3 More than three days ☐

4. Number of chest drainage tubes

4.1 One ☐

4.2 Two ☐

4.3 Three ☐

44.4 More than three ☐

5. BMI in sqm2

5. 1 Less than 20 ☐

5.2 20 – 25 ☐

5.3 25-30 ☐

5.4 Above 30 ☐

6. Treatment for pain

6.1 Oral NSAIDs ☐

6.2 Parenteral NSAIDs ☐

6.3 Narcotic analgesics ☐

6.4 On NSAIDs and Narcotics ☐

7. Physical activity that increases pain

7.1 Chest physiotherapy ☐

7.2 Ambulation ☐

7.3 Position change ☐

7.4 Dressing or any procedures ☐

8. Previous experience of chest drainage

8.1Yes ☐

8.2No ☐

9. Ambulated with chest drainage tubes

9.1 Yes ☐

9.2 No ☐

10. Co- morbid illness

10.1 Yes ☐

10.2 No ☐

If yes, Specify ----------

மருத்துவ விவரங்களின் மாறுபட்ட குறிப்புகளை அறியும் மாதிரிப்படிவம்

நோக்கம்

இந்த விளக்கப்பட்டியலின் நோக்கம் மாறுபடும் மருத்துவ குணங்களை ஆராய்வதே. அவை நோய் ஆய்வறிக்கை, நெஞ்சில் இடப் நீர்க் குழாய், அதனின் நாட்கள் மற்றும் எண்ணிக்கை, உடல் சார்ந்த மற்ற நோய்கள் எவ்வாறு வேறுபடுகிறது என்பதைப் பற்றி ஆராய்வது.

முன்குறிப்பு

கீழ்கண்ட கேள்விகளுக்கு விடையளிக்கவும். இத்தகவல்களை ஆராய்ச்சியாளர் பூர்த்தி செய்வார். திறந்த மனதுடன் ஒளிவு மறைவில்லாமல் பதிலளிக்கவும். இத்தகவலகள் ரகசியமாக வைக்கப்படும்.

1. நோய்ஆய்வறிக்கை

1.1 இருதய அறுவை சிகிச்சை செய்யப்பட்டுள்ளது.

1.2 நெஞ்சு அறுவைச் சிகிச்சை செய்யப்பட்டுள்ளது.

1.3 இருதயம் மற்றும் நுரையீரல் சம்பந்தப்பட்ட மருத்துவ சிகிச்சைகளில் உள்ளவர்கள்

1.4 மற்றவை எனில் குறிப்பிடவும்.

2. நெஞ்சில் இடப்பட்ட நீர்க்குழாய்

2.1 முன்புறம்

2.2 நெஞ்சில்

2.3 அனைத்தும்

3. எத்தனை நாட்கள் நீர்க்குழாய் உள்ளது?

3.1 ஒருநாளுக்கும் குறைவாக

3.2 1 – 3 நாட்கள்

3.3 3 நாட்களுக்கும் மேல்

4. நீர்க்குழாயின் எண்ணிக்கை.

4.1 ஒன்று

4.2 இரண்டு

4.3 மூன்று

4.4 மூன்றுக்கும் மேல்

5. பி.எம்.ஐ. (சதுர மீட்டர்)

5.1 இருபதுக்கு கீழ்

5.2 20 – 25

5.3 25 – 30

5.4 30 க்கு மேல்

6. வலிக்கான மருந்து

6.1 வாய்வழி உட்கொள்ளும் வலிநிவாரணங்கள்

6.2 இரத்தநாளங்களின் வழியாக செலுத்தப்படும் வலிநிவாரணங்கள்

6.3 சமரக தூக்கம் தொழும் வலிநிவாரணங்கள்

6.4 சமரக தூக்கம் தொழும் வலிநிவாரணங்களும் மற்ற வலிநிவாரணங்களும்

7. உங்களின் எந்த உடல் வேலை நெஞ்சுக்குழாயினால் உண்டாகும் வலியை அதிகரிக்கிறது.

7.1 நெஞ்சக உடற்பயிற்சி

7.2 நடத்தல்

7.3 நிலைப்பாடு மாற்றல்

7.4 மற்றவை

8. நெஞ்சுக்குழாயின் முந்தைய அனுபவம் உள்ளதா?

8.1 ஆம் ☐

8.2 இல்லை

9. நெஞ்சுக் குழாயோடு நடந்து இருக்கிறீர்களா?

9.1 ஆம் ☐

9.2 இல்லை

10. உடல் சார்ந்த மற்ற நோய்கள் உள்ளதா?

10.1 ஆம் (குறிப்பிடுக) ☐

10.2 இல்லை

BLUE PRINT - RATING SCALE TO ASSESS THE LEVEL OF SATISFACTION OF PATIENTS WITH CHEST DRAINAGE ABOUT THE ICE COMPRESS THERAPY

Item description	questions	No. of questions	Percentage
Method of ice compress application	1,2,3,4	4	40%
Effects of the therapy	5,6,	2	40%
Researcher's approach	7,8,9,10	4	20%

APPENDIX XIII

RATING SCALE TO ASSESS THE LEVEL OF SATISFACTION OF PATIENTS WITH CHEST DRAINAGE ABOUT THE ICE COMPRESS THERAPY

Purpose

This questionnaire used by the researcher to know the level of satisfaction of ice compress therapy among the patients with chest drainage

Instructions

This rating scale has got three categories and each question with four options which describe the level of satisfaction. Please answer the following questions and describe your satisfaction level about the ice compress therapy. Please feel free and frank in answering these questions. Confidentiality will be maintained.

S.NO	ITEM	HIGHLY SATISFIED	MODERATELY SATISFIED	JUST SATISFIED	DISSATISFIED
A.	**Method of ice compress application**				
1.	Whether you were satisfied with the method of application of ice compress therapy				

2.	Are you satisfied with the duration of the therapy				
3.	Where you comfortable with the frequency of the therapy				
4.	Are you satisfied with the timing and the temperature of the therapy				
B.	**Effects of the therapy**				
5.	Are you satisfied with the benefits of the therapy				
6.	Where are you satisfied with the method of evaluation by the researcher				

C	**Researcher's approach**				
7.	Where you comfortable with the approach of the researcher				
8.	Whether you satisfied with the methods of data collection				
9.	Are you satisfied with the method of communication by the researcher				
10.	Whether the explanation given by the researcher about the therapy was satisfactory				

SCORING KEY:

Highly satisfied	-	4
Moderately satisfied	-	3
Just satisfied	-	2
Dissatisfied	–	1

SCORING INTERPRETATION:

Highly satisfied	-	> 75%
Moderately satisfied	-	50% – 75%
Just satisfied	-	25% - 50%
Dissatisfied	-	< 25%

பனிக்கட்டி குறுக்குதல் பயன்பாட்டில் பங்கு பெற்றோரின் திருப்திக்கான நிலையை அறியும் அளவுகோல்

நோக்கம்

இக்கருவி பனிக்கட்டி குறுக்குதல் பயன்பாட்டில் பங்கு பெற்றோரின் திருப்திக்கான நிலையை அறியும் அளவுகோல்

முன்குறிப்பு

இங்கு 10 கேள்விகள் கீழே உள்ளன. பதில்கள் மிகவும் திருப்தியிலிருந்து அதிருப்தி வரை விரிந்துள்ளது. உங்கள் பதில்களுக்கு நேராக (✓) செய்யவும். உங்கள் பதில்களை சுதந்திரமாகவும், வெளிப்டையாகவும் கூறவும். உங்கள் பதில்கள் ரகசியமாக வைக்கப்படும் மற்றும் ஆய்வுக்காக மட்டுமே பயன்படுத்தப்படும்.

வ. எண்.	கேள்விகள்	மிகவும் அதிருப்தி	திருப்தி	திருப்தியில்லை	மிகவும் திருப்பதியில்லை திதிருப்திியில்லை
	பனிக்கட்டி குறுக்குதல் முறையின் பயன்பாடு				
1.	பனிக்கட்டி குறுக்குதல் முறையின் திருப்தி				
2.	அதனின் கால அளவின் திருப்தி				
3.	அதனின் அலை எண் திருப்தி				
4.	அதனின் தன்மை மற்றும் குளிர்நிலையின் திருப்தி				
	பனிக்கட்டு குறுக்குதலின் சலுகைகள்				
5.	பனிக்கட்டி குறுக்குதலின் சலுகைகளின் திருப்தி				

6.	ஆய்வாளர் மதிப்பீட்டின் திருப்தி				
	ஆய்வாளர்				
7.	ஆய்வாளரின் அணுகுமுறை				
8.	ஆய்வாளரின் மதிப்பீடு மற்றும் தகவல் சேகரிக்கும் முறை				
9.	ஆய்வாளரின் தொடர்பு முறை				
10.	ஆய்வாளரின் விரிவாக்கும் முறை				

APPENDIX XIV

STANDARDISED PAIN ASSESSMENT TOOL

Mc GILL PAIN QUESTIONNAIRE

SHORT-FORM McGILL PAIN QUESTIONNAIRE

RONALD MELZACK

PATIENT'S NAME: _____ DATE: _____

	NONE	MILD	MODERATE	SEVERE
THROBBING	0) _____	1) _____	2) _____	3) _____
SHOOTING	0) _____	1) _____	2) _____	3) _____
STABBING	0) _____	1) _____	2) _____	3) _____
SHARP	0) _____	1) _____	2) _____	3) _____
CRAMPING	0) _____	1) _____	2) _____	3) _____
GNAWING	0) _____	1) _____	2) _____	3) _____
HOT-BURNING	0) _____	1) _____	2) _____	3) _____
ACHING	0) _____	1) _____	2) _____	3) _____
HEAVY	0) _____	1) _____	2) _____	3) _____
TENDER	0) _____	1) _____	2) _____	3) _____
SPLITTING	0) _____	1) _____	2) _____	3) _____
TIRING-EXHAUSTING	0) _____	1) _____	2) _____	3) _____
SICKENING	0) _____	1) _____	2) _____	3) _____
FEARFUL	0) _____	1) _____	2) _____	3) _____
PUNISHING-CRUEL	0) _____	1) _____	2) _____	3) _____

NO PAIN ——— WORST POSSIBLE PAIN

PPI

0	NO PAIN	_____
1	MILD	_____
2	DISCOMFORTING	_____
3	DISTRESSING	_____
4	HORRIBLE	_____
5	EXCRUCIATING	_____

Fig. 1. The short-form McGill Pain Questionnaire (SF-MPQ). Descriptors 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. The Present Pain Intensity (PPI) of the standard long-form McGill Pain Questionnaire (LF-MPQ) and the visual analogue (VAS) are also included to provide overall intensity scores.

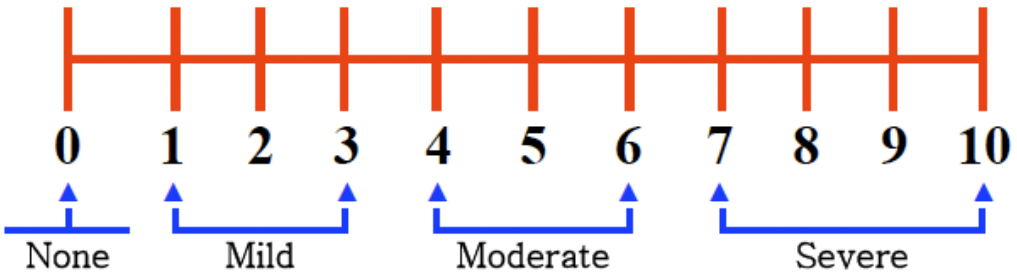
மெக் கில் வலி மதிப்பீட்டு ஆய்வறிக்கை

வலியின் தன்மை	வலியில்லை	மெதுவான	மிதமாக	கடுமையாக
துடித்தல்				
குத்துவலி				
கத்திக் குத்தல்				
கூர்மை				
பிடித்திழுத்தல்				
கடினமான				
சூடு/எரிச்சல்				
வலித்தல்				
பளு				
மென்மை				
பிளவுபட்டது				
கடும்சோர்வு				
வெறுப்பூட்டுகின்றன				
பயம்				
கொடுமை/தண்டிப்பு				

APPENDIX XV

NUMERICAL RATING PAIN SCALE

In the numerical scale, the patient has the option to verbally rate their scale from 0 to 10 or to place a mark on a line indicating their level of pain. 0 indicates the absence of pain, while 10 represents the most intense pain possible.



OBSERVATION RECORD

Scale	Num rating scale	MC Gill	Num rating scale	MC Gill	Num rating scale	MC Gill	Num rating scale	MC Gill
Time								
Score								

APPENDIX XVI

PROTOCOL FOR CHEST DRAIN REMOVAL

STANDARD PROTOCOL FOR CHEST DRAIN REMOVAL FOR POST CARDIO THORACIC SURGICAL PATIENTS

POLICY:

Post cardio thoracic patients in CTICU are with chest drain, these chest drainage are removed by the CTICU Nurses as per the order of the intensivist / consultant

PURPOSE:

To create a protocol of chest drain removal this allows the nurses to follow a standard protocol in order to remove the chest drain safely. This procedure is carried out when the indwelling drain tube is no longer needed or it is no longer functioning and needs to be discontinued as per intensivist / consultant order.

PROTOCOL FOR CHEST DRAINAGE REMOVAL:

I Removal criteria:

The Decision is made by the intensivist / consultant. Assessment of chest drain removal is based on the following criteria, when there is;

- Absence of air leaks into chest drain bottle
- No drain for 3 hrs or drain < 10ml/hr
- No evidence of respiratory compromise or failure as evidenced by ABG , chest x-ray.
- No coagulation deficit or increased risk of bleeding as evidenced by platelet counts
- Radiological evidence of absence of pneumothorax / pleural effusion and with complete lung expansion

II Precautions:

Nurses need to assess the chest drain site ;

- For signs and symptoms of infection at or around the chest drain site
- For subcutaneous emphysema
- Identify the sutures.

III. Order for removal:

Once the intensivist or the consultant gives a written order for removal of chest drain tube, the following protocol will be carried out by the nurses.

a. Assessment of pain at chest drain site:

The nurse will assess the patient's level of pain at or around the chest drainage site .Patients with pain score of 4 and above as measured by numerical rating scale will be given ice compress /pack application around the chest drain site to reduce the level of pain during chest drain removal(physical

analgesia which causes numbness , vasoconstriction denervates the nerve endings at the chest drain site thereby reduces the level of pain perception)

b.Ice compress application: .

- The nurse will explain the procedure and get oral consent from the patient to gain confidence cooperation from the patient
- The nurse will check vital signs before ice compress application to know the base line data of the patient.
- The nurse will also assess the patient tolerance of the ice compress temperature to ensure effective application and to prevent hypothermia
- The nurse performs hand hygiene and follow universal precautions to minimize cross infection
- The Nurse will expose the chest drain site and check for any signs of oozing, infection, subcutaneous emphysema.
- The nurse will keep a Gauze pad below the chest drain site as this absorbs if the water drains from the ice pack
- The nurse will use Ice pack of 4 degree centigrade and is wrapped around a gauze ; is applied in circular rotatory motion around the site of chest drain as Ice compress cause numbness , vasoconstriction and denervates the nerve endings at the site of application thereby reduces the level of pain perception. Circular rotatory motion prevents causing hypothermia of the chest drain site and also prevents stagnation of water from the ice compress or pack in turn which prevents infection.
- The nurse will apply Ice compress 5 times for 5 minutes with 2 min interval which reduces hypothermia and cold intolerance
- The nurse will assess the level of pain after ice compress applied 5 times to know the effectiveness of ice compress therapy in reduction of level of pain the chest drain site.

Note: If patient's level of pain does not reduce below 4 as measured by numerical rating scale, the nurse will inform the intensivist / consultant and pain will be managed as per intensivist judgment.

c. Procedure of chest drain removal

The nurse will use sterile dressing tray and keep the articles aside the patient bedside

1. Patient preparation:

- The nurse will explain the procedure to the patient and the family and get oral informed consent which ensures adequate cooperation from the patient.
- The nurse will position the patient in a comfortably either in supine or semi recumbent position to ensure easy access to the chest drain site.
- The nurse will assess the vital signs before removal. If any negative suction is applied to the chest drainage system, the nurse will disconnect the suction from the suction source.
- The nurse will ensure continuous SaO2 monitoring and if required the nurse will provide 2 – 4lts of oxygen via nasal prongs or face mask
- The nurse will teach inhalation and breathe holding techniques for chest drain removal.

Note: TWO NURSES ARE REQUIRED FOR A CHEST DRAIN REMOVAL

2. Procedure for removal:

- The nurse will perform hand hygiene will wear clean gloves and remove the anchored dressing.
- The nurse will again Perform hand hygiene and follow universal precautions
- The nurse who assist will help in opening the dressing tray and pour betadine solution , and be ready with the sterile blade and Sterile gauze pack and adhesive tapes
- The nurse will Clean the chest drain site from center to periphery with betadine solution in order to prevent contamination of the wound site
- The nurse who assist will clamp the chest drain tube to prevent air and fluid entry into the chest cavity
- The nurse will Identify the purse string suture and unwind the suture and will Cut the anchor suture(suture holding the drain in place with the skin) to ensure safe drain removal

- If the patient is breathing spontaneously the nurse will ask the patient to take 3 deep breathe in and out and instruct hold the third breath to prevent air entry during removal of chest drainage

- If the patient is on ventilator chest drain can be removed at any part of respiratory cycle as long as the airway pressure do not go below 0.

- The nurse will seal the site with gauze piece with firm pressure and be ready with to seal the site with half knot

- The nurse will instruct the assistant nurse to remove the chest drain , and the assisting nurse will withdraw the drain tube gently and firmly in a single motion to minimize pain and prevent air entry

- As soon as the tube is withdrawn the nurse completes the knot of the suture and will instruct the patient to breathe normally in order prevent air entry during removal of chest drainage

- The nurse will Apply direct pressure to the site for 10 – 15 seconds with the gauze piece to prevent bleeding

- The nurse will Observe the exit site for escaping air to ensure that there is no air entry through the drain site into thoracic cavity

- The nurse will Clean the chest drain wound and sternotomy wound with betadine and apply firm dressing. If pleural drain is removed the nurse will apply dynaplast dressing

- Back care is provided by the nurse and positions the patient comfortably

c. Post procedure care:

- The nurse will Assess the level of pain after chest drain removal and also will Document the procedure of ice compress application and chest drain removal with date and time in nurses record and in critical care flow chart
- The nurse will also make a note of vital signs after chest drain removal

- The nurse will also order for chest x-ray two hours after chest drain removal

IV Notify the intensivist / consultant

The nurse will notify the intensivist / consultant if she finds any drop in saturation, tachypnea , increasing respiratory distress, hemo dynamically unstable.

When the nurse encounters any of the following circumstances:

- Patient decompensation or intolerance to procedures
- Bleeding that is not resolved
- Unexpected resistance met during chest drain removal
- Outcome of the procedure other than expected.

The nurse will inform the intensivist / consultant and managed as per the consultant order.

APPENDIX XVII

DATA CODE SHEET

Control group	**CG**	**History of smoking and alcoholism**	**HO**
Experimental	**EG**	Yes	11.1
group		No	11.2
Age in years	**AG**	**family history-cardio respiratory**	**FH**
< 40yrs	1.1	**disease**	
40-60yrs	1.2	Yes	12.1
>60 yrs	1.3	No	12.2
Gender	**G**	**Diagnosis**	**DG**
Male	2.1	Undergone cardiac surgery	1.1
Female	2.2	Undergone thoracic surgery	1.2
Area of residence	**AR**	**Type of chest drain present**	**CD**
Urban	3.1	Anterior drain	2.1
Sub urban	3.2	Pleural drain	2.2
Rural	3.3	Both	2.3
Education	**ED**	**Number of days on chest drain**	**ND**
Illiterate	4.1	< than one day	3.1
Primary	4.2	1-3 days	3.2
Secondary	4.3	> than 3 days	3.3
Higher secondary	4.4	**Number of chest drainage tubes**	**NT**
Graduate and above	4.5	One	4.1
Occupation	**OC**	Two	4.2
Professional	5.1	Three	4.3
Non professional	5.2		

Nature of work	**NW**	**BMI**	**BM**
Sedentary	6.1	< 20 sqm2	5.1
Moderate	6.2	20 – 25 sqm2	5.2
Heavy	6.3	25-30sqm2	5.3
Annual income	**AI**	**Treatment for pain**	**TP**
Rs.1lak – 3lak	7.1	Oral NSAIDs	6.1
Rs.3lak – 5lak	7.2	Parenteral NSAIDs	6.2
> 5lak	7.3	**Physical activity that increase pain**	**PA**
Marital status	**MS**	Chest physio	7.1
Unmarried	8.1	Ambulation	7.2
Married	8.2	Position change	7.3
Widow	8.3	Dressing or any other procedure	7.4
Divorce	8.4	**Previous experience with chest drain**	**EX**
Type of diet	**TD**		
Vegetarian	9.1	Yes	8.1
Mixed	9.2	No	8.2
If non veg, how often	**NV** 10.1	**Ambulated with chest drain**	**AM**
		Yes	9.1
Once a week	10.2	No	9.2
Twice a week	10.3	**Co morbid illness**	**CM**
Often		Yes	10.1
		No	10.2

APPENDIX - XVIII

MASTER CODE SHEET- Control Group

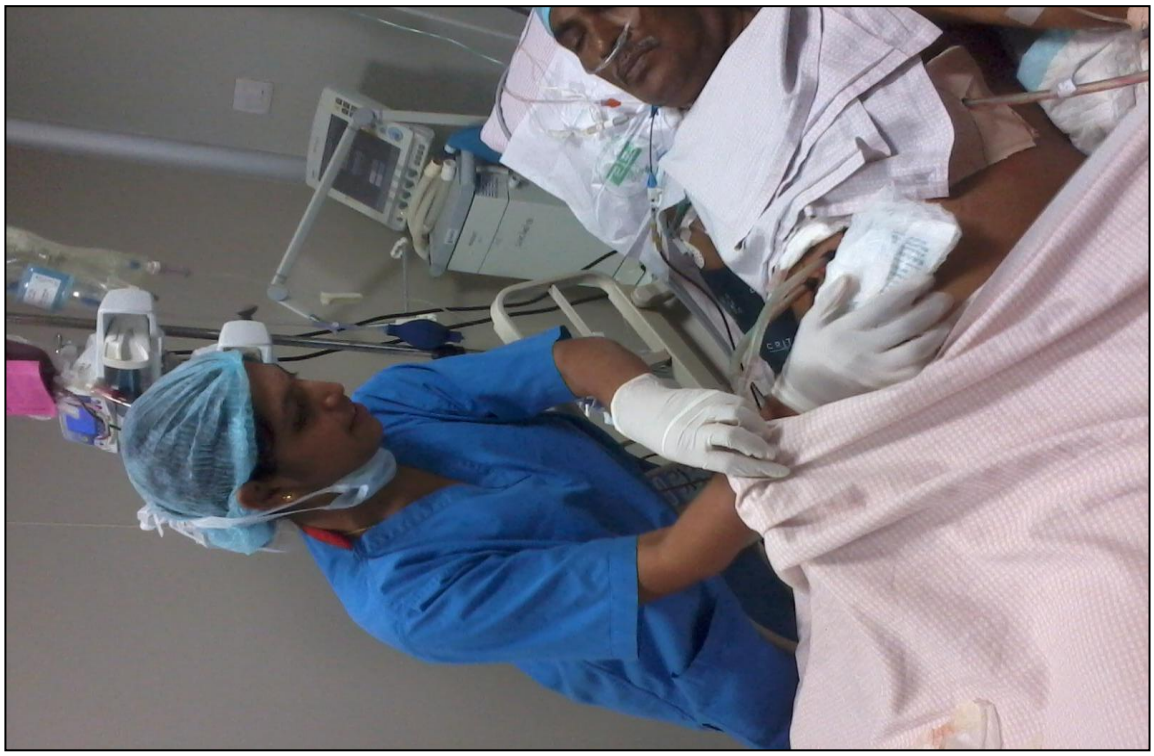
	DEMOGRAPHIC VARIABLES												CLINICAL VARIABLES										PRETEST		POST TEST OB I		POST TEST OBII		POST TEST OB III	
CG	AG	G	AR	ED	OC	NW	AI	MS	TD	NV	HO	FH	DG	CD	ND	NT	BM	TP	PA	EX	AM	CM	NR	MG	NR	MG	NR	MG	NR	MG
1	1.2	2.2	3.1	4.5	5.1	6.2	7.2	8.1	9.1	0	11.1	12.1	1.1	2.3	3.2	4.2	5.2	6.1	7.1	8.2	9.2	10.1	9	3	9	3	7	3	8	2
2	1.1	2.2	3.1	4.2	5.2	6.2	7.1	8.2	9.1	0	11.4	12.2	1.1	2.1	3.2	4.2	5.2	6.1	7.2	8.2	9.1	10.2	8	3	7	2	7	2	6	2
3	1.3	2.2	3.2	4.4	5.2	6.2	7.2	8.2	9.2	10.1	11.1	12.1	1.1	2.3	3.2	4.2	5.1	6.1	7.3	8.2	9.2	10.2	10	3	10	3	8	2	7	2
4	1.4	2.2	3.3	4.4	5.2	6.2	7.2	8.2	9.2	10.2	11.4	12.2	1.1	2.1	3.2	4.2	5.1	6.1	7.1	8.2	9.2	10.2	9	3	9	3	7	2	6	2
5	1.1	2.1	3.1	4.5	5.1	6.2	7.3	8.2	9.2	10.1	11.4	12.1	1.1	2.3	3.2	4.3	5.2	6.1	7.1	8.2	9.2	10.1	10	3	9	3	9	2	6	2
6	1.1	2.1	3.1	4.4	5.2	6.2	7.1	8.1	9.2	10.3	11.4	12.2	1.2	2.2	3.2	4.2	5.2	6.1	7.1	8.2	9.1	10.1	9	3	10	3	8	2	7	2
7	1.2	2.1	3.1	4.3	5.2	6.2	7.2	8.2	9.2	10.2	11.1	12.2	1.1	2.1	3.2	4.2	5.3	6.1	7.1	8.2	9.2	10.1	10	3	9	2	8	2	7	2
8	1.1	2.2	3.1	4.2	5.2	6.2	7.1	8.2	9.2	10.2	11.4	12.2	1.1	2.3	3.1	4.3	5.3	6.1	7.3	8.1	9.2	10.1	89	3	8	3	7	2	6	1
9	1.1	2.1	3.1	4.1	5.2	6.2	7.2	8.2	9.2	10.3	11.3	12.1	1.1	2.1	3.2	4.2	5.3	6.1	7.1	8.2	9.2	10.1	10	3	9	3	8	3	7	3
10	1.2	2.1	3.2	4.4	5.1	6.2	7.2	8.3	9.2	10.1	11.4	12.1	1.2	2.2	3.2	4.1	5.1	6.1	7.1	8.2	9.2	10.1	9	3	10	3	8	2	8	2
11	1.2	2.1	3.2	4.4	5.2	6.2	7.2	8.2	9.1	0	11.2	12.1	1.1	2.1	3.2	4.2	5.2	6.1	7.1	8.2	9.2	10.1	10	3	9	3	7	2	7	2
12	1.2	2.1	3.1	4.5	5.1	6.2	7.3	8.2	9.2	10.3	11.3	12.2	1.1	2.3	3.2	4.3	5.1	6.1	7.3	8.2	9.2	10.1	9	3	10	3	8	2	8	2
13	1.2	2.1	3.1	4.5	5.1	6.2	7.2	8.2	9.2	10.4	11.4	12.2	1.1	2.3	3.2	4.3	5.1	6.1	7.1	8.2	9.2	10.2	8	3	9	3	7	3	7	2
14	1.2	2.1	3.1	4.5	5.2	6.2	7.3	8.2	9.2	10.3	11.3	12.1	1.1	2.3	3.2	4.3	5.3	6.1	7.3	8.2	9.2	10.1	9	3	10	3	8	2	8	3
15	1.2	2.1	3.2	4.5	5.2	6.2	7.2	8.2	9.2	10.1	11.4	12.1	1.2	2.2	3.2	4.2	5.3	6.1	7.1	8.2	9.2	10.1	9	3	9	3	8	2	6	2
16	1.2	2.1	3.1	4.3	5.2	6.2	7.2	8.2	9.2	10.1	11.4	12.2	1.1	2.2	3.2	4.1	5.1	6.1	7.1	8.2	9.1	10.1	99	3	8	3	8	3	7	2
17	1.1	2.2	3.1	4.3	5.2	6.2	7.1	8.2	9.1	0	11.4	12.2	1.1	2.3	3.2	4.3	5.1	6.1	7.1	8.2	9.2	10.2	9	3	9	3	8	3	7	2
18	1.1	2.1	3.1	4.5	5.2	6.2	7.3	8.1	9.2	10.1	11.3	12.1	1.1	2.3	3.2	4.3	5.2	6.1	7.1	8.2	9.2	10.2	9	3	9	3	8	2	8	3
19	1.2	2.2	3.1	4.3	5.2	6.2	7.1	8.2	9.2	10.2	11.4	12.1	1.2	2.2	3.2	4.1	5.1	6.1	7.2	8.2	9.2	10.1	9	3	9	3	8	2	7	2
20	1.2	2.2	3.1	4.3	5.2	6.2	7.2	8.2	9.1	0	11.4	12.2	1.1	2.3	3.2	4.2	5.2	6.1	7.1	8.2	9.2	10.2	8	3	9	3	8	3	8	1
21	1.2	2.1	3.2	4.3	5.2	6.2	7.1	8.2	9.2	10.1	11.2	12.2	1.1	2.2	3.2	4.1	5.2	6.1	7.3	8.2	9.2	10.1	9	3	9	3	8	2	7	3
22	1.2	2.2	3.2	4.2	5.2	6.2	7.2	8.2	9.2	10.2	11.4	12.1	1.1	2.3	3.2	4.3	5.2	6.1	7.1	8.2	9.2	10.2	9	3	8	2	6	2	6	2
23	1.2	2.1	3.2	4.3	5.2	6.2	7.2	8.2	9.2	10.2	11.2	12.1	1.1	2.3	3.2	4.3	5.1	6.1	7.1	8.2	9.2	10.1	10	3	9	3	8	2	8	2
24	1.2	2.2	3.2	4.5	5.1	6.2	7.2	8.2	9.1	10.2	11.1	12.2	1.1	2.3	3.2	4.2	5.2	6.1	7.3	8.2	9.2	10.2	9	3	9	3	8	2	8	2
25	1.1	2.1	3.1	4.2	5.2	6.2	7.1	8.1	9.2	10.2	11.4	12.2	1.2	2.2	3.2	4.1	5.2	6.1	7.1	8.2	9.1	10.2	10	3	10	3	7	2	7	1
26	1.2	2.2	3.3	4.2	5.2	6.2	7.1	8.2	9.1	0	11.4	12.2	1.1	2.3	3.2	4.1	5.2	6.1	7.1	8.2	9.2	10.2	9	3	8	3	7	2	7	2
27	1.1	2.1	3.1	4.3	5.2	6.2	7.1	8.1	9.2	10.2	11.4	12.1	1.2	2.2	3.2	4.2	5.1	6.1	7.2	8.2	9.2	10.1	10	3	10	3	8	2	8	2
28	1.2	2.2	3.3	4.3	5.2	6.1	7.1	8.2	9.1	0	11.4	12.2	1.1	2.3	3.3	4.2	5.1	6.1	7.3	8.2	9.2	10.1	9	3	9	3	6	2	6	2
29	1.1	2.1	3.3	4.3	5.2	6.2	7.2	8.1	9.2	10.1	11.4	12.1	1.1	2.2	3.2	4.1	5.3	6.1	7.1	8.2	9.2	10.2	9	3	9	3	7	2	7	1
30	1.2	2.2	3.1	4.2	5.2	6.1	7.1	8.2	9.1	0	11.4	12.2	1.1	2.2	3.2	4.3	5.1	6.1	7.3	8.2	9.2	10.1	10	3	10	3	6	2	6	2

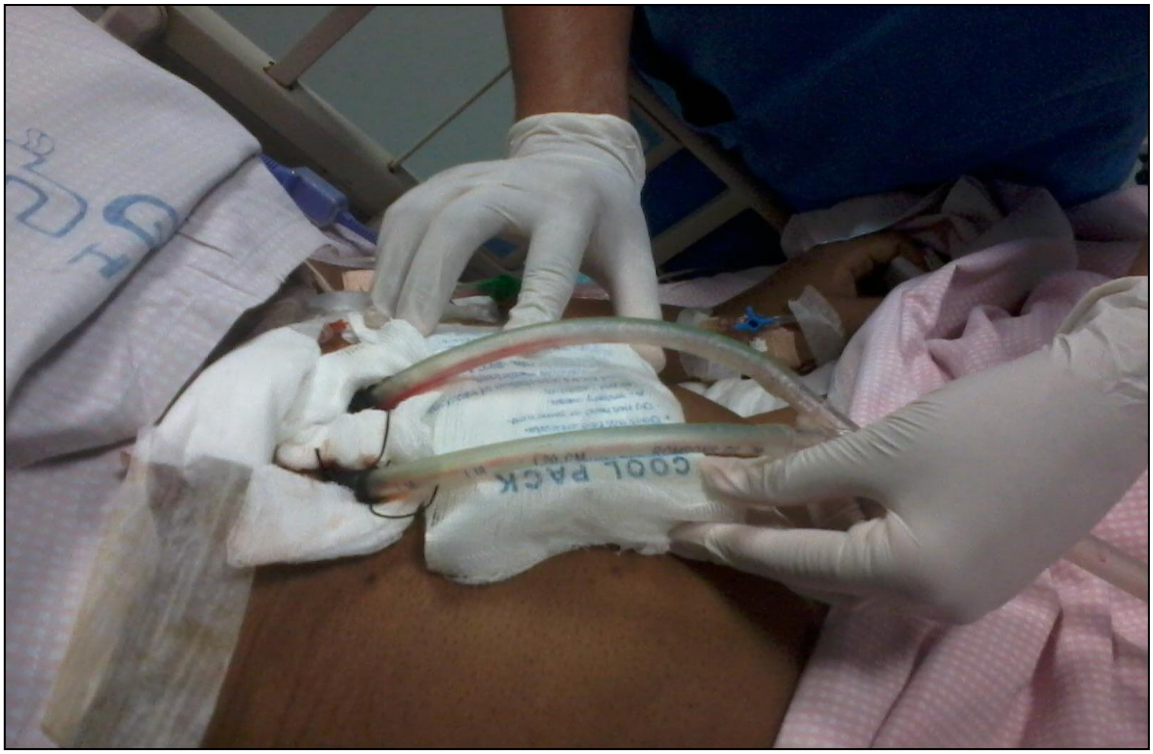
MASTER CODE SHEET – EXPERIMENTAL GROUP

	DEMOGRAPHIC VARIABLES												CLINICAL VARIABLES										PRETEST		POST TEST OB I		POST TEST OBII		POST TEST OB III	
EX	AG	G	AR	ED	OC	NW	AI	MS	TD	NV	HO	FH	DG	CD	ND	NT	BM	TP	PA	EX	AM	CM	NR	MG	NR	MG	NR	MG	NR	MG
1	1.1	2.1	3.1	4.4	5.2	6.2	7.2	8.2	9.2	10.2	11.4	12.2	1.2	2.2	3.3	4.2	5.1	6.1	7.1	8.2	9.2	10.1	10	3	7	2	4	1	2	0
2	1.2	2.1	3.2	4.2	5.2	6.2	7.1	8.2	9.1	0	11.4	12.2	1.1	2.3	3.2	4.3	5.2	6.1	7.2	8.2	9.2	10.1	8	3	7	2	5	0	2	0
3	1.2	2.2	3.1	4.5	5.1	6.2	7.2	8.2	9.2	0	11.4	12.2	1.1	2.3	3.2	4.3	5.1	6.1	7.1	8.2	9.2	10.1	9	3	5	1	3	0	1	0
4	1.3	2.1	3.3	4.3	5.2	6.2	7.1	8.2	9.1	0	11.4	12.2	1.1	2.3	3.2	4.3	5.2	6.1	7.2	8.2	9.2	10.1	9	3	5	1	3	0	1	0
5	1.3	2.1	3.1	4.3	5.1	6.2	7.2	8.2	9.2	10.3	11.4	12.2	1.1	2.3	3.2	4.3	5.3	6.1	7.1	8.2	9.2	10.1	8	3	4	1	3	1	1	0
6	1.2	2.2	3.1	4.5	5.2	6.2	7.3	8.2	9.2	10.1	11.4	12.1	1.1	2.3	3.2	4.3	5.2	6.1	7.1	8.2	9.2	10.1	8	3	5	1	3	0	0	0
7	1.2	2.1	3.1	4.5	5.1	6.2	7.3	8.2	9.1	0	11.4	12.2	1.1	2.3	3.2	4.3	5.2	6.1	7.1	8.2	9.2	10.1	10	3	9	1	5	0	3	0
8	1.1	2.1	3.2	4.4	5.1	6.3	7.2	8.2	9.2	10.3	11.3	12.1	1.2	2.2	3.3	4.2	5.1	6.1	7.2	8.2	9.2	10.2	9	3	5	1	3	0	1	0
9	1.2	2.1	3.1	4.5	5.1	6.1	7.2	8.2	9.2	10.3	11.2	12.1	1.1	2.3	3.2	4.3	5.1	6.1	7.1	8.2	9.2	10.1	9	3	7	2	4	0	2	0
10	1.1	2.2	3.2	4.4	5.2	6.3	7.1	8.2	9.2	10.2	11.1	12.2	1.2	2.2	3.3	4.2	5.2	6.1	7.2	8.1	9.2	10.2	9	3	5	1	4	0	2	0
11	1.2	2.1	3.1	4.3	5.2	6.2	7.2	8.2	9.2	10.2	11.4	12.1	1.1	2.3	3.2	4.3	5.2	6.1	7.1	8.2	9.1	10.1	9	3	6	1	4	1	1	0
12	1.2	2.1	3.2	4.2	5.2	6.2	7.1	8.2	9.2	10.2	11.3	12.1	1.1	2.3	3.2	4.3	5.2	6.1	7.1	8.1	9.2	10.1	9	3	8	3	4	0	1	0
13	1.2	2.1	3.3	4.3	5.2	6.2	7.3	8.2	9.2	10.1	11.3	12.2	1.1	2.3	3.2	4.3	5.2	6.1	7.2	8.1	9.2	10.2	10	3	7	3	4	2	2	0
14	1.1	2.2	3.1	4.3	5.2	6.2	7.1	8.2	9.2	10.1	11.4	12.2	1.1	2.1	3.2	4.2	5.2	6.1	7.1	8.2	9.2	10.2	9	3	8	2	5	1	3	0
15	1.2	2.1	3.1	4.3	5.2	6.2	7.2	8.2	9.2	10.3	11.4	12.1	1.1	2.3	3.2	4.3	5.3	6.1	7.3	8.2	9.2	10.1	10	3	8	3	4	2	2	0
16	1.2	2.1	3.1	4.5	5.2	6.2	7.2	8.2	9.2	10.1	11.2	12.2	1.1	2.3	3.2	4.3	5.3	6.1	7.1	8.2	9.2	10.2	8	3	4	1	2	1	1	0
17	1.2	2.1	3.1	4.3	5.2	6.2	7.2	8.2	9.2	10.2	11.4	12.2	1.1	2.3	3.2	4.3	5.1	6.1	7.1	8.2	9.2	10.1	7	3	5	1	4	0	2	0
18	1.2	2.1	3.1	4.4	5.2	6.1	7.1	8.2	9.2	10.4	11.4	12.2	1.1	2.3	3.1	4.3	5.3	6.1	7.2	8.2	9.2	10.2	8	3	6	2	4	1	3	0
19	1.2	2.1	3.1	4.5	5.2	6.2	7.1	8.2	9.2	10.2	11.1	12.2	1.1	2.3	3.2	4.3	5.2	6.1	7.1	8.2	9.2	10.2	9	3	7	2	3	0	2	0
20	1.2	2.1	3.2	4.4	5.2	6.2	7.3	8.2	9.2	10.4	11.4	12.1	1.1	2.1	3.2	4.2	5.3	6.1	7.3	8.2	9.2	10.2	8	3	7	2	4	0	1	0
21	1.2	2.1	3.2	4.3	5.2	6.2	7.3	8.1	9.2	10.3	11.4	12.2	1.2	2.3	3.2	4.1	5.1	6.1	7.2	8.2	9.1	10.1	9	3	7	3	3	0	1	0
22	1.2	2.1	3.1	4.3	5.2	6.2	7.2	8.2	9.2	10.3	11.3	12.2	1.1	2.3	3.2	4.3	5.1	6.1	7.1	8.2	9.2	10.1	8	3	7	2	4	0	2	0
23	1.2	2.1	3.1	4.4	5.2	6.1	7.1	8.2	9.2	10.1	11.4	12.1	1.1	2.3	3.2	4.3	5.3	6.1	7.1	8.2	9.2	10.2	9	3	7	1	3	0	1	0
24	1.2	2.1	3.1	4.5	5.2	6.2	7.3	8.2	9.2	10.2	11.3	12.2	1.1	2.3	3.2	4.3	5.3	6.1	7.1	8.2	9.2	10.1	9	3	7	1	3	1	1	0
25	1.2	2.1	3.1	4.4	5.2	6.1	7.3	8.2	9.2	10.1	11.4	12.1	1.1	2.3	3.1	4.3	5.3	6.1	7.1	8.2	9.1	10.1	9	3	7	2	4	2	2	1
26	1.3	2.1	3.2	4.3	5.1	6.2	7.2	8.2	9.2	10.2	11.3	12.2	1.2	2.3	3.2	4.3	5.2	6.1	7.1	8.2	9.2	10.2	10	3	9	3	7	0	6	2
27	1.2	2.1	3.2	4.3	5.2	6.2	7.2	8.2	9.2	10.1	11.4	12.1	1.2	2.2	3.2	4.2	5.3	6.1	7.1	8.2	9.1	10.1	10	3	7	2	4	0	2	0
28	1.1	2.1	3.1	4.2	5.2	6.2	7.2	8.2	9.2	10.2	11.3	12.2	1.2	2.2	3.2	4.2	5.2	6.1	7.2	8.2	9.2	10.2	10	3	8	1	4	0	2	0
29	1.1	2.1	3.1	4.3	5.1	6.1	7.2	8.2	9.2	10.2	11.3	12.2	1.2	2.2	3.2	4.2	5.3	6.1	7.3	8.2	9.2	10.2	10	3	8	1	6	0	4	0
30	1.1	2.1	3.1	4.3	5.2	6.2	7.1	8.2	9.2	10.1	11.3	12.2	1.1	2.3	3.2	4.2	5.3	6.1	7.1	8.2	9.2	10.2	10	3	8	1	4	0	2	0

APPENDIX – XIX

PHOTOGRAPHS DURING ICE COMPRESS APPLICATION




COOL PACK