# EFFECTIVENESS OF EFFLEURAGE BACK MASSAGE TECHNIQUE IN REDUCTION OF PAIN AND ANXIETY AMONG ORTHOPAEDIC PATIENTS IN LKM HOSPITAL, ERODE.

A DISSERTATION SUBMITTED TO THE TAMILNADU DR. MGR MEDICAL UNIVERSITY, CHENNAI IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

2009 – 2011

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# ABSTRACT

Hospitalization and disease processes are the major stressors which cause physiological and psychological disequilibrium in the individuals including pain, anxiety, muscle tension, restlessness and behavioral changes.

There is a need for non pharmacological interventions to address all the discomforts of physical and psychological status as an adjunct to routine care and pharmacological interventions.

The present study was conducted to assess the effectiveness of effleurage back massage technique in reduction of pain and anxiety among orthopaedic patients in L.K.M. Hospital. Erode.

Conceptual framework for the study has been based on Kolkaba's Comfort Theory. The research design used was one group pre test and post test pre experimental design. Non probability purposive sampling technique was used to select 60 samples for the study. Effleurage back massage was given using talcum powder for 15 minutes once a day for 3 days per patient. The levels of pain and anxiety before and after effleurage back massage, the association between the post test levels of pain and anxiety with the selected demographic variables among orthopaedic patients were assessed. The data gathered were analyzed using descriptive and inferential statistics.

With regard to pain, the mean posttest scores of pain 1.25(SD$\pm$0.78) was significantly lower than the mean pretest scores 5.6(SD$\pm$1.01).The mean posttest scores of anxiety 41.16(SD $\pm$3.6) and was significantly lower than the mean pretest scores 53.2 (SD$\pm$4.00). The 't' value of pain score is 27.18 and anxiety is 27.6 which was significant at 0.05 level. The 't' value for the physiological parameters such as pulse rate, respiratory rate and blood pressure showed a significant difference at 0.05 level except temperature. There was no significant association between post test scores of pain with the selected demographic variables except sex ($\chi^2$=8.04) at 0.05 level and no significant association was found between post test scores of anxiety with their selected demographic variables.

The study findings revealed that there is a significant reduction of pain and anxiety after effleurage back massage. Based on the statistical findings it was evident that effleurage back massage will reduce the pain and anxiety among orthopaedic patients thereby the patient's comfort will be improved and complications due to prolonged bed rest will be prevented.

# CHAPTER I

## INTRODUCTION

*I hope that nurses will collectively move boldly into a future where knowing about and doing something about human needs for comfort and relief from pain are clearly within nursing's realm.*

*Chinna .P.,(2009)*

## BACKGROUND OF THE STUDY

Health is a state of being hale, sound in body, mind or soul, especially the state of being free from physical diseases or pain.

Illness is the impairment of normal physiological function affecting a part or whole of a human being.

**Anderson.B., (2010)**

Illness may be acute or chronic. Acute illness is a disease or a disorder which is abrupt in onset and of a short duration. A chronic illness is any disorder that persists over a long period and affects physical, emotional, intellectual, social, vocational or spiritual functioning which mostly needs hospitalization. For example cancer, hypertension, orthopaedic surgeries.

**Tom.H., (2011)**

Hospitalization is one of the most stressful events that everyone can experience. Their reactions to prolonged hospitalization such as fear, anxiety, withdrawal and regression can be more severe than their response to illness.

Hospitalization due to orthopedic condition have substantial degree of unrelieved discomfort among clients and family which may be due to prolonged hospital stay, presence of cast, skin or skeletal

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traction, splints, internal fixators, arthroplasty, prosthesis, implants, imposing restriction in mobility.

**Rice M.,(2008)**

1 in 5 orthopaedic patients meet the criteria for psychological illness as a result of hospitalization. Prolonged hospitalization due to skeletal traction produces physical problems like pain, insomnia, restriction of activities of daily living, constipation, anorexia, pressure sore, joint stiffness, etc. The psychological problems like feeling of isolation, low self esteem, fear of loss, threat to independence and authority, worry about home, family, job, and finance moreover hospital smell, noise, restriction, of visitors, act as triggering factors. Ineffective relief of all these discomforts may result in a complete physiological and psychological disequilibrium. The normal routine care, pharmacological intervention and focused attention may not effectively address all these discomforts. Along with routine care a non pharmacological intervention is also necessary to resolve these discomforts.

**Ray L., (2006)**

For patients undergoing surgery for traction or internal fixation devices, the fear of uncontrolled pain is a primary concern. Although the perception of postoperative pain is normal and predictable, it is accompanied by anxiety and emotional distress. 59% of patients cite pain as their most common concern when contemplating surgery,86% of patients who report experiencing pain after surgery report moderate to extreme levels of pain.

**Javed P., (2007)**

Pain can be defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.

**The International Association for pain (1986)**

Anxiety can be defined as a psychological and physiological state characterized by cognitive, somatic, emotional and behavioral components combined to create an unpleasant feeling that is typically associated with uneasiness, fear or worry. Physiological and behavioral indicators of anxiety include heart rate, blood pressure, muscle tension, restlessness and also subjective report of anxiousness.

**Andreassi.,(2000)**

**The Joint Commission on Accreditation of Health Care Organization (2004)** has designated pain as the fifth vital sign, along with temperature, heart rate, respiration and blood pressure.

Although sedation and analgesic practices to reduce pain have evolved significantly in recent years, nurses administering these agents are often concerned about related complications that may please the patient in a compromising situation.

**Price P.,(2006)**

Most post surgical orthopedic patients can manage with a pain level in the mild (1-4) to moderate (5-7) range. If severe pain is reported (8-10), to reduce it by one-third to one-half, there is a need for non pharmacological interventions to address all the discomforts of physiological and psychological status as an adjunct to normal routine care and pharmacological interventions.

**Walton M., (2009)**

Nonpharmacological interventions like complementary and alternative therapies including acupressure, acupuncture, exercise, manual therapies, and electrotherapy modalities may eliminate the amount of medication needed.

**White Y., (2000)**

**Price and Pooler(2001)** emphasis that nurses are legally and ethically accountable for effectively managing pain symptoms.

**Piotrowski.et.al.,(2003)** states that pain limits physical functioning including the ability to cough and deep breathe, move, sleep and perform self care activities. And despite the wide spread of opiates, pharmacological interventions alone may not effectively address all the sensory and affective factors involving in experiencing pain.

Massaging the art of rubbing as defined by Hippocrates roots back to thousands of years. It has a long history in culture around the world. Today people use many different types of massage therapy for variety of health problems and health related purposes. Many researchers have scientifically proved that even a single session of back massage can reduce state anxiety(a reaction to particular situation), blood pressure, heart rate and multiple sessions can reduce trait anxiety(general anxiety proneness),depression and pain**.**

**Wendy A., (2006)**

**Tappan (2004)** states that it is obvious that massage stimulates the sensory proprioceptive nerve fibers of the skin and underlying tissue ,producing various effects in any zone supplied from the same segment of the spinal cord. Such reactions are called 'reflex effects'.

**Tritton (2005)** says that effleurage back massage and other slow stroking movements are thought to have a sedating effect leading to activation of the parasympathetic nervous system, stimulating the vagus nerve to slow down the heart rate and increase peristalsis.

There are numerous theories about how a massage may affect the body. The Gate Control Theory suggests that massage may provide stimulation that helps to block pain signals sent to the brain. Other examples include theories suggesting that massage would stimulate the release of certain chemicals in the body such as serotonin, endorphins and also cause beneficial mechanical changes in pain.

**Perry P., (2006)**

Evidence based researches continue to confirm the importance of human touch to balance the increased technologies of today's health care practices.

**NEED FOR THE STUDY:**

Hospitalization and disease process are the major stressors which cause physiological and psychological disequilibrium in the individual.

Nearly 28.6% of the bed ridden patients in hospitals are orthopaedic patients world wide.

**WHO (2009)**

The United Nations and WHO have designated the first decade of the 21st century as 'The Decade of Bone and Joint Diseases' which focuses internationally on 5 areas of musculoskeletal problems like osteoporosis, osteoarthritis ,rheumatoid arthritis, back pain and musculoskeletal trauma.

**Aggarwal K.K., (2005)**

In USA musculo skeletal problems were the second reason for physician visits. Approximately 1 in 6 or 40-45 million people are affected by musculoskeletal problems. About 6.8 million people seek medical attention for fractures in the United States each year.

**Bionka M.A., (2009)**

In India approximately 5,873,551 cases of fractures are reported daily.In South India on an average, a 300 bedded orthopaedic hospital treat 100 fresh fracture cases daily, out of which at least 5-8 need operative interventions. Nearly 461 inpatient admissions and nearly 454 orthopaedic surgeries have been done.

**Michael S., (2009)**

**Hedge., (2009)** pointed out 5 – 10% of overall patients who confined to bed are suffering from back pain.

**Richards.,(2008)** reported that among orthopedic hospitalized bed ridden clients 84% of patients reported about anxiety, 55% of patients about pain and 54% of patients reported lack of sleep

High rates of psychological distress are reported among patients with musculoskeletal trauma. Psychological distress is strongly associated with patient's outcome including functional outcome.

**Adam J., (2008)**

Stasis produced in the muscles and its reflex contractures is often responsible for a dull ache and a feeling of stiffness in patients confined to bed.

**Buck W., (2009)**

Pain management remains a critical issue for hospitals and is receiving the attention of hospital accreditation agencies.

**Rose A., (2006)**

Various alternative and complimentary therapies are followed to alleviate the pain and anxiety of bedridden orthopaedic patients.

**Wright A. Saluka. et.al., (2001)** conducted a study with several types of physical therapies used in the management of painful musculoskeletal disorders categorized as electrotherapy modalities (e.g., transcutaneous electrical nerve stimulation), acupuncture, thermal modalities (e.g., moist heat, ultrasound), manual therapies (e.g., manipulation or massage), or exercise. Results showed that there is preliminary evidence to support the use of manual therapies, exercise, and acupuncture in the management of some categories of musculoskeletal pain.

**Suarez Almazor M.E.et.al., (2010)** conducted a randomized controlled trial of acupuncture for osteoarthritis of the knee. Results showed significant reductions in J-MAP Joint-Specific Multidimensional Assessment of Pain (J-MAP), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and (-1.1, -1.0, and -0.1, respectively; $P < 0.001$) and WOMAC pain (-13.7, -14, and -1.7, respectively; $P < 0.001$) compared with the control group. Statistically

significant differences were observed in J-MAP pain reduction and satisfaction, favoring the experimental group.

Three of the most common forms of CAM therapy that are used for the treatment of reducing discomforts of bedridden clients are acupuncture, massage therapy, and spinal manipulation. As these therapies   are used more frequently, they will come under greater scrutiny for effectiveness, safety of the treatment, and cost. According to the conclusions massage may reduce the costs of care after an initial course of therapy and safer compared to acupuncture and spinal manipulation.

**Cherkin D.C., (2003)**

Massage is thought to improve physiological and clinical outcomes by offering symptomatic relief of pain through physiological, mental relaxation compared with other complimentary therapies, massage showed higher results than laser therapy, exercise, acupuncture and self care education.

**Craig W., (2003)**

Pain increases the feeling of anxiety and anxiety tends to increase the perception of pain. This connection occurs in the brain because painful stimuli activate portions of limbic system believed to control emotional reactions. People who are seriously injured and hospitalized often experience both pain and heightened levels of anxiety due to their helplessness and lack of control.

**Persis M.H., (2007)**

**Wilkie.D.J(2002)** identified that the pain, intensity, pulse rate and respiratory rate were significantly reduced after back massage. The massage group reported higher pain intensity which decreased by 42% compared to 25% reduction in control group.

**Kisher Taslitz.et.al.,(2005)** concluded that effleurage stroking of the back presumably produced autonomic effects in the connective tissue resulting in psychological relaxation.

**Tortora Grabowski.,(2001)** states that painful ,stressful experiences all cause changes in hypothalamic activity is relieved by back massage.

**Margie (2003)** says that back massage enhances the immune system and aids recovery from soft tissue injuries by increasing blood circulation to injured area and congested areas, improves circulation and nutrition of joints and hastens the elimination of harmful particles in the synovial fluids. It helps to lessen inflammation and swelling in joints, thereby alleviating pain, helps to reduce edema of the extremities through lymphatic massage. Massage may have a sedative, stimulating effect on the nervous system.

Since orthopedic patients constitute major part of bedridden patients in hospitals, there is an urgent need to develop and strengthen nurses to practice non pharmacological pain and anxiety management.

**Agewell Research and Advocacy Center(2009)**

When researcher was posted in hospital settings, noticed orthopedic patients had multiple complaints such as pain, anxiety, sleeplessness and other discomforts of hospitalization. Pain and anxiety

is unique to individuals .So the researcher proposed a measure to provide a safer, less cost effective complimentary therapy in order to reduce the problems of hospitalization among orthopaedic patients.

The present study proposes to determine whether effleurage back massage reduces pain and anxiety among hospitalized orthopedic patients

**STATEMENT OF THE PROBLEM**

A study to assess the effectiveness of effleurage back massage technique in reduction of pain and anxiety among orthopaedic patients in LKM Hospital, Erode.

**OBJECTIVES:**

1. To assess the pretest and post test levels of pain among orthopaedic patients.
2. To assess the pretest and post test levels of anxiety among orthopaedic patients.
3. To compare the pretest and post test levels of pain among orthopaedic patients.
4. To compare the pretest and post test levels of anxiety among orthopaedic patients.
5. To find out the association between post test levels of pain among orthopaedic patients with their demographic variables.
6. To find out the association between post test levels of anxiety among orthopaedic patients with their demographic variables.

**OPERATIONAL DEFINITIONS :**

**1. EFFECTIVENESS**:

Effectiveness can be defined as "producing an intended result".

**Peter Drucker., (2009)**

In this study effectiveness is referred to the outcome of effleurage back massage technique on levels of pain and anxiety which is measured in terms of significant difference between pre and post test scores by using statistical measurements.

## 2. EFFLEURAGE BACK MASSAGE TECHNIQUE:

Effleurage back massage is smooth long rhythmic strokes that glide over the skin of the back without attempting to move the deep muscle masses. **(Tappan 1998).** In this study it is given with whole surface of both the hands after applying talcum powder, from the lower back to the neck then circling around and back to the lower back for 5 minutes, starting at the lower back in circles first outward then upward for 5 minutes, standing on the sides with flats of fingers and hand on hand massage away from the centre then gliding back towards the spine for 5 minutes. Effleurage back massage is given for 15 minutes once a day for 3 days per patient.

## 3. PAIN:

An unpleasant sensory and emotional experience arising from actual or potential tissue damage or described in terms of such damage.

**International Association for The Study Of Pain (1986)**

In this study pain refers to unpleasant sensation perceived by the orthopaedic clients who are bed ridden as a result of treatment procedures which is measured through Visual Analogue Scale and its scores.

## 4. ANXIETY:

Anxiety is a psychological and physiological state characterized by cognitive, somatic, emotional, and behavioral components combine to create an unpleasant feeling that is typically associated with

uneasiness, fear, or worry.  Physiological and behavioral indicators of anxiety include heart rate, blood pressure, muscle tension, restlessness and subjective report of anxiousness**.**

**Andreassi (2000)**

In this study anxiety refers to the physical and emotional disequilibrium experienced by the orthopaedic patients with skeletal traction who are confined to bed. It is assessed through 'The anxiety Rating Scale' adopted from "The Zung Self Rating Anxiety Scale' consisting of 20 questions.

Physiological parameters such as temperature, pulse rate, respiratory rate and blood pressure were also assessed using bio physiological instrument to measure the level of anxiety.

## 5. ORTHOPAEDIC PATIENTS:

Orthopedic patients are those who have an injury or disorder of the skeletal system associated with muscles, joints or ligaments.

**Hutchinson., (2009)**

In this study clients with skeletal traction in the orthopedic wards who are confined to bed are selected.

**HYPOTHESES:**

**H$_1$** -   The mean post test scores of pain is significantly lower than the mean pretest scores among orthopaedic patients.

**H$_2$** -   The mean post test scores of anxiety is significantly lower than the mean pretest scores among orthopaedic patients.

**H$_3$** -   There will be a significant association between the post test scores of    pain among orthopaedic patients with their selected demographic variables.

**H₄ -** There will be a significant association between the post test scores of anxiety among orthopaedic patients with their selected demographic variables.

**ASSUMPTIONS:**

1. Hospitalization and disease process are the major stressors which cause physiological and psychological disequilibrium for the patients.

2. Complimentary therapies like massage may help in alleviating the discomforts of prolonged hospitalization including pain and anxiety in a cost effective manner and without side effects.

**DELIMITATIONS:**

1. Sample size is limited to 60.

2. The data collection period is only 5 weeks.

3. The study is delimited to the orthopedic patients who are in lower extremity skeletal traction and confined to bed in orthopaedic wards.

**PROJECTED OUTCOME:**

Effleurage back massage will help to alleviate the pain and anxiety of orthopaedic clients thus causing physiological and psychological relaxation. It promotes comfort to clients who are confined to bed for a long time. It also prevents the complications of prolonged bed rest like pressure sores, muscle tension, generalized body pain etc.,

# (ii) CONCEPTUAL FRAMEWORK

Conceptual framework helps to express abstract ideas from the original conceptualization to a major précised form. The conceptual framework for this study was modified from Katharine Kolkaba's 'Comfort Theory' (1994).

According to Kolkaba, the word 'comfort' is derived from 'comfortare' (to strengthen greatly). Comfort is also a process (the nurse comforted me) and a product (the patient felt comfortable). And the state of discomfort is more than the absence of discomfort. Kolkaba defined comfort as 'the immediate state of being strengthened through having the human need for relief, ease and transcendence addressed in four contexts of experience (physical, psycho spiritual, sociocultural and environmental.

The concepts of comfort theory includes

      Step 1:  Health Care Needs

      Step 2:  Nursing Interventions

      Step 3:  Intervening Variables

      Step 4:  Comfort

      Step 5:  Health Seeking Behaviors

      Step 6:  Institutional Integrity

## Step 1: Health Care Needs

According to the theorist, health care needs are the deficits that arise from stressful health care situations and which the patient's natural support system cannot meet.

In this study, orthopaedic patients with lower extremity skeletal traction who are hospitalized and confined to bed are included.

**Step 2:  Nursing Interventions**

According to the theorist nursing interventions are comfort measures that the nurse design and implement targeting towards health care needs. These interventions have the explicit goal of enhancing the patient's immediate comfort and/or facilitating subsequent desirable health seeking behavior.

In this study, effleurage back massage is given for 15 minutes for orthopaedic patients with lower skeletal traction and confined to bed.

**Step 3: Intervening Variables**

The theorist explain the intervening variables as the factors that each patient brings to the health care situation that nurses cannot change, and that have an impact on the success of the intervention.

In this study intervening variables include age, sex, education, occupation, marital status, family monthly income and religion,

**Step 4: Comfort**

Comfort is defined as the state that is experienced by recipients of comfort measures. It is the immediate and holistic experience of being strengthened through having the needs met for three types comfort (relief, ease and transcendence) in four contexts of experience physical, psychological, social and environmental.

**Aspects of Comfort**

Aspects of comfort have been arranged in two dimensional grid. They are as follows:

**1. Dimension one**

The first dimension of comfort consists of three states called relief, ease transcendence.

**a. Relief**

The state of a recipient who has had a specific need met.

In this study 'relief' refers to the reduction in the level of pain among orthopaedic patients who in lower extremity skeletal traction and confined to bed.

**b. Ease**

The state of calm or contentment.

In this study 'ease' refers to the reduction in the level of anxiety among orthopaedic patients who in lower extremity skeletal traction and confined to bed.

**2. Dimension Two**

Kolcaba derived the contexts in which comfort is experienced from the literature on holism and she defined them as

**a) Physical**

Pertaining to bodily sensations.

In this study physical components include the reduction in pain and anxiety.

**b) Psychological**

Pertaining to internal awareness of self, including esteem, self concept, sexuality and meaning in life, relation to a higher order or being.

In this study it refers to increased comfort and increased self esteem.

**c) Environmental**

Pertaining to external surroundings, conditions and influences.
In this study it refers to the hospital surroundings and its routine.

**d) Social**

Pertaining to interpersonal, family and social relationships.
In this study it refers to the interpersonal relationship of the patient with the family and the society after reduction of pain and anxiety.

**Step 5: Health Seeking Behaviors (Outcome)**

According to Kolkaba, health seeking behaviors in which the patient engages and that facilitate health or peaceful death. They can be internal like healing, T-Cell formation, oxygenation etc., or external like observable behaviors such as working in therapy groups, length of stay in hospital, ambulation and functional status.

In this study the reduction of pain and anxiety (internal behaviors) and an improved functional status (external behaviors) are obtained.

**Step 6:  Institutional Integrity**

According to Kolkaba, it is defined as the quality or state of health care organizations in terms of professional and ethical providers of health care. It is measured by many indicators including cost of care, length of stay, patient, and nurse satisfaction.

In this study, the comfort needs of the orthopaedic patients with lower extremity skeletal traction like pain and anxiety are met by following protocols using non pharmacological interventions to improve the comfort of the patients who are confined to bed.

**Health care Needs**

Orthopedic patients with lower extremity skeletal traction confined to bed.

- Pain is measured by Visual Analogue scale.
- A) Anxiety is measured by the anxiety Rating scale
- b) Physiological parameters such as temperature pulse rate, respiratory rate & blood pressure are measured by using bio physiological instrument.

**Comfort measures**

Effleurage back massage is given for 15 minutes once a day for 3 days. After applying talcum powder, Effleurage Back Massage is given with the palms of both the hands from the lower back to the back then encircling around the back for 5 minutes, starting at the lower back in circles first outward then upward for 5 minutes, standing on the sides with flat of fingers and hand on hand massage away from the centre then gliding back towards the spine for 5 minutes.

**Intervening variables**

Demographic variables like age, sex education, occupation, marital status family monthly income & religion.

| Comfort | | |
|---|---|---|
| Components | Relief | Ease |
| 1. Physical | Reduction in the level of pain | Reduction in the level of anxiety |
| 2. Psychological | Increased comfort | Increased self esteem. |
| 3. Environmental | Hospital routine | Hospital routine |
| 4. Social | Improved interpersonal relationship | Improved interpersonal relationship |

| Institutional Integrity | |
|---|---|
| Best policy | Best practice |
| Development of protocols using non pharmacological measures to improve the comfort of the patients | Continuing back massage for all patients confined to bed |

Health seeking Behavior (OUTCOME)

External

Internal

Changes in the levels of pain which is assessed by visual Analogue scale

- No Pain
- Mild
- Moderate
- Severe

Changes in the level of Anxiety which is assessed by the anxiety rating scale

- Normal
- Mild
- Moderate
- Severe

Changes in the physiological parameters which is assessed by bio Physiological instrument s.

- Temperature
- Pulse rate
- Reparatory rate
- Blood pressure

**FIG :1 CONCEPTUAL BASED ON MODIFIED KATHARINE KOLCABA'S COMFORT THEORY (1994)**

# CHAPTER –II

## REVIEW OF LITERATURE

This chapter deals with the related review of literature. The literatures are grouped under the following headings:

**Part –A**

    a) Overview of common problems of hospitalized orthopaedic patients.

    b) Overview of pain.

    c) Overview of anxiety.

    d) Overview of effleurage back massage.

**Part - B**

| | |
|---|---|
| Section A - | Studies related to pain management among orthopaedic clients. |
| Section B - | Studies related to anxiety management among orthopaedic clients. |
| Section C- | Studies related to effects of effleurage back massage on pain and anxiety among orthopaedic clients. |

**PART- A:**

**a) OVERVIEW OF COMMON PROBLEMS OF ORTHOPAEDIC PATIENTS**

Hospitalization due to orthopedic condition have substantial degree of unrelieved discomfort among clients and family which may be due to prolonged hospital stay, presence of cast, skin or skeletal traction, splints, internal fixators, arthroplasty, prosthesis, implants, imposing restriction in mobility.

**Rice and Meckenzie .,(2008)**

**Complications of prolonged bed rest:**

Bedrest is often necessary for healing injured or diseased parts of the bodyThe most obvious effects of long periods of immobility are seen in the musculoskeletal system, with the loss of muscle strength and endurance, and bone weakening. Bones undergo a progressive loss in mass through a condition known as disuse osteoporosis.Immobility is also linked with altered skin integrity and can affect the immune system.

**The musculoskeletal system:**
**Muscles:**

Disuse of the muscles leads to atrophy and a loss of muscle strength at a rate of around 12% a week **(Jiricka, 2008).** After 3–5 weeks of bedrest, almost half the normal strength of a muscle is lost.

Atrophy can occur after only a short period of immobility. One study found that 72 hours of limb immobilisation can cause atrophy of type 1 and type 2 fibres by 14% and 17% respectIt takes about four weeks to recover from atrophy caused by immobility – a slower process than recovery from direct muscle trauma (Halar, 1994). Disuse weakness is reversed at a rate of only 6% per week with exercise.

**(Lindboe and Platou, 2004).**

Disuse of muscle may also have detrimental effects on neuromuscular function leadind to body pain. The loss of muscle strength is often greater than the degree of atrophy.

**Connective tissue:**

Changes in the structure and function of connective tissue become apparent four to six days after immobility begins and these changes remain even after normal activity has been resumed. Most of these changes are due to altered structure of collagen fibres.About 20 days of bedrest reduces the stiffness of tendons and increases their viscosity **(Kubo et al, 2003).** This affects transmission from muscle fibres to bone and reduces the ability to produce dynamic force, resulting in a weaker and more exhausted patient.

**Contractures:**

Any decrease from the normal range in parts of the body responsible for motion – for example joints, ligaments, tendons and related muscles – is known as a contracture **(Montague et al, 2005).** However, 2–3 weeks of immobilisation will produce a much firmer contracture, and this is a frequent complication of bedrest.

Contractures may be prevented through proper positioning and body alignment, and the use of straps and supports.

**Bone:**

The primary function of bone is mechanical support for body tissues and muscles, and to maintain mineral homeostasis by providing a reservoir of calcium, phosphorous and magnesium salts

**(Marieb, 2008)**

In just a few days of bedrest, plasma calcium levels rise and, by the third day, there are measureable increases in urinary losses of calcium. If immobility continues, this can lead to the formation of calcium-containing kidney stones (urolithiasis).

Between 24% and 40% of the mass of the heel bone is lost during 36 weeks of bedrest **(Bortz, 2004).** Lost bone mass is not regained for some weeks after muscle mass and strength have returned to normal, and this adds to the risk of fracture **(Bloomfield, 2007).**

Early mobility and physiotherapy are essential to prevent disuse osteoporosis. In postmenopausal women, bone loss is particularly rapid in the femoral neck, increasing the risk of fracture (**Milton and Riggs, 2003).**

**Skin:**

The skin protects underlying muscles, bones and internal organs, as well as being involved in temperature regulation and sensation.

Immobility is the factor most likely to put an individual at risk of altered skin integrity **(Wilkinson, 2000).**

Normally, to relieve discomfort, individuals automatically shift their weight off pressure areas every few minutes, even during sleep. However, immobile patients or those with decreased sensation cannot do this, resulting in prolonged pressure on skin capillaries and, ultimately, the death of skin tissue. Prolonged pressure (greater than capillary pressure of 32mmHg) can result in ischaemia and necrosis of underlying tissues. The prevalence of pressure ulcers increases significantly with age – 70% occur in patients older than, who can acquire them within two weeks of admission to hospital **(Dittmer and Teasell, 1993).**

About 95% of all pressure ulcers occur at five sites: the sacrum, ischial tuberosity, greater trochanters, heels and ankles.

**The immune system:**

The other major effect of bedrest on the immune system appears to be on the production of cytokines. These chemical messengers regulate the immune response in various ways, including stimulating the production of immune cells (leucocytes) or mediating inflammation.

The production of interleukins (IL) seems to be most affected by bedrest. A decrease in the production of IL-2 (responsible for growth, proliferation and activation of T and B lymphocytes and natural killer cells) has been found in patients confined to bed, which may contribute to lower levels of immunity.

**The perception of 'self':**

Immobility and the associated changes in body composition described above can also affect the self-concept of patients. The self is one of the central concepts in psychology and self-concept is described as a stable set of beliefs about one's qualities and attributes (**Taylor, 1999).**

**b) OVERVIEW OF PAIN:**
 **Definition:**

Pain can be defined as an unpleasant sensation occurring in varying degrees of severity as a consequence of injury, disease, or emotional disorder.

**Grabowsky Tortora.,(2006**)

Pain is always subjective. Pain occurs in individuals experiencing anxiety, or emotional tension. For example, tension headaches are very common. The presence of anxiety in a pain sufferer tends both to

increase the severity of pain experienced and to reduce the individual's tolerance or ability to cope with it.

**Demographics:**

Pain is experienced by all age groups, both sexes, and all races and ethnic groups.

**Causes and Symptoms:**

Pain is the most common symptom of injury and disease, and descriptions can range in intensity from a mere ache to unbearable agony. Nociceptors have the ability to convey information to the brain that indicates the location, nature, and intensity of the pain. For example, stepping on a nail sends an information-packed message to the brain: the foot has experienced a puncture wound that hurts a lot. Pain perception also varies depending on the location of the pain. The kinds of stimuli that cause a pain response on the skin include pricking, cutting, crushing, burning, and freezing.

Pain due to prolonged bed rest (also known as dorsalgia) is the pain felt  usually in bedridden clients that usually originates from the muscles, nerves, bones, joints or other structures in the spine. Stasis produced in the muscles and its reflex contractures is often responsible for a dull ache and a feeling of stiffness in bed confined patients.

**Buck Walter(2009).**

The pain can often be divided into neck pain, upper back pain, lower back pain or tailbone pain. It may have a sudden onset or can be a chronic pain; it can be constant or intermittent, stay in one place or radiate to other areas. It may be a dull ache, or a sharp or piercing or burning sensation. The pain may radiate into the arm and hand), in the

upper back, or in the low back, (and might radiate into the leg or foot), and may include symptoms other than pain, such as weakness, numbness or tingling.

The spine is a complex interconnecting network of nerves, joints, muscles, tendons and ligaments, and all are capable of producing pain. Large nerves that originate in the spine and go to the legs and arms can make pain radiate to the extremities.

**Major Types of Pain:**

Pain arises from any number of situations. Injury and illness are the major causes. It may accompany a psychological condition, such as depression, anxiety, or may even occur in the absence of a recognizable trigger

Pain can be acute or chronic.

**(i) Acute Pain:**

Acute pain often results from tissue damage, such as a skin burn or broken bone. Acute pain can also be associated with headaches or muscle cramps. This type of pain usually subsides as the injury heals or the cause of the pain (stimulus) is removed.

**Pathophysiology of acute pain:**

Nerve cells, or neurons, perform many functions in the body. It acts as an interface between the brain and the body. Certain types of neurons are capable of transmitting a pain signal to the brain. As a group, these pain-sensing neurons are called nociceptors, and virtually every surface and organ of the body is wired with them. The central part of these cells is located in the spine, and they send threadlike

projections to every part of the body. Nociceptors are classified according to the stimulus that prompts them to transmit a pain signal. Thermoreceptive nociceptors are stimulated by temperatures that are potentially tissue damaging. Mechanoreceptive nociceptors respond to a pressure stimulus that may cause injury. Polymodal nociceptors are the most sensitive and can respond to temperature and pressure. Polymodal nociceptors also respond to chemicals released by the cells in the area from which the pain originates.

Nerve cell endings, or receptors, are responsible for pain sensation. A stimulus at this part of the nociceptor unleashes a cascade of neurotransmitters (chemicals that transmit information within the nervous system) in the spine. Each neurotransmitter has a purpose. For example, substance P relays the pain message to nerves leading to the spinal cord and brain. These neurotransmitters may also stimulate nerves leading back to the site of the injury. This response prompts cells in the injured area to release chemicals that not only trigger an immune response but also influence the intensity and duration of the pain.

## (ii) Chronic Pain:

Chronic pain refers to pain that persists after an injury heals, cancer pain, pain related to a persistent or degenerative disease, and long-term pain from an unidentifiable cause.

**Pathophysiology of chronic pain:**

Chronic pain may be caused by the body's response to acute pain. In the presence of continued stimulation of nociceptors, changes occur within the nervous system. Changes at the molecular level are dramatic and may include alterations in genetic transcription of

neurotransmitters and receptors. These changes may also occur in the absence of an identifiable cause. In chronic pain the stimulus may be unknown also. For example, the stimulus cannot be medically identified in as many as 85 percent of individuals suffering from.

There are no diagnostic tests that can determine the quality or intensity of an individual's pain. Therefore, medical examination includes the location of pain, its intensity, duration, its nature, aggravating factors, alleviating factors etc.,. An individual may be asked to use a pain scale to describe the pain. One such scale assigns a number to the pain intensity; for example, 0 may indicate no pain, and 10 may indicate the worst pain the person has ever experienced.

.                                               **Buck Walter.,(2009).**

## Management of pain:

Due to the rapid advances of modern medicine, there are now many varied treatments available for pain. The degree of pain varies from person to person, so the treatment plan will be according to the specific needs and circumstances. Treatment may include a single approach or a combination of medications, therapies and procedures, such as:

**Medications**

- **Painkillers**

    Narcotic pain killers are often used to treat acute pain or cancer pain. They seldom are prescribed for chronic pain.

- **Anti-inflammatory drugs**

    Aspirin-like drugs are the most commonly used medications of this type. They not only reduce swelling and irritation but also can relieve pain.

- **Antidepressants**

  Originally used only to treat depression, studies have shown that these medications can alleviate pain in certain situations. Furthermore, they may have the added benefit of helping the patient to sleep at night.

- **Anti-seizure medicines**

  These medicines may help relieve certain types of pain by reducing abnormal electrical discharges in damaged nerves.

- **Other medicines**

  The physician may prescribe other types of medicines that are more specific to the type of pain patient is experiencing.

**Injection Treatments**

Local anesthetics, with or without cortisone-like medicines, can be injected around nerves or into joints. These may act to reduce swelling, irritation, muscle spasms or abnormal nerve transmissions that can cause pain.

**Surgery**

When necessary, surgical treatment may be recommended.

**Conozca., (2009)**

**Natural non-drug pain control therapies and methods include:**

**Acupuncture :**

Acupuncture is based on the belief that life forces or energy move through the body in specific paths. These paths are called meridians. With acupuncture, a needle is put into the meridian that runs to the area where pain persists. This needle blocks the meridian which stops or decreases the pain.

**Aromatherapy :**

Aromatherapy is a way of using good smells to improve relaxation and decrease pain. Candles, massage oils, scented bubble baths and even baking cookies are all ways that smells are used.It may also help your brain makes special chemicals like endorphins which decreases pain.

**Biofeedback:**

Biofeedback teaches the body to respond in a different way to the stress of being in pain. Teaching your body to relax helps make the pain less. This can work with breathing, temperature, and blood pressure too.

**Breathing exercises:**

Breathing exercises are another physical way to help your body relax. Breathing exercise includes breathing in and out very slowly. Blowing soap bubbles slowly may also help. Women have used breathing exercise for many years to decrease the pain of childbirth. This is to be practiced even when there is no pain.

**Distraction :**

Distraction is to focus the attention on something other than pain like playing cards,games, watching TV, or taking a walk, visiting friends, painting, pet animals, and writing out one's feelings are various distraction techniques. Using planned activities helps to manage chronic pain.

**Guided imagery :**

Guided imagery is a method to put pictures in the mind that will make the pain less intense. Guided imagery changes the way the body

senses and responds to pain. Imagination of floating in the clouds or remembering favorite place are some examples for guided imagery.

**Laughter Therapy:**

Various researches have proved that 10 minutes of belly laughter gives 2 hours of pain free sleep. Laughter helps to breathe deeper and improves digestion.  It lowers blood pressure and may stimulate the brain to make endorphins. Laughter can also help change the moods. It helps get relieved of stress, anger, fear, depression, and hopelessness.

**Massage**:

Massage is often used to help a person become more relaxed.Gentle massages of the back, shoulders, and neck would promote relaxation.Massage would be more effective if combined with guided imagery, breathing exercises, or music.It is one of the cost effective and safer methods of complimentary therapies.

**Music** :

Music increases blood flow to the brain and helpsto breathe normally. Scientists are proving that it increases energy and helps to change the mood. Music also may induce the production of endorphins. Endorphins are a natural body chemical like morphine that decrease pain. Music decreases the need of medicines for pain and anxiety.

**Physical therapy**:

Physical therapy can be helpful with pain that was caused by immobilization. Stretching the muscles and making them stronger around the injured area can reduce pain.

**Electrical Stimulation**

Transcutaneous electrical nerve stimulation (TENS) is the most common form of electrical stimulation. It is not painful and does not require needles. TENS consists of a small, battery-operated device that can stimulate nerve fibers through the skin to diminish pain. Also, electrical stimulation of acupuncture points is sometimes performed.

**Spinal cord stimulation**

Spinal cord stimulation is a nerve stimulation technique that is similar to TENS. The difference is that in SCS an electrode (a metal wire) is put near the spinal cord during surgery. SCS also uses mild, safe electrical signals to help controlpain.

**Thomson., (2011)**

**OVERVIEW OF ANXIETY**

**Definition:**

Anxiety is a psychological and physiological state characterized by somatic, emotional, cognitive, and behavioral components.Anxiety is considered to be a normal reaction to stress. It may help a person to deal with a difficult situation by prompting one to cope with it. Chronic anxiety proneness may lead to anxiety disorder.

**Causes of Anxiety:**

Causes of anxiety disorder include genetic predisposition and environmental factors such as hospitalization to encourage anxious behavior. Stressful early life events such as early parental death can also place individuals at higher risk for generalized anxiety disorder. Chronic experiences of fear and learned helplessness may cause greater chronic cortisol activation and increased sympathetic tone. Traumatic

experiences and abnormal prenatal hormonal exposures may also play a role the cause of this disorder.

**Types of Anxiety disorder:**

**Panic Disorder**

Unpredictable attacks of anxiety that are accompanied by physiological manifestations which mimics like heart attacks or other medical conditions before the diagnosis of panic disorder is made. Attacks may last from minutes to hours.

**Agoraphobia**

An abnormal fear of being helpless in an embarrassing or inescapable situation that is characterized especially by the avoidance of open or public places. It may occur alone, or may accompany panic disorder. People with this disorder may become house bound for years, with resulting impairment of social and interpersonal relationships.

**Specific Phobias**

Persistent fear of objects or situations. When these situations or objects appear, they can produce immediate and severe symptoms of anxiety.

**Social Anxiety Disorder**

A persistent irrational fear of situations in which the person may be closely watched and judged by others, as in public speaking, eating, or using public facilities. A person then becomes fearful of social or performance situations in which they may be subject to the scrutiny of others.

**Post Traumatic Stress Disorder (PTSD)**

Post-traumatic stress disorder is a psychiatric illness that can occur following a traumatic event, in which there is the threat of injury or death to self or someone else.

**Obsessive Compulsive Disorder (OCD)**

The person suffering from OCD uses ritualistic and repeated behaviors to rid themselves of obsessive thoughts and anxieties.

**Generalized Anxiety Disorder (GAD)**

This is a common condition. The disorder is characterized by excessive anxiety and worry that is out of proportion to the impact of the event or circumstance that is the focus of the worry. Persons with GAD may eventually experience other mental disorders, such as panic disorder or major depressive disorder.

**Signs and Symptoms:**

Physical effects of anxiety may include heart palpitations, muscle weakness and tension, fatigue, nausea, chest pain, shortness of breath, stomach aches, or headaches, blood pressure and increased heart rate , increased sweating,inhibited immune and digestive system functions. External signs of anxiety may include pale skin, sweating, trembling, and pupillary dilation.

Other symptoms include:
- ☐ Excessive, ongoing worry and tension
- ☐ An unrealistic view of problems
- ☐ Restlessness
- ☐ Irritability
- ☐ Muscle tension

- ☐ Headaches
- ☐ Sweating
- ☐ Difficulty concentrating
- ☐ Nausea
- ☐ The need to go to the bathroom frequently
- ☐ Tiredness
- ☐ Trouble falling or staying asleep
- ☐ Trembling
- ☐ Being easily startled

**Dr.Kenneth.,(2010)**

**Non pharmacological therapies include**:

**Acupuncture**

Acupuncture is an effective therapy for the treatment of anxiety disorders It provides support to the underlying energetic spheres affected by your anxiety, helping to resolve the cause or effects of anxiety. Acupuncture releases tension in the muscles. This allows increased flow of blood, lymph, and nerve impulses to affected areas, decreasing the stress experienced Acupuncture also is effective in relieving the physical symptoms associated with stress-related and anxiety disorders, such as diarrhea, headaches,insomnia etc.,

**Acupressure**

It can relieve anxiety and nervousness as it increases blood circulation throughout the body and has an overall relaxing effect on muscles and the mind. Acupressurerelaxes the mind and calms the mind where patients can gain a new perspective on the problems underlying the anxious feelings or phobias.Some acupressure points that will help release tension and anxiety are CV 17 - Chest Center, Third Eye Point (Yintang), B 10 - Heavenly Pillar etc.,

**Aromatherapy**

Essential oils like scents of vanilla, orange blossom, rose, chamomile and lavender {and other floral fragrances are very effective in the treatment of anxiety and in the encouragement of relaxation.Patchouli oil helps eliminate anxiety and lifts the mood (it is also said to be an aphrodisiac.).Clary sage is a sedative and tonic. Ylang-ylang is euphoric, regulator, sedative, and tonic. Lavender is probably the most useful of them all for relaxation. It is a sedative and a tonic. It helps to relax, eases aches and pains, such as headache.

**Breathing Exercise for Anxiety**

One of the most common breathing Exercise for anxiety reduction includes, standing with the feet slightly apart, keeping the arms hang at the sides, inhale, raise the arms slowly out to the sides, palms up, and over your head. Exhaling, clasp the fingers and turn the palms toward the ceiling or sky.  Now inhale again, stretching up and tilting the head slightly back. During exhalation, drop the head down and let the arms slowly return to the sides. Repeat this exercise several times. This breathing exercise is very useful before an acupressure session or before doing exercises.

**Hydrotherapy**

Hydrotherapy can help alleviate the tension, nervousness, and other symptoms that accompany anxiety attacks. Warm baths with or without herbs can help soothe anxious states of mind.. A relaxing blend of essential oils of lavender, geranium and bergamot in sweet almond oil or peach kernel oil may be used in the bath at times of great stress and anxiety. Hot moist compresses applied to the spine, hot foot baths,

and hot water bottles placed at the feet can be beneficial in relieving anxiety.

**Massage Therapy**

Massage relaxes the mind, body and spirit. A 15 minute self massage will ease tightness in the muscles. A full body massage from a trained professional is one of the best ways to relax.

**Reflexology**

The best antidote for stress and anxiety is relaxation. One of the best techniques to accomplish this is by giving a foot massage or feet rub. A reflexologist will address the central nervous system, brain, solar plexus, and neck and shoulder reflexes. Work the diaphragm reflex on your feet, spine, the pituitary, parathyroid, thyroid and adrenal gland reflex points.

**Tissue Salts**

Kali phos works as nourishment for the nerves. It is the chief tissue salt in cases of fatigue, anxiety, sleeplessness and depression due to nervous tension.

Calc phos is appropriate if nervous debility is linked to physical weakness or anemia.

Nat mur is another tissue salt to consider, helpful when anxiety is accompanied by low spirits, possibly related to grief.

**Miscellaneous Alternative Therapies for Anxiety**

Alexander Technique, therapies, Auricular, Biofeedback, Color Therapy, Hypnotherapy, Imagery, Kinesiology, Macrobiotic Mind Body Medicine Naturopathy, Sound Therapy and Therapeutic Touch.

## C) OVERVIEW OF EFFLEURAGE BACK MASSAGE:

Back massage is one of the best ways through which one can get relieved from various physiological and psychological stress. Mentioned below are few steps in which detailed back massage technique is explained.

### Definition:

**Effleurage**, a French word meaning "to skim" or "to stroke", is a series of massage strokes involving circular stroking movement made with the palm of the hand.

### Mode of action:

Effleurage can be firm or light without dragging the skin and is performed using either the padded parts of the finger tips or the palmar surface of the hands, and works as a mechanical pump on the body to encourage venous and lymphatic return.

### Benefits of Effleurage Back Massage:

With the increase in the amount of stress in people lives all over the world, the use of massage for stress relaxation has greatly increased in the past few years. Effleurage massage is one such massaging techniques and is also known as stroking massage. The technique makes a person relax his or her body and prevents muscle fatigue. It involves light gliding movements applied to the body parts that are to be massaged using hands or forearms. Medium but continuous pressure is applied to the body, making it feel relaxed and free from stress. There are numerous benefits of effleurage massage, some of which include:

**1. Helps in relaxation:**

When effleurage massage is carried out lightly, it creates a soothing effect on the body helps it to relax and get away from physical stress.

**2. Improves blood circulation:**

When the massage is performed with pressure, it helps improve the blood circulation in the skin cells of the body.

**3. Helps in stimulating muscles:**

Short and fast massage strokes help to stimulate the muscles, thereby improve their performance.

**4. Gives a sedative effect:**

When slow massage movements are carried out they act like a sedative and help in soothing the nerves. As a result, stress and strain are relieved, headaches and tension and problems related to insomnia are treated.

**5. Helps to alleviate depression:**

Effleurage massage helps to alleviate depression. It helps to stimulate and encourage the flow of lymph and the body's venous system.

**6. Aids in treating injuries:**

Light strokes in effleurage massage are used for treating injuries during the early stages of healing process.

**7. Helps to relieve pain:**

Light effleurage strokes also aid in relieving back pains that occur due to over work, under usage of back muscles like prolonged bed rest or injuries in the back bone.

**8. Improves the central nervous system:**

Brisk movements of effleurage massage are considered beneficial to stimulate and revive the central nervous system of a person.

**9. Improves a person's immunity:**

Research conducted in the field shows that effleurage massage helps to increase the cytotoxic capacity of the body's immune system. As a result there is an increase in the activity level of body's natural defense system or the "killer cells". The number of T-cells in the body is reduced, thus, lowering the frequency and intensity of sickness. As a result of all this, the person's immunity is enhanced and there are fewer occurrences of diseases.

**Massage Tips:**

1. Massage oil or powder decreases the friction created on the skin and prevents the pulling of hairs.
2. Use slower movements for a soothing or calming response.
3. When applying pressure with finger or thumb, provide support with the other fingers and thumbs.

**Patient Comfort:**

- If the patient is uncomfortable in the lower back, ankles, neck or shoulders, place cushions as required under the whole length of the torso, and/or under the ankles, the shoulders, or the side of the head (diagram right).Patient can assume a side lying position

if not contraindicated. In pregnancy, the patient can lie on her side.

- Pour the massage oil or powder onto the hands first, and then apply. Once the massage is started, keep a hand on the person at all times.
- Avoid direct pressure on bony processes.
- Ask the patient for feedback.

**Contraindications for effleurage back massage:**

- Younger than 20 or older than 55 and getting back pain for the first time.
- Pain after a violent injury, e.g. road traffic accident.
- Pain is constant and getting worse.
- Pain is in the upper part of the spine.
- Cancer in the past or at present.
- Taking (Cortico) steroids.
- Drug abuser or HIV infected.
- Generally unwell or feverish.
- Significant weight loss.
- Continue to have great difficulty bending forwards.
- Nerve related problems other than pain: loss of sensation (especially of the area that would sit on a saddle - so called saddle anaesthesia), loss of power, urinary or bowel incontinence.
- Obvious structural deformity of the spine.
- Debilitating pain that is not reducing after 4 -6 weeks.

<center>**PART –II**</center>

## SECTION A -STUDIES RELATED TO PAIN MANAGEMENT AMONG ORTHOPAEDIC CLIENTS

**El-Husseini.et.al.,  ( 2007)** conducted a study designed to test the effect of the micro-current skin patch therapy (MCT) on pain relief in patients following Total Knee Arthroplasty among 24 patients, randomly divided into two groups, one group receiving MCT plus tramadol hydrochloride (tramadol) for pain relief and a control group receiving only tramadol, for 10 days postoperatively. Tramadol was given intramuscularly in increment doses of 100 mg, as needed, for the duration of the study period. Pain was assessed daily using a visual analogue score (VAS). The results showed that Wound healing was better with the application of the MCT patch: grade 1 wounds were observed in 50% of the patients of the MCT group as compared to 8.3% in control group. The total drain volume was lower in patients of the MCT group compared to the controls (1020.8±211.6 and 1170.8±243.5 ml, respectively. Thus it was proved that micro-current skin patch (MCT) therapy led to better pain control with a markedly lower need for tramadol as compared to the control group.

**Matthias Fink.et.al., (2007)** conducted an open observational study to investigate the efficacy of a flexible orthotic device which is an elastic back support with para vertebral air chamber pads among 50 bedridden osteoporosis patients. An open observational study was performed on 50 patients with osteoporosis in order to investigate the efficacy of a new osteoporosis orthotic device, which is an elastic back support with para vertebral air chamber pads. Results proved that *t*here

<center>54</center>

was a highly significant reduction in pain under exertion from mean 6.1 (SD 1.7) to 4.5 (SD 1.4).

**Wright A. Sluka K.A.et.al., (2001)** conducted a study with several types of physical therapies used in the management of painful musculoskeletal disorders categorized as electrotherapy modalities (e.g., transcutaneous electrical nerve stimulation), acupuncture, thermal modalities (e.g., moist heat, ultrasound), manual therapies (e.g., manipulation or massage), or exercise. Results showed that there is evidence from basic science research to suggest that many of the therapies have potentially therapeutic effects. However, there appears to be limited high-quality evidence from randomized clinical trials to support the therapeutic effectiveness of several of the therapies.

**Suarez Almazor.M.E.et.al., (2010)** conducted a randomized controlled trial of acupuncture for osteoarthritis of the knee. Patients were randomized to 1 of 3 style groups, waiting list, high, or neutral, and nested within style, TCA or sham acupuncture twice a week over 6 weeks. Sham acupuncture was performed in nonmeridian points with shallow needles and minimal stimulation. Primary outcome measures were Joint-Specific Multidimensional Assessment of Pain (J-MAP), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and satisfaction scores. Results showed significant reductions in J-MAP Joint-Specific Multidimensional Assessment of Pain (J-MAP), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and (-1.1, -1.0, and -0.1, respectively; P < 0.001) and WOMAC pain (-13.7, -14, and -1.7, respectively; P < 0.001) compared with the waiting group. Statistically significant differences

were observed in J-MAP pain reduction and satisfaction, favoring the high expectations group.

**Good M.et.al.,(2000)** studied on the effectiveness of supplementing relaxation and music for pain after orthopaedic surgery.517 patients having orthopaedic surgery and receiving patient-controlled analgesia aged 18-75 years (n = 517) were randomized to four groups: patient-controlled analgesia (PT), Relaxation and music (RM) , a combination (PTRM), and a control group. A 2 x 2 factorial design was used to assess PT-Effects and RM-effects. Immediate effects on pain were measured on visual analogue sensation and distress scales before and after five 20-min tests in the first 2 days. Results proved that the immediate Relaxation and music (RM) effects supported the proposition that nonpharmacological adjuvants to analgesics can ease pain without adding side effects.

**Chung M.S.et.al., (2007)** studied the effectiveness of perifracture site injections following volar plating for distal radius fractures of distal radius fractures under axillary nerve block in patients with and without injections of local anesthetics, narcotics, and epinephrine around the fracture site. Perioperative pain levels were prospectively assessed in 44 consecutive patients who had had volar plating for a distal radius fracture under axillary nerve block at a mean time of 2.8 days after trauma. Intravenous, patient-controlled analgesia and prescheduled analgesic medications were administered to all patients. In addition, patients were randomly allocated to 2 groups: perifracture site injection (PI; n = 22) and no perifracture site injection (no-PI; n = 22). At the end of surgery, PI group patients were administered perifracture site injections and blocks of the superficial radial and interosseous nerves

with a local anesthetic mixture consisting of ropivacaine, morphine, and epinephrine. During the first 48 hours after surgery, the overall mean pain VAS scores were 29 before surgery, and 58, 47, 40, and 27 at 4, 8, 24, and 48 hours after surgery, respectively. Thirteen patients needed additional pain rescue despite the multimodal analgesic approach used.

**Hsiao Lan Wang.et.al., (2000)** conducted a pretest-posttest design study among 18 patients to investigate the effectiveness of 20-minute foot and hand massage (5 minutes to each extremity), which was provided 1 to 4 hours after a dose of pain medication, would reduce pain perception and sympathetic responses among postoperative orthopaedic patients. They reported decrease in pain intensity from 4.65 to 2.35 ($t$ = 8.154, $p$ < .001) and in pain distress from 4.00 to 1.88 (t = 5.683, p < .001). Statistically significant decreases in sympathetic responses to pain (i.e., heart rate and respiratory rate) were observed. Results showed that foot and hand massage was effective, inexpensive, low-risk, flexible, and easily applied strategy for postoperative pain management.

## III. STUDIES RELATED TO ANXIETY MANAGEMENT AMONG ORTHOPAEDIC CLIENTS:

**Wong E.M.et.al., (2010)** studied the effectiveness of pain management, educational intervention on level of pain, anxiety and self-efficacy among patients with musculoskeletal trauma and consequent orthopaedic surgery. A pre- and post-test design (quasi-experimental) was employed with 125 patients assigned either to a control (usual care) or an experimental group. The 30-minute educational intervention consisted of information about pain, coping strategies and breathing relaxation exercises. The outcome measures

were scores for pain, anxiety, self-efficacy, analgesic use and length of hospital stay and these were measured before surgery and on day 2, day 4, day 7, 1 month and 3 months after surgery. Results showed that the experimental group reported statistically significantly lower levels of pain, less anxiety and better self-efficacy during hospitalization (before surgery to day 7), as compared to the control group. The experimental group had more requests for analgesics at day 2 only. There were no statistically significant effects on length of stay. At the 3-month evaluation, a statistically significant effect on anxiety level was found in the experimental group.

**Mok.E.(2004)** studied and explored the effect of slow-stroke back massage (SSBM) on anxiety and shoulder pain in hospitalised elderly orthopedic patients. An experimental quantitative design was used, comparing the scores for self-reported pain, anxiety, blood pressure, heart rate and pain of two groups of patients before and immediately after, and three days after the intervention. The intervention consisted of 10 min of SSBM for seven consecutive evenings. One hundred and two patients participated in the study and were randomly assigned to a massage group or a control group. The results revealed that the massage intervention significantly reduced the patients' levels of pain and anxiety. Physiological measures (systolic and diastolic blood pressures and heart rate) indicated relaxation. Prolonged effects of SSBM were reflected by the maintenance of the psycho-physiological parameters 3 days after the massage. The patients' perceptions of SSBM revealed positive support for SSBM for elderly patients.

**Karen M. Thomas.et.al., (2005) studied t**o evaluate the effect of guided imagery as an intervention to reduce pain and anxiety in 121 patients undergoing a total joint arthroplasty. The design used for this study was a 2-group quasi-experimental design. The intervention group listened to a guided imagery CD containing a message to develop a sense of relaxation and harmony. The intervention and control groups were compared on self-reported pain and anxiety levels postoperatively on Days 1, 2, and 3.Results showed that the significant decrease in anxiety was from time 1 (just prior to the initiation of music or rest) to time 2 (just after 20 minutes of music or rest) (t(55) =2.86, p = .006). Additionally, anxiety decreased significantly from time 3 (just after physical therapy) and time 4 (after second period of 20 minutes of music or rest period), (t(55) = 2.222, p = .030) and hence proving the effectiveness of guided imagery.

**Kelly Allred., (2007)** studied on the impact of music therapy on post operative anxiety among 56 orthopedic patients in an orthopedic unit in a 300-bed community hospital in the South Eastern United States. An experimental repeated measures design was used. A visual analog scale was used to measure pain and anxiety. Physiological measures, including blood pressure, heart rate, oxygen saturation, and respiratory rate, were also obtained. Results showed that the music group's decrease in pain or anxiety was not significantly different from the comparison rest group's decrease in pain (F = 1.120, p = .337) or anxiety (F = 1.566, p = .206) at 0.001 level. However, statistical findings within groups indicated that when the groups were combined, the sample had a statistically significant decrease in pain(F = 6.699, p = .001) and anxiety (F = 4.08, p = .013).

# IV. STUDIES RELATED TO EFFECT OF EFFLEURAGE BACK MASSAGE ON PAIN AND ANXIETY AMONG ORTHOPAEDIC CLIENTS:

**Mary Walton., (2007)** conducted a study to assess the immediate effects of effleurage back massage on selected physiological and psychological components of relaxation in adult clients who were confined to bed in orthopaedic ward of St John's Medical College Hospital, Bangalore. Data was obtained from 60 adult clients who were confined to bed. The research design adopted for this study was one group pre-test post-test design. Purposive sampling technique was used to select the sample. The instruments used for data collection were interview schedule for baseline information, record of physiological parameters, visual analogue scale and state trait anxiety inventory. There was significant change in pain level and anxiety level following effleurage back massage at 0.001 level. It was concluded that effleurage back massage was effective on all the physiological components - blood pressure, heart rate and respiratory rate and all psychological components - pain levels and anxiety level.

**Maryam Eghbali.et.al., (2006)** conducted a study to evaluate the effect of massage therapy on pain severity and anxiety among 60 arthroscopic knee surgery patients who were hospitalized in men's orthopedic ward. A two part questionnaire was used for collecting data. Samples were selected using easy continuity method and then they were randomly divided into two groups. In intervention group, besides routine treatments, patients were given back massage by the researcher for 20 minutes each day and pain severity was evaluated before and after the massage.) Results showed that there was a significant difference between mean score of pain severity and anxiety before and

after the massage in intervention group (p < 0.001)compared to control group (p = 0.32). Also comparing the mean score of pain severity in both groups before any interventions showed that there were no significant differences (p = 0.34) but this difference was significant after interventions (p = 0.001).

**Melodee Harris.et.al.,(2000)** studied the physiological and psychological effects of slow-stroke back massage and hand massage on pain and anxiety in older orthopaedic patients. Twenty-one patients who met the inclusion criteria for massage were given a three-minute slow-stroke back massage and 10-minute hand massage. Results concluded that physiological and psychological indicators suggest the effectiveness of slow-stroke back massage and hand massage in reducing pain and anxiety and thereby promoting relaxation in older orthopaedic population.

**Fraser.J.et.al.,(2003)** conducted an experimental design to measure the effects of back massage on anxiety levels of elderly residents in orthopedic wards. Twenty-one clients, 17 females and four males, participated in the study. Subjects were randomly assigned to three groups which received 'back massage with normal conversation', 'conversation only' and 'no intervention' respectively. The dependent variable, anxiety, was measured prior to back massage, immediately following, and 10 minutes later, on four consecutive evenings. The Spielberger Self-Evaluation Questionnaire (STAI), electromyography recordings, systolic blood pressure, diastolic blood pressure (DBP) and heart rate were used as measures of anxiety. Analysis of variance was used to examine differences in group mean scores over the pre-test to post-test, post-test to delayed time interval, and pre-test to delayed time

intervals, There was a statistically significant difference in the mean anxiety (STAI) score between the back massage group and the no intervention group. The difference between the back massage group and the conversation only group approached statistical significance.

# CHAPTER –III

## METHODOLOGY

The methodology of research indicates the general pattern to gather empirical data for the problem under investigation. This chapter deals with research approach design, variables under study, the setting, population of the study,sample, criteria for selection of the sample, sample size, sampling techniques, development of the tool for data collection, content validity, pilot study procedure for data collection and plan for data analysis.

**Research approach**

An evaluative approach was used for the study.

**Research design**

The research design for the present study was pre experimental one group pre test post test design.

**Schematic representation**

| Group | Pretest | Intervention | Posttest |
|-------|---------|--------------|----------|
| G1    | O1      | X            | O2       |

**O1** – Collection of demographic data. Pretest to assess the levels of pain and anxiety among orthopaedic patients with lower extremity skeletal traction.

**X** - Intervention - Effleurage back massage is given for 15 minutes once a day for 3 days per patient.

**O2** - Posttest to assess the levels of pain and anxiety among orthopaedic patients with lower extremity skeletal traction.

**SETTINGS**

The study is conducted in LKM Hospital, Erode. It is a 75 bedded orthopaedic hospital with 2 floors. It has a male ward of 10 beds, a female ward of 10 beds, general, private wards, ICU, and an operation theater. 2-3 surgeries are being conducted per day. The total in patient admission of the hospital is 100-150 per month and approximately about 100-120 patients are in skeletal traction. The out patient census is 60-75 per day.

**POPULATION OF THE STUDY**

Population includes orthopaedic patients in LKM Hospital, Erode.

**SAMPLES**

Orthopaedic patients who are in lower extremity skeletal traction and confined to bed.

**CRITERIA FOR SAMPLE COLLECTION:**

**Inclusion Criteria**

➢ Adult patients between 20 and 60 years.

➢ Both male and female patients are included.

➢ Orthopaedic patients who are able to turn or sit.

**Exclusion Criteria**

➢ Patients diagnosed with, fractured ribs and tuberculosis spine, spinal injuries and cervical cord injuries.

➢ Patients who are confused, delirious state and mentally incompetent.

➢ Patients who are not willing to participate in the study.

➢ Patients with diabetes mellitus and hypertension.

➢ Patients who are physically challenged.

## SAMPLE SIZE

The sample size is 60.

## SAMPLING TECHNIQUE

Non probability purposive sampling was used to select the samples.

## DEVELOPMENT OF TOOL FOR DATA COLLECTION

It consists of three parts.

## PART I

Demographic data includes age, sex, education, occupation, family monthly income, marital status and religion.

## PART II

Visual Analogue Scale was used to assess the level of pain. It is a 0-10 point scale.

## PART III

The Anxiety Rating Scale adopted from The Zung Self Rating Anxiety Scale was used to assess the level of anxiety. It consists of 20 items out of which 14 are positive items and 6 are negative items. It is scored from 20-80.

Physiological parameters like temperature, pulse rate, respiratory rate and blood pressure is also assessed to assess the level of anxiety by biophysiological instrument such as sphygmomanometer and thermometer.

**SCORING PROCEDURE**

**PART II**

**Visual Analogue Scale**

Visual Analogue Scale was used to assess the level of pain. It is given 0 score for no pain, 1-3 for mild pain, 4-7 for moderate pain and 8-10 for severe pain. The total score is 10 and is interpreted as follows:

| LEVEL OF PAIN | SCORE | PERCENTAGE% |
|---|---|---|
| No Pain | 0 | 0 |
| Mild pain | 1-3 | 10-33 |
| Moderate pain | 4-7 | 34-69 |
| Severe pain | 8-10 | 70-100 |

**PART II**

**A. The Anxiety Rating Scale**

The Anxiety Rating Scale was used to assess the level of anxiety. It consists of 20 items among which 14 are positive items and 6 are negative items. It has 4 responses such as rarely, sometimes, many times and often and is scored as 1,2,3,4 respectively.

**Anxiety Score:**

| LEVEL OF ANXIETY | SCORE | PERCENTAGE |
|---|---|---|
| Normal | 20-44 | 25-55% |
| Mild anxiety | 45-59 | 56-74% |
| Moderate anxiety | 60-74 | 75-92% |
| Severe anxiety | 75-80 | 93-100% |

**For the positive response, scores were measured as follows:**

| | |
|---|---|
| Rarely | -1 |
| Sometimes | -2 |
| Many times | -3 |
| Often | -4 |

**For the negative response, scores were measured as follows:**

| | |
|---|---|
| Rarely | -4 |
| Sometimes | -3 |
| Many times | -2 |
| Often | -1 |

**Validity reliability of the tool**

**Validity**

The validity of the tool was established in consultation with the guide, four nursing experts and one general surgeon. The tool was modified according to the suggestions of the experts. The accuracy of the biophysiological instruments such as sphygmomanometer and thermometer was assessed using Karl Pearson's formula and found to be accurate. The r value for sphygmomanometer is 0.9 and thermometer 0.9 respectively.

**Reliability**

The reliability of the anxiety rating scale was assessed by testing stability by test retest method. The value was found to be reliable(r=0.97). The equivalence of the anxiety scale was assessed by inter rater method and found to be reliable. Cronbach's alpha method was used to find the internal consistency of the tool. The value was found to be reliable (r=0.94).Inter rater reliability was used to assess the equivalence of the bio physiological instruments such as sphygmomanometer and thermometer and was found to be reliable(r=0.97 and r= 0.99).

**PILOT STUDY**

The pilot study was conducted in LKM Hospital, Erode during the first week of May, 2009. Formal permission was obtained from the

Medical Officer and the participants of the study. 6 samples fulfilling the inclusion criteria were selected for the pilot study by using purposive sampling technique. 1 patient was selected per day and effleurage back massage was given for 3 days.

The investigator explained the study to the patients and thus rapport was maintained. Verbal consent was obtained prior to the test. In pre test pain was assessed through Visual Analogue Scale, the Anxiety Rating scale was used to assess the level of anxiety, physiological parameters like temperature, pulse rate, respiratory rate and blood pressure were also measured by using bio physiological instrument to assess the level of anxiety, for 15 minutes. After applying talcum powder effleurage back massage was given with the palms of both hands from the lower back to the neck then encircling around and back to the lower back for 5 minutes, starting at the lower back in circles first outward then upward for 5 minutes, standing on the side of the patient with flats of fingers, hand on hand massage is given away from the centre then gliding back towards the spine for 5 minutes. Effleurage back massage was given for 15 minutes.5 minutes after the intervention post test scores were assessed by using the same scales. The total time duration per patient is about 60 minutes. Collected data were analyzed using descriptive and inferential statistics. The findings of the pilot study revealed that the mean posttest level of pain scores 1.5(SD $\pm$0.7) was significantly lower than the mean pretest level of pain scores 5.3(SD$\pm$0.9). The mean posttest levels of anxiety scores 42.8(SD $\pm$ 3.4) was significantly lower than the mean pretest levels of anxiety scores 52.3(SD$\pm$ 3.14). The 't' value of the level of pain was found to be 8.4 and the 't' value of the level of anxiety was 5.2 which was significant at 0.05 level. Results revealed that the pilot study was feasible and practicable.

**PROCEDURE FOR DATA COLLECTION**

The study was conducted in LKM Hospital, Erode in the month of June, 2010. The data was collected for a period of 5 weeks. The nature of the study was explained to the Medical Officer and formal permission was obtained.60 patients fulfilling the inclusion criteria were selected through non probability purposive sampling technique .The investigator explained the study to the patients and thus rapport was maintained. Verbal consent was obtained prior to the test. In pre test the level of pain was assessed through Visual Analogue Scale, the anxiety rating scale is used to assess the level of anxiety, physiological parameters like temperature, heart rate, respiratory rate and blood pressure were also assessed by bio physiological instrument to measure the level of anxiety.

6 patients were selected per day and effleurage back massage was given for 3 days per patient. After applying talcum powder effleurage back massage was given with the palms of both hands from the lower back to the neck then encircling around and back to the lower back for 5 minutes, starting at the lower back in circles first outward then upward for 5 minutes, standing on the side of the patient with flats of fingers, hand on hand massage is given away from the centre then gliding back towards the spine for 5 minutes. Effleurage back massage was given for 15 minutes.5 minutes after the intervention post test scores were assessed by using the same scales. The total time duration per patient is about 60 minutes. 12 patients were selected per week from monday. The collected data were analyzed by using descriptive and inferential statistics.

**PLAN FOR DATA ANALYSIS**

| S. No | DATA ANALYSIS | METHOD | PURPOSE |
|-------|---------------|--------|---------|
| 1. | Descriptive | Frequency and percentage | To assess the demographic variables of orthopaedic patients who are with lower extremity skeletal traction and confined to bed. |
| | | Mean standard deviation | To assess the pretest and post test levels of pain and anxiety among orthopaedic patients who are with lower extremity skeletal traction and confined to bed. |
| 2. | Inferential statistics | Paired 't' test | To evaluate the effectiveness of effleurage back massage technique on the level of pain among orthopaedic patients who are with lower extremity skeletal traction and confined to bed. |
| | | | To evaluate the effectiveness of effleurage back massage technique on the levels of anxiety among orthopaedic patients who are with lower extremity skeletal traction and confined to bed. |

|  |  | Chi – square | To find the association between post test levels of pain of orthopaedic patients with their selected demographic variables. |
|  |  |  | To find the association between post test levels of anxiety of orthopaedic patients with their demographic variables. |

**PROTECTION OF HUMAN SUBJECTS:**

The research was approved by dissertation committee prior to conducting pilot study and the main study. Written permission was obtained from the Medical Officer of the hospital. Verbal consent was obtained from the orthopaedic patients regarding the nature of the study.

# CHAPTER – IV

## DATA ALANYSIS AND INTERPRETATION

This chapter deals with the analysis & interpretation of the data collection to assess the effectiveness of effleurage back massage technique in reducing the level of pain and anxiety among orthopedic patients in selected hospital.

The data has been tabulated & organized as follows.

**Section A -** Frequency and percentage distribution of demographic variables of orthopedic patients.

**Section B -** Comparison between pre and post test levels of pain score among orthopedic patients.

**Section C -** Comparison between pre and post test levels of anxiety score among orthopedic patients.

**Section D -** Comparison of mean, standard deviation, paired t values of pre test and post test levels of pain among orthopedic patients.

**Section E -** **a)** Comparison of mean, standard deviation, paired t values of pre test and post test levels of anxiety among orthopedic patients.

**b)** Comparison of mean, standard deviation, paired t values of pre test and post test levels of physiological parameters among orthopedic patients.

**Section F -** Association between post test level of pain among orthopaedic patients with their selected demographic variables.

**Section G -** Association between post test level of anxiety among orthopaedic patients with their selected demographic variables.

**SECTION – A**

**Table : 1 Frequency and percentage distribution of demographic variables among orthopaedic patients.**

**n=60**

| S. No | Demographic Variables | Frequency | Percentage (%) |
|---|---|---|---|
| 1 | **Age (in years) :** | | |
| 1.1 | 20 – 30 | 17 | 28.3 |
| 1.2 | 31 – 40 | 18 | 30 |
| 1.3 | 41 – 50 | 15 | 25 |
| 1.4 | 51 – 60 | 10 | 16.7 |
| 2 | **Sex :** | | |
| 2.1 | Male | 47 | 78.3 |
| 2.2 | Female | 13 | 21.7 |
| 3 | **Education** : | | |
| 3.1 | No formal education | 6 | 10 |
| 3.2 | Primary education | 19 | 31.7 |
| 3.3 | High school education | 17 | 28.3 |
| 3.4 | Higher Secondary education | 11 | 18.3 |
| 3.5 | Degree | 7 | 11.7 |

| 4 | Occupation : | | |
|---|---|---|---|
| 4.1 | Self employed | 18 | 30 |
| 4.2 | Government | - | - |
| 4.3 | Private | 18 | 30 |
| 4.4 | Daily wages | 11 | 18.3 |
| 4.5 | Un employed | 13 | 21.7 |
| 5 | Marital Status : | | |
| 5.1 | Unmarried | 18 | 30 |
| 5.2 | Married | 37 | 61.7 |
| 5.3 | Widow / Widower | 5 | 8.3 |
| 5.4 | Divorce | - | - |
| 6 | FamilyMonthlyIncome (in rupees) | | |
| 6.1 | $\leq$ 3000 | 8 | 13.3 |
| 6.2 | 3001 – 5000 | 15 | 25 |
| 6.3 | 5001 – 10,000 | 28 | 46.7 |
| 6.4 | 10,000 $\leq$ | 9 | 15 |
| 7 | Religion : | | |
| 7.1 | Hindus | 50 | 83.4 |
| 7.2 | Muslims | 2 | 3.33 |
| 7.3 | Christians | 8 | 13.34 |

**Table 1** shows that higher percentages of orthopaedic patients 18(30%) were in the age group of 31 and 40 years. 10(16.7%) were in the age group of 51 and 60 years, 17(28.3%) belong to the age group of 20 and 30 years and 15(25%) were between 41 and 50 years (Fig 2).

Percentage distribution of orthopedic patients according to their sex shows that 47(78.3%) were male and 13(21.7%) were female (Fig 3)

Highest percentage 19(31.7%) of orthopedic patients had primary education, where as 17(28.3%) had a high school education and 11 (18.3%) had a higher secondary education. However 7 (11.7%) were degree holders and 6(10%) of orthopedic clients had no formal education (Fig 4)

Percentage distribution of orthopedic patients by occupation depicts that nearly 18 (30%) were self employed and 18(30%) of them were working in a private concern, 13(21.7%) were unemployed and the lowest percentage 11 (18.3%) were earning on daily wage basis (Fig 5)

Percentage distribution of orthopedic patients according to marital status depicts that maximum 37(61.7%) were married, 18(30%) were unmarried and least population 5(8.3%) were widows or widowers. No one is a divorce (Fig 6).

Regarding family monthly income, majority of the orthopedic patients 28(46.7%) earn between 5001 and 10,000 rupees, 15(25%) of them earn between 3001 and 5000 rupees,9 (15%) of them earn above 10,000 rupees, and however the lowest percentage of earning group 8 (13.3%) earn less than 3000 rupees (Fig 7).

Data depicts that 50(83.34%) of the orthopaedic patients were Hindus, 8(13.34%) were Christians, 2(3.3%) were Muslims (Fig 8).
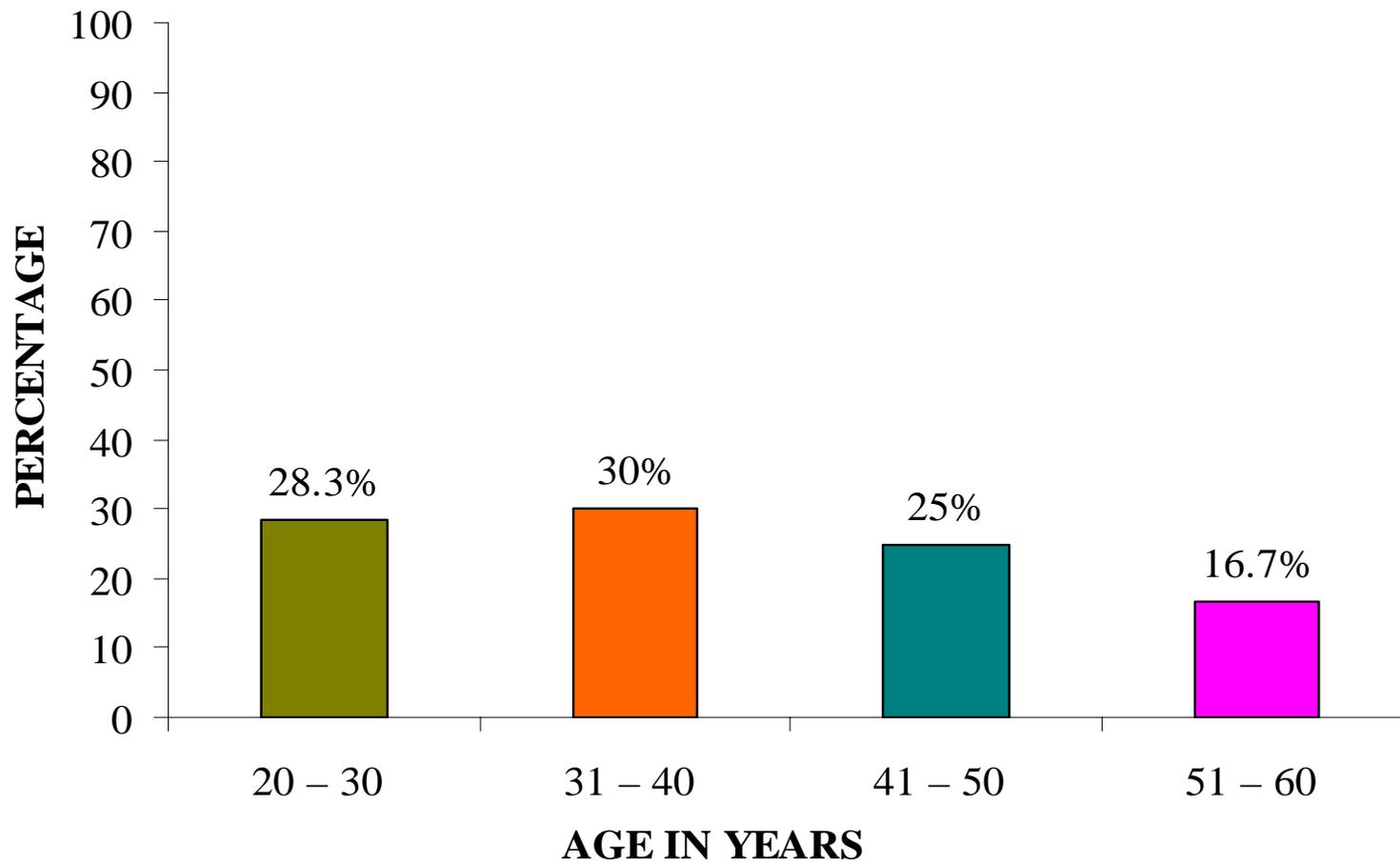
Fig 2 : Percentage distribution of orthopedic patients according to the age.

21.7%

Male

Female

78.3%

SEX
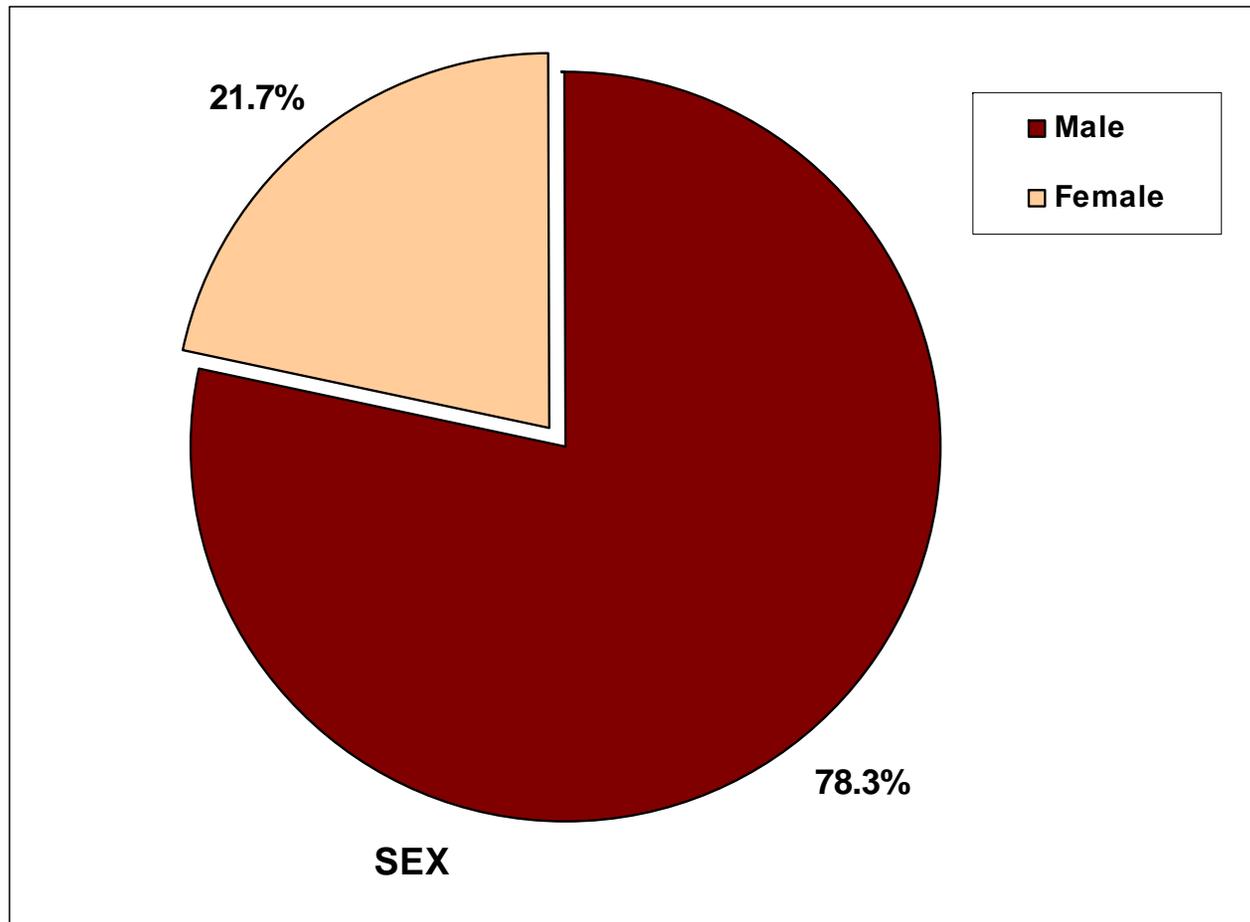
Fig : 3 Percentage distribution of orthopedic patients according to the sex.
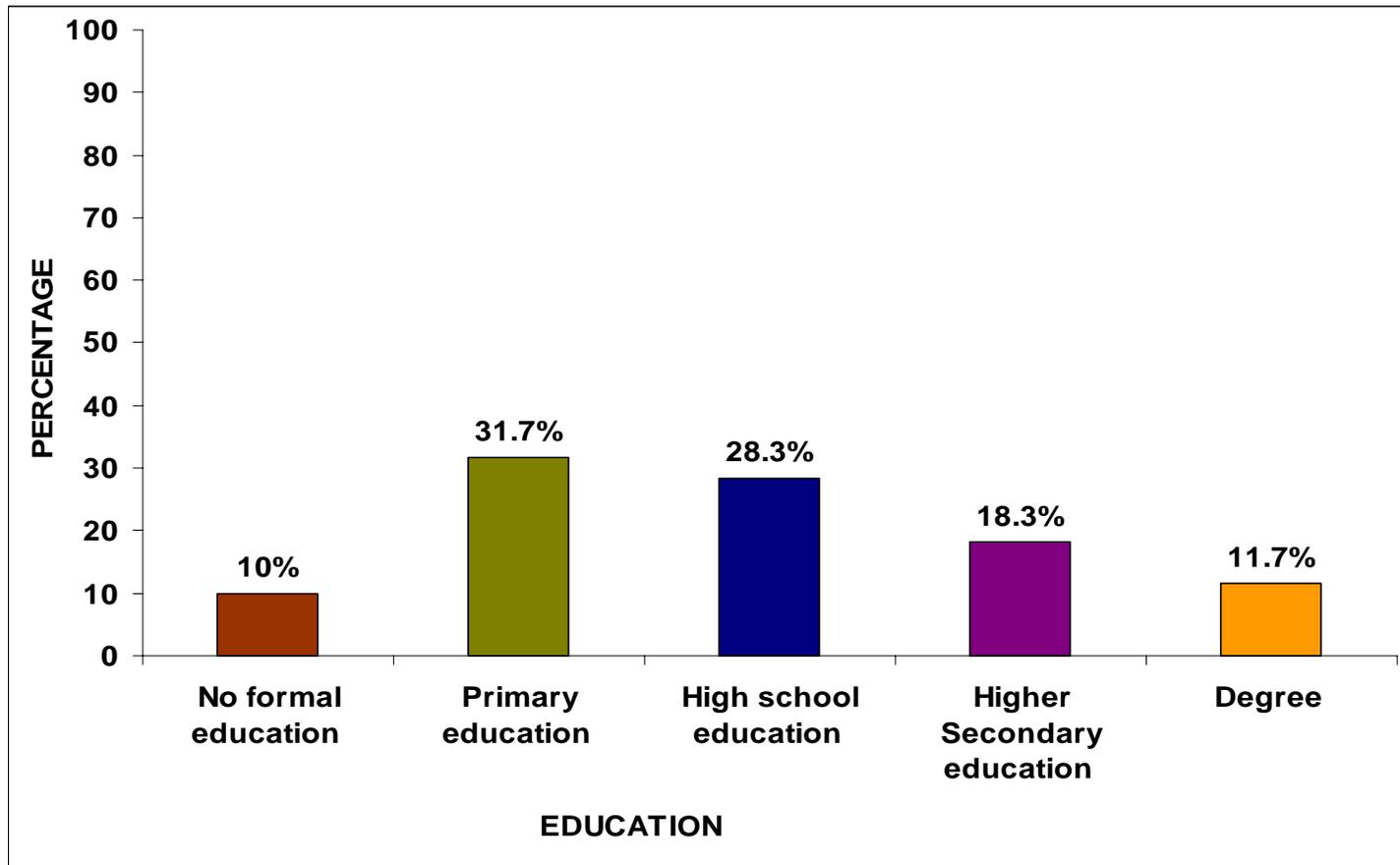
Fig 4 : Percentage distribution of orthopedic patients according to the education.
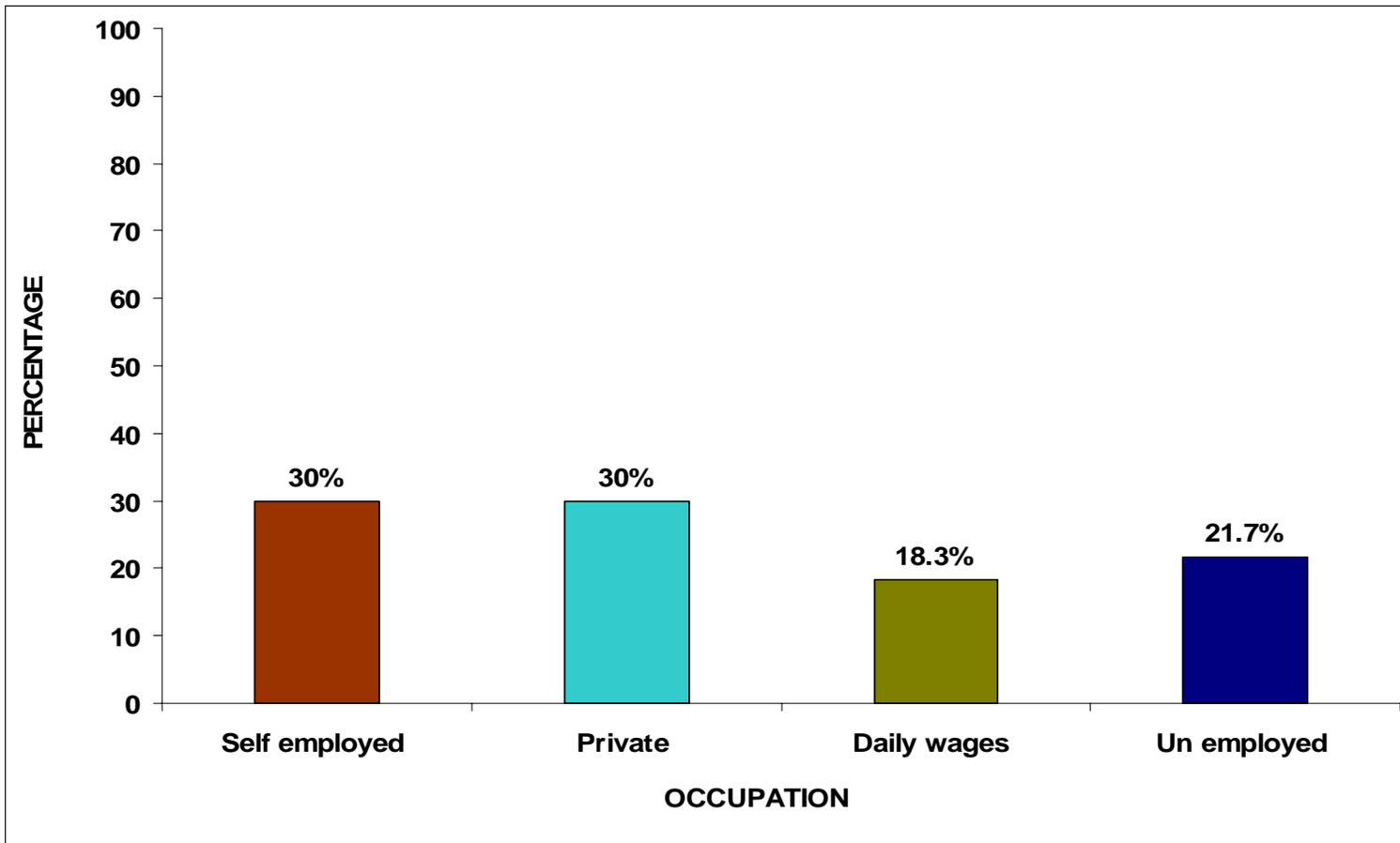
Fig 5 : Percentage distribution of orthopedic patients according to the occupation.
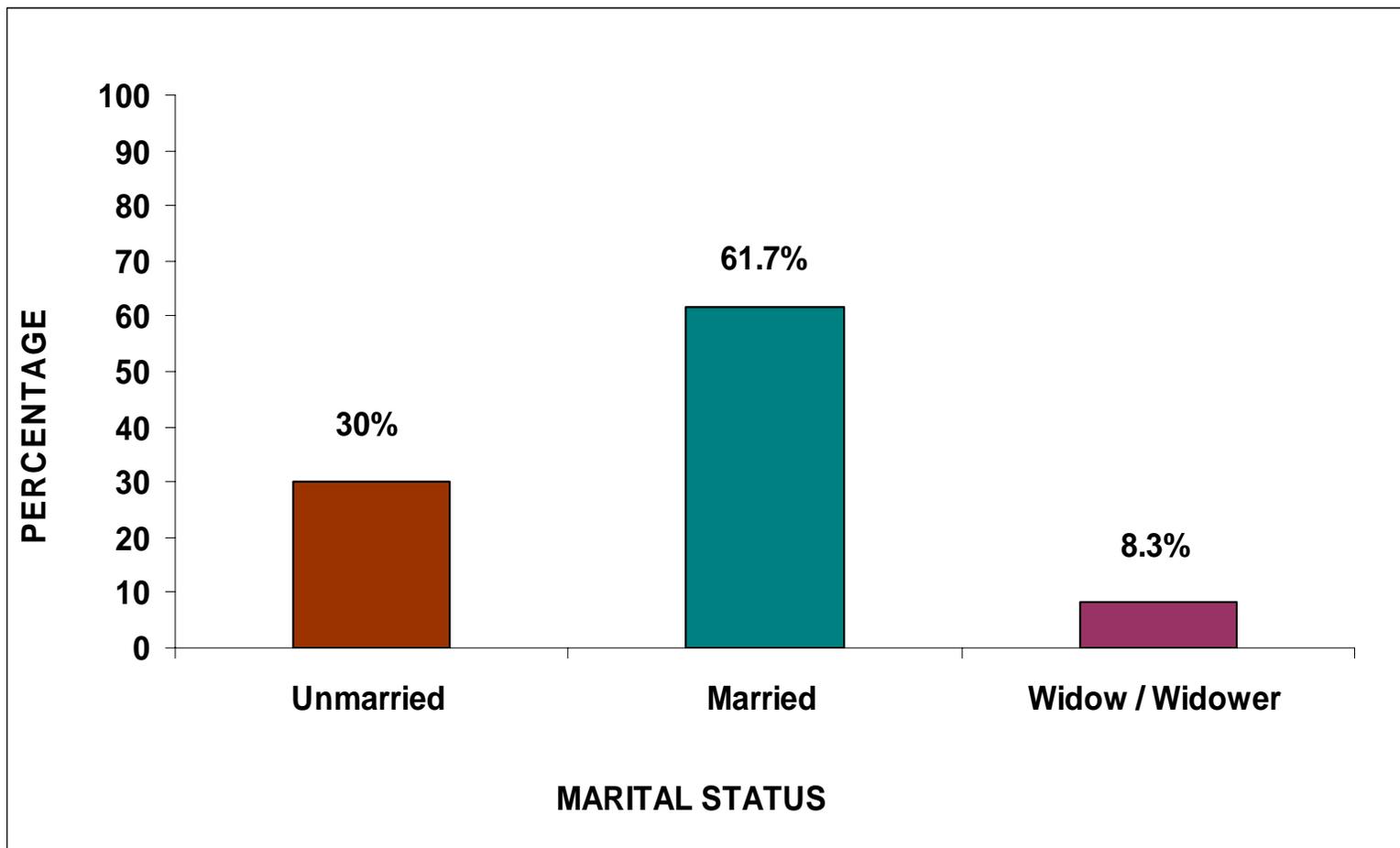
Fig : 6 Percentage distribution of orthopedic patients according to the marital status.
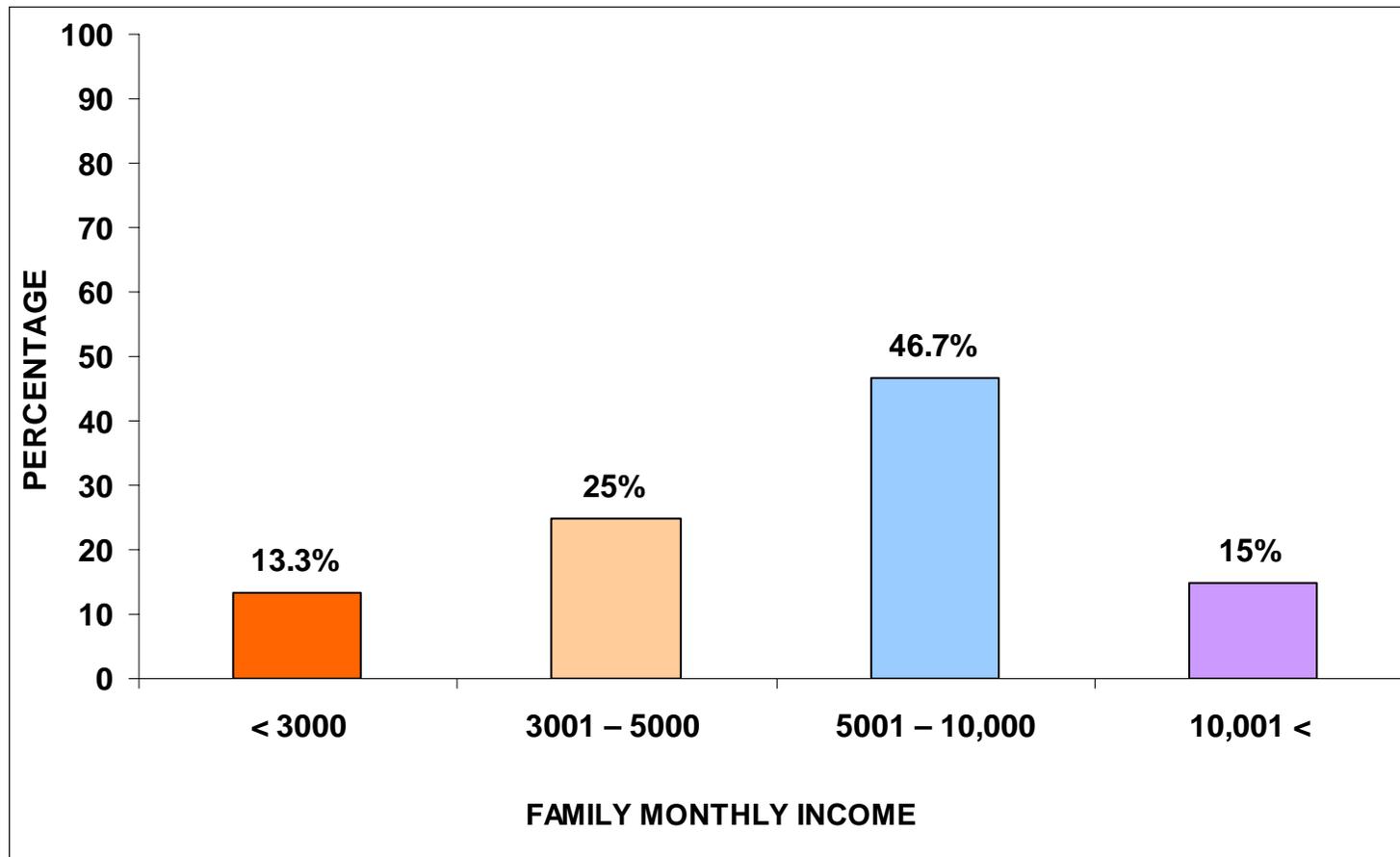
Fig : 7 Percentage distribution of orthopedic patients according to their family monthly income.
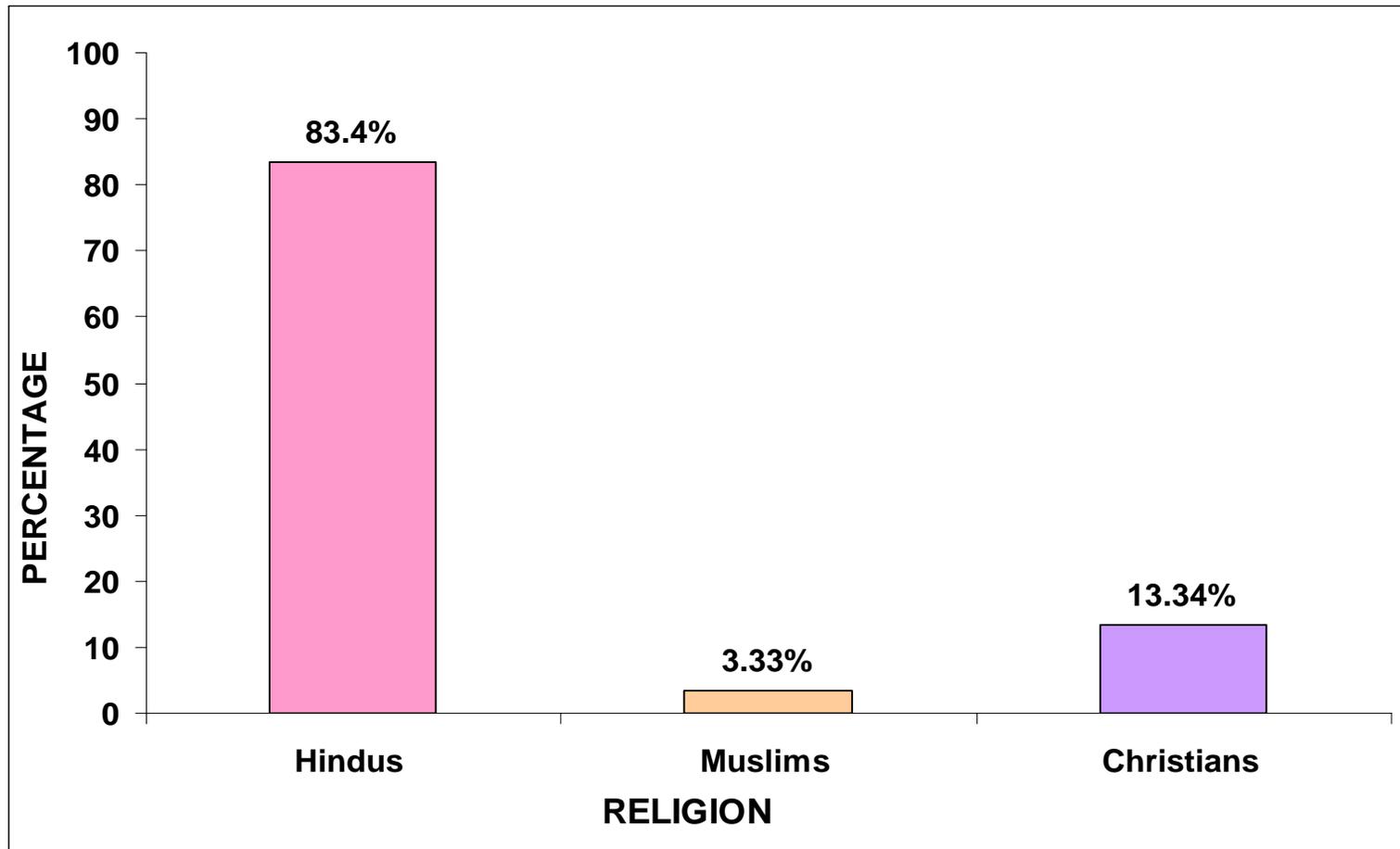
Fig : 8 Percentage distribution of orthopedic patients according to religion.

**SECTION – B**

**Frequency and percentage distribution of pretest and post test levels of pain among orthopedic patients.**

**Table 2** – Frequency and percentage distribution of pretest and post test levels of pain among orthopedic patients.

n = 60

| S. No | Level of Pain | Pre Test | | Post Test | |
|---|---|---|---|---|---|
| | | Frequency | % | Frequency | % |
| 1. | No Pain | 0 | 0 | 12 | 20 |
| 2. | Mild Pain | 2 | 3.3 | 48 | 80 |
| 3. | Moderate Pain | 57 | 95 | 0 | 0 |
| 4. | Severe pain | 1 | 1.7 | 0 | 0 |

Table 2 depicts that in pretest majority of the 57(95%) orthopaedic patients had moderate pain, where as 2(3.3%) of the patients had mild pain and 1(1.7%) of the patients had severe pain. Post test frequencies show that 48(80%) of the orthopaedic patients had mild pain revealing a reduction in pain level and 12(20%) had no pain. Figure 9 shows that in pretest majority of the patients had moderate pain, whereas in post test, it has been reduced to mild level of pain.
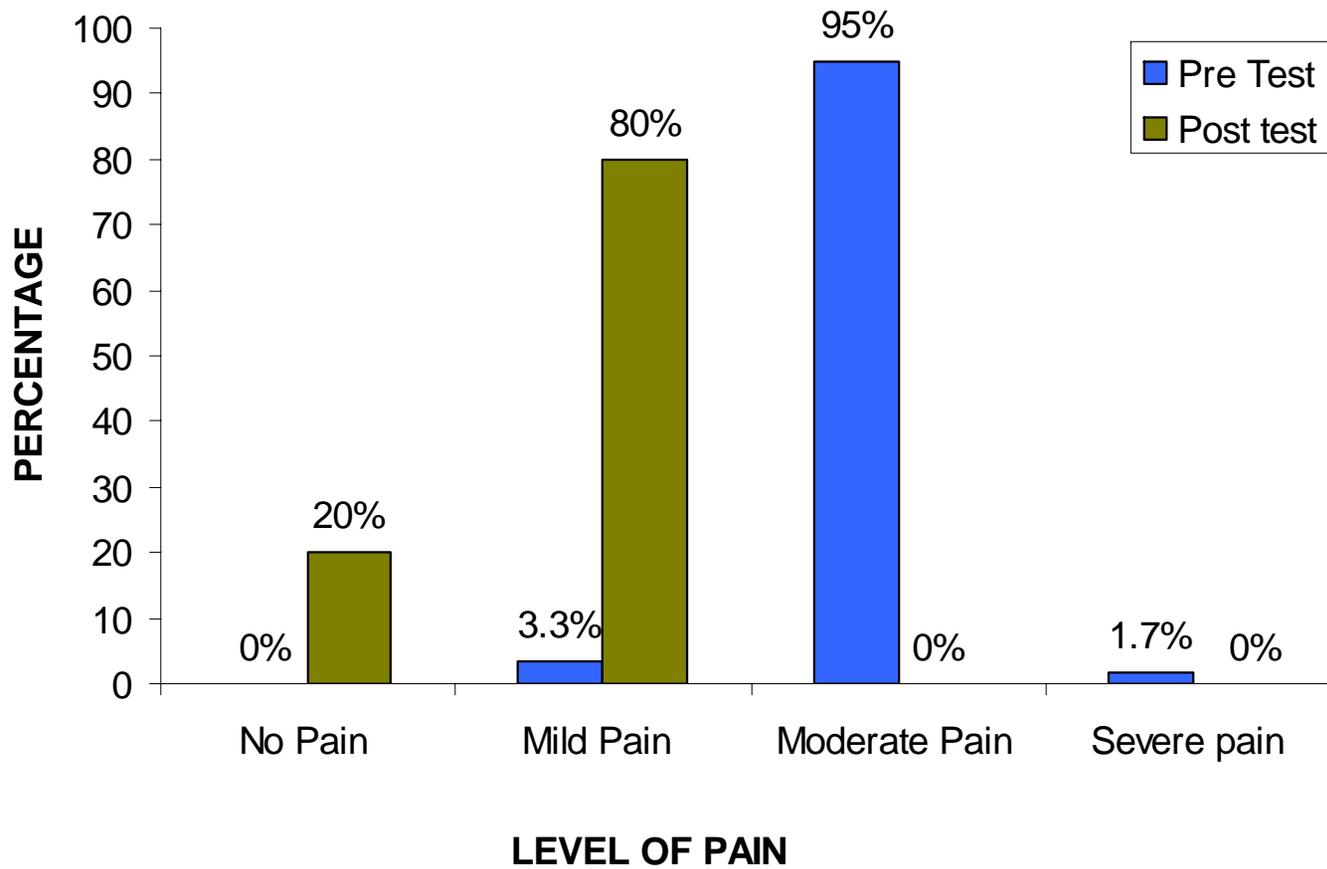
Fig : 9 Comparison between pre and post test level of pain among orthopedic patients.

**SECTION – C**

**Frequency and percentage distribution of pretest and post test levels of anxiety among orthopedic patients**

**Table 3 :** Frequency and percentage distribution of the levels of anxiety among orthopedic patients.

| S. No | Level of Anxiety | Pre Test | | Post Test | |
|---|---|---|---|---|---|
| | | Frequency | % | Frequency | % |
| 1. | Normal | 1 | 1.7 | 51 | 85 |
| 2. | Mild anxiety | 54 | 90 | 9 | 15 |
| 3. | Moderate anxiety | 5 | 8.3 | 0 | 0 |
| 4. | Severe anxiety | 0 | 0 | 0 | 0 |

Frequency and percentage distribution of pre and post test levels of anxiety among orthopedic patients (Tab 3) depicts that in pretest 54(90%) of the orthopedic patients had mild anxiety where as 5(8.3%) had moderate anxiety and 1(1.7%) had a no anxiety. In post test majority of the orthopaedic patients.51(85%) had normal anxiety and 9(15%) had mild of anxiety.(Fig 10)
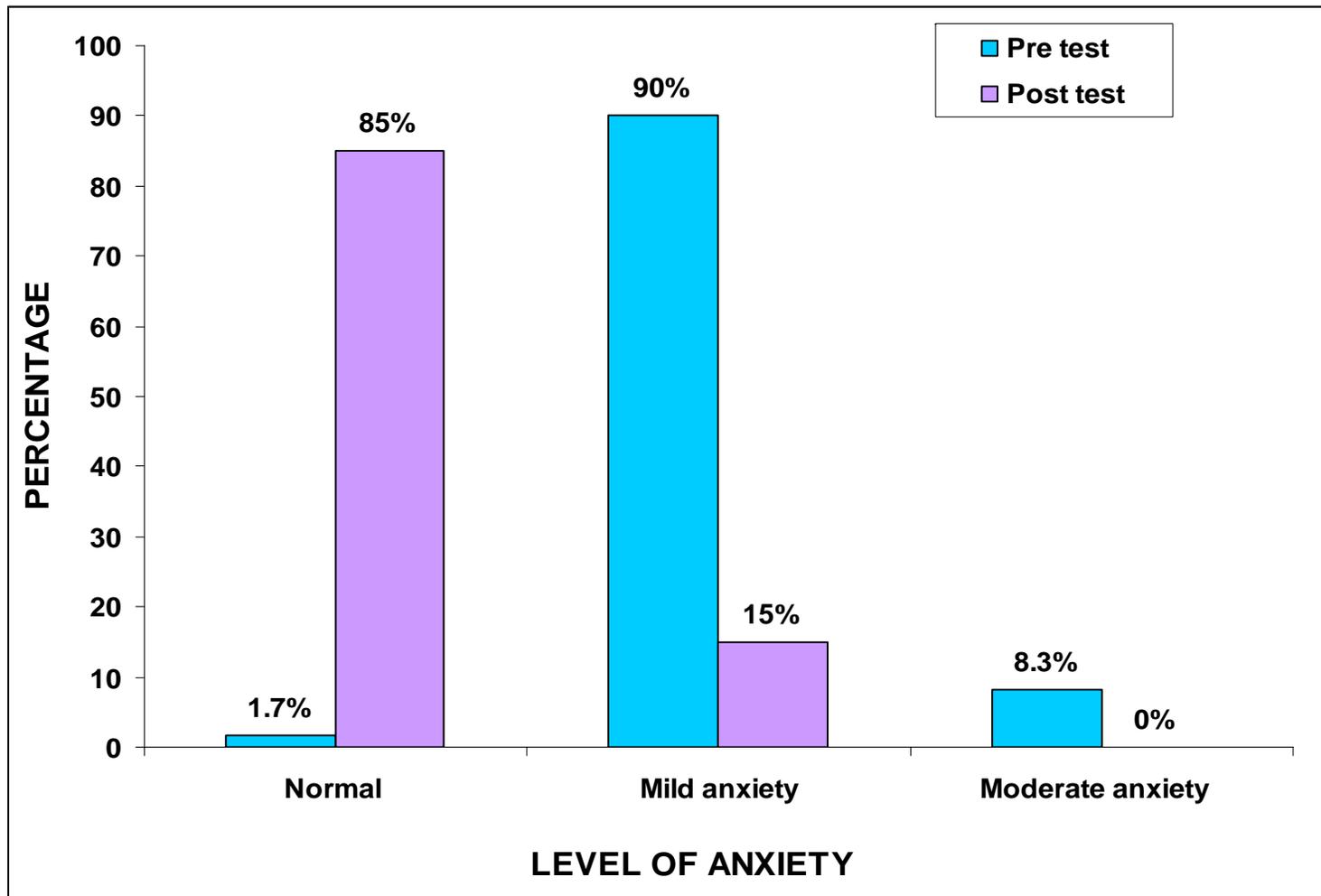
Fig 10: Comparison between pre and post test levels of anxiety among orthopedic patients.

**SECTION – D Comparison of mean, standard deviation, paired 't' value of pre test and post test level of pain among orthopedic patients.**

Table 4 : Comparison of mean, standard deviation, paired 't' value of pre test and post test level of pain among orthopedic patients.

n=60

| S. No | Test | Mean | SD | Paired 't' Value | Table Value |
|-------|------|------|-----|-----------------|-------------|
| 1. | Pretest | 5.6 | 1.01 | 27.18 | 1.671 |
| 2. | Post test | 1.25 | 0.78 | | |

(df = 59)                                                                 (P < 0.05)

Table 4 depicts that the mean post test pain score 1.25(SD±0.78) was significantly lower than mean pretest pain score 5.6(SD±1.01). The paired t value is 27.18 which was significant at 0.05 level.

**SECTION – E Comparison of mean, standard deviation, paired value in pretest & post test level of anxiety among orthopedic patients**

Table 5 (a)  Comparison of mean, standard deviation, paired value in pretest & post test level of anxiety among orthopedic patients.

n=60

| S. No | Test | Mean | SD | Paired 't' Value | Table Value |
|-------|------|------|-----|------------------|-------------|
| 1. | Pretest | 53.2 | 4.00 | 27.6 | 1.671 |
| 2. | Post test | 41.16 | 3.6 | | |

df =59                                                                    (P<0.05)

Table 5(a) depicts that the mean post test anxiety score 41.16(SD$\pm$ 3.6) is significantly lower than mean pretest anxiety score 53.2(SD$\pm$ 4.00). The paired t test shows that there is a significant difference between pretest & post test levels of anxiety (t=27.6) at 5% level of significance (P<0.05).

**SECTION – F**

Table 5(b) : Comparison of mean, standard deviation, paired t value in pre test and post test of physiological parameters like temperature, pulse rate, respiratory rate, systolic & diastolic blood pressure among orthopaedic clients.

n=60

| Parameters | Test | Mean | SD | Paired t value | Table value | Inference |
|---|---|---|---|---|---|---|
| Temperature | Pre test | 98.64 | 0.09 | 0 | 1.671 | NS |
| | Post test | 98.59 | 0.06 | | | |
| Pulse rate | Pre test | 76.75 | 1.99 | 9.6 | 1.671 | S |
| | Post test | 73.26 | 2.16 | | | |
| Respiratory rate | Pre test | 23.8 | 3.5 | 11.48 | 1.671 | S |
| | Post test | 18.4 | 1.4 | | | |
| Systolic blood Pressure | Pre test | 130.6 | 3.59 | 15.24 | 1.671 | S |
| | Post test | 124.3 | 3.2 | | | |
| Diastolic blood Pressure | Pre test | 84.3 | 1.68 | 3.35 | 1.671 | S |
| | Post test | 80.3 | 1.93 | | | |

df = 59                                                                    (P < 0.05)

Table 5(b) shows that the mean post test scores of the physiological parameters like temperature, pulse rate, respiratory rate, diastolic & systolic blood pressure are lower than the pretest scores respectively. The paired t test values of pulse rate, respiratory rate, systolic & diastolic blood pressure are 9.6, 11.48, 15.24 and 3.35 which was significant at 0.05% level. The paired t value of temperature is 0 which was not significant at 0.05% level.

# SECTION G

**Association between post test levels of pain among orthopaedic patients with their selected demographic variables.**

Table 6 : Association between post test levels of pain among orthopaedic patients with their selected demographic variables.

n=60

| S. No | Demographic Variables | No Pain | | Mild Pain | | Moderate Pain | | Severe Pain | | Chi Square Values | Table Value and Inference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F | % | F` | % | F | % | F | % | | |
| 1 | **Age (in years) :** | | | | | | | | | | |
| | a) 20 – 30 | 4 | 6.67 | 13 | 21.67 | - | - | - | - | 0.477 | 3.84 |
| | b) 31 – 40 | 4 | 6.67 | 14 | 23.33 | - | - | - | - | df=1 | (NS) |
| | c) 41 – 50 | 2 | 3.33 | 13 | 21.67 | - | - | - | - | | |
| | d) 51 – 60 | 2 | 3.33 | 8 | 13.33 | - | - | - | - | | |
| 2 | **Sex :** | | | | | | | | | | |
| | a) Male | 11 | 18.33 | 36 | 60 | - | - | - | - | 8.04 | 7.81 |
| | b) Female | 1 | 1.67 | 12 | 20 | - | - | - | - | df=3 | (NS) |
| 3 | **Education :** | | | | | | | | | | |
| | a) No education | 1 | 1.67 | 5 | 8.33 | - | - | - | - | 7.4 | 3.84 |
| | b) Primary | 4 | 6.67 | 15 | 25 | - | - | - | - | df=1 | (NS) |
| | c) High School | 2 | 3.33 | 15 | 25 | - | - | - | - | | |
| | d) Higher Secondary | 4 | 6.67 | 7 | 11.67 | - | - | - | - | | |
| | e) Degree | 1 | 1.67 | 6 | 10 | - | - | - | - | | |

| S. No | Demographic Variables | No Pain | | Mild Pain | | Moderate Pain | | Severe Pain | | Chi Square Values | Table Value and Inference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F | % | F` | % | | | F | % | | |
| 4 | **Occupation :** | | | | | | | | | | |
| | a) Self employed | 2 | 3.33 | 16 | 26.67 | - | - | - | - | 7.4 | 21 |
| | b) Government | - | - | - | - | - | - | - | - | df=12 | (NS) |
| | c) Private | 6 | 10 | 12 | 20 | - | - | - | - | | |
| | d) Daily Wages | 3 | 5 | 8 | 13.34 | - | - | - | - | | |
| | e) Unemployed | 1 | 1.67 | 12 | 20 | - | - | - | - | | |
| 5 | **Marital Status :** | | | | | | | | | | |
| | a) Unmarried | 5 | 8.33 | 13 | 21.67 | - | - | - | - | | |
| | b) Married | 9 | 15 | 28 | 46.67 | - | - | - | - | 0.146 | 16.9 |
| | c) Widow/ Widower | 1 | 1.67 | 4 | 6.67 | - | - | - | - | df=9 | (NS) |
| | d) Divorce | 0 | 0 | 0 | 0 | - | - | - | - | | |
| 6 | **Family Monthly Income :** | | | | | | | | | | |
| | a) $\leq$ 3000 | 2 | 3.33 | 6 | 10 | - | - | - | - | 0.086 | 3.84 |
| | b) 3001 – 5000 | 3 | 5 | 12 | 20 | - | - | - | - | df=1 | (NS) |
| | c) 5001 – 10,000 | 7 | 11.67 | 21 | 35 | - | - | - | - | | |
| | d) 10,001 $\leq$ | 0 | 0 | 9 | 15 | - | - | - | - | | |
| 7 | **Religion :** | | | | | | | | | | |
| | a) Hindu | 9 | 15.33 | 41 | 68.33 | - | - | - | - | 4.015 | 16.9 |
| | b) Muslims | 1 | 1.67 | 1 | 1.67 | - | - | - | - | df=9 | (NS) |
| | c) Christian | 2 | 5 | 6 | 10 | - | - | - | - | | |

(p<0.05)

Chi square values were calculated to find out the association between the level of pain of orthopaedic patients and their selected demographic variables. Table 6 shows that among the demographic variables sex ($\chi$=8.04) was found to have significant association with post test levels of pain. Other variables like age, education, occupation, marital status, family monthly income& religion are not associated with the levels of pain among orthopaedic patients.

**SECTION – G**

Association between post test levels of anxiety among orthopedic patients with their selected demographic variables.

**Table 7:** **Association between post test levels of anxiety among orthopedic patients with their selected demographic variables.**

n=60

| S. No | Demographic Variables | Normal | | Mild | | Moderate | | Severe | | Chi Square Values | Table Value and Inference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **F** | **%** | **F`** | **%** | **F** | **%** | **F** | **%** | | |
| 1 | **Age(in years)** | | | | | | | | | | 7.81 |
| | a) 20 – 30 | 17 | 28.33 | 0 | 0 | - | - | - | - | 5.53 | (NS) |
| | b) 31 – 40 | 16 | 26.67 | 2 | 3.33 | - | - | - | - | df=3 | |
| | c) 41 – 50 | 12 | 20 | 3 | 5 | - | - | - | - | | |
| | d) 51 – 60 | 6 | 10 | 4 | 6.67 | - | - | - | - | | |
| 2 | **Sex** | | | | | | | | | 0.063 | 3.84 |
| | a) Male | 41 | 68.33 | 6 | 10 | - | - | - | - | df=1 | (NS) |
| | b) Female | 11 | 18.33 | 2 | 3.33 | - | - | - | - | | |
| 3 | **Education** | | | | | | | | | | |
| | a) No  education | 4 | 6.67 | 2 | 3.33 | - | - | - | - | | |
| | b) Primary | 15 | 25 | 4 | 6.67 | - | - | - | - | 1.73 | 3.84 |
| | c) High School | 15 | 25 | 2 | 3.34 | - | - | - | - | df=1 | (NS) |
| | d) Higher Secondary | 10 | 16.67 | 1 | 1.67 | - | - | - | - | | |
| | e) Degree holders | 7 | 11.67 | 0 | 0 | - | - | - | - | | |

| S. No | Demographic Variables | Normal | | Mild Pain | | Modera te | | Severe | | Chi Square Values | Table Value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F | % | F` | % | F | % | F | % | | |
| 4 | **Occupation:** | | | | | | | | | | |
| | a) Self employed | 14 | 23.33 | 4 | 6.67 | - | - | - | - | | |
| | b) Government | 0 | 0 | 0 | 0 | - | - | - | - | 2.087 | 7.81 |
| | c) Private | 17 | 28.33 | 1 | 1.67 | - | - | - | - | df=3 | (NS) |
| | d) Daily Wages | 9 | 15 | 2 | 3.33 | - | - | - | - | | |
| | e) Unemployed | 11 | 18.33 | 2 | 3.33 | - | - | - | - | | |
| 5 | **Marital Status :** | | | | | | | | | | |
| | a) Unmarried | 18 | 30 | 1 | 1.67 | - | - | - | - | | |
| | b) Married | 29 | 48.33 | 5 | 8.33 | - | - | - | - | 5.67 | 5.59 |
| | c) Widow/ | | | | | | | | | df-2 | (NS) |
| | Widower | 4 | 6.66 | 3 | 5 | - | - | - | - | | |
| | d) Divorced | 0 | 0 | 0 | 0 | - | - | - | - | | |
| 6 | **Family Monthly Income :** | | | | | | | | | | |
| | a) $\leq$ 3000 | 5 | 8.33 | 2 | 3.33 | - | - | - | - | | |
| | b) 3001 – 5000 | 14 | 23.33 | 3 | 5 | - | - | - | - | 0.066 | 3.84 |
| | c) 5001 – 10,000 | 25 | 41.67 | 2 | 3.33 | - | - | - | - | df=1 | (NS) |
| | d) 10001 $\leq$ | 7 | 11.67 | 2 | 3.33 | - | - | - | - | | |
| 7 | **Religion :** | | | | | | | | | | |
| | a) Hindu | 42 | 70 | 8 | 13.33 | - | - | - | - | 3.73 | 7.81 |
| | b) Muslims | 1 | 1.67 | 1 | 1.67 | - | - | - | - | df=3 | (NS) |
| | c) Christian | 7 | 11.67 | 1 | 1.67 | - | - | - | - | | |

Table 7 depicts that there is no significant association between the levels of anxiety with their selected demographic variables like age, sex, education, occupation, marital status, family monthly income and religion.

# CHAPTER – V

## DISCUSSION

This chapter attempts to discuss the finding of the study as per objectives, There findings are discussed under the following heading.

1. To assess the pretest and post test levels of pain among orthopaedic patients.
2. To assess the pretest and post test levels of anxiety among orthopaedic patients.
3. To compare the pretest and post test levels of pain among orthopaedic patients.
4. To compare the pretest and post test levels of anxiety among orthopaedic patients.
5. To find out the association between post test levels of pain among orthopaedic patients with their demographic variables.
6. To find out the association between post test levels of anxiety among orthopaedic patients with their demographic variables.

**Description of the demographic variables of orthopedic patients**

Percentage distribution according to the age (Table 1) showed that higher percentages of orthopaedic clients 18(30%) were in the age group of 31 and 40 years. 10(16.7%) were in the age group of 51 and 60 years, 17(28.3%) belong to the age group of 20 and 30 years and 15(25%) were between 41 and 50years.

Percentage distribution of orthopedic patients according to their sex showed that 47(78.3%) were male and 13(21.7%) were female.(Fig 2)

Highest percentage 19 (31.7%) of orthopedic patients had primary education, where as 17(28.3%) had a high school education and 11 (18.3%) had a higher secondary education. However 7 (11.7%) were degree holders and 6(10%) of orthopedic clients had no formal education.(Fig 3)

Percentage distribution according to occupation depicts that 18 (30%) were self employed and 18(30%) were working in a private concern, 13 (21.7%) were unemployed and the lowest percentage 11 (18.3%) were earning on daily wages basis.

Percentage distribution according to marital status depicts that majority of the orthopaedic patients 37(61.7%) were married, 18(30%) were unmarried and least population 5(8.3%) were widows or widowers.

Regarding family monthly income, majority of the orthopedic patients 28(46.7%) earn between 5001 and 10,000 rupees, 15(25%) of them earn between 3001 and 5000 rupees,9 (15%) of them earn above 10,000 rupees, and however the lowest percentage of earning group 8(13.3%) earn less than 3000 rupees.

Data depicts that 50(83.4%) of the orthopaedic patients were Hindus, 8(13.34%) were Christians, 2(3.33%) were Muslims.

**Objective 1 -To assess the pretest and post test levels of pain among orthopaedic patients.**

Table 2 depicts that in pretest majority of the 57(95%) orthopaedic clients had moderate pain, where as 2(3.3%) had mild pain and 1(1.7%) had severe pain. Post test scores showed that 48(80%) had mild pain revealing a reduction in pain level and 12(20%) had no pain. It shows that in pretest majority of the patients had moderate pain, whereas in post test, it has been reduced to mild level of pain (Fig 8).

**Objective 2 -To assess the pretest and post test levels of anxiety among orthopaedic** patients.

Frequency and percentage distribution of pre and post test levels of anxiety among orthopedic patients (Tab 3) depicts that in pretest 54(90%) of the orthopedic patients had mild anxiety where as 5(8.3%) had moderate anxiety and 1(1.7%) had a normal anxiety. In post test majority of the orthopaedic patients. 51(85%) had normal anxiety and 9(15%) had mild of anxiety. (Fig 10)

**Objective 3 -To compare the pretest and post test levels of pain among orthopaedic patients.**

Table 4 depicts that the mean post test pain score 1.25(SD$\pm$0.78) is significantly lower than mean pretest pain score 5.6(SD$\pm$ 1.01). The paired t test shows that there is significant difference between pretest & post test scores of pain (t = 27.18) at 5% level of significance (P < 0.05) indicates the effectiveness of practicing effleurage back massage technique. This finding is consistent with the study conducted by Maryam Eghbali.et.al.,(2006) to evaluate the effect of back massage therapy on pain severity among 60 elderly orthopedic patients. Results showed that there was a significant difference in pain before and after

the back massage in intervention group is found to be 3.4 which was significant at (p < 0.001). Hence $H_1$ the mean post test score of pain among orthopaedic clients is lower than the mean pretest scores, is accepted by the above findings.

**Objective 4 -To compare the pretest and post test levels of anxiety among orthopaedic patients.**

Table 5 shows that the mean post test score 14.16(SD± 3.6) is significantly lower than mean pretest anxiety score. The paired t test shows that there is a significant difference between pretest & post test score (t = 27.6) at 5% level of significance (P=<0.05) indicates the effectiveness of practicing effleurage back massage technique. The paired t values of physiological parameters like temperature (t=9.6), pulse rate(t=9.6), respiratory rate(t=11.48) and systolic blood pressure (t=15.24) and diastolic blood pressure(t=3.35) showed a significant difference at 0.05 level. This finding is consistent with the findings of Mary Walton (2009). In the study anxiety was assessed using state trait anxiety scale. The physiological parameters - systolic blood pressure (SBP), diastolic blood pressure (DBP), HR and RR were checked before effleurage back massage and at 5 minutes and 30 minutes after effleurage back massage were also assessed to measure anxiety. Findings proved that there is consistent reduction in the anxiety levels after effleurage back massage (t = 8.73) at 0.05 level. Physiological parameters showed a significant difference (t=4.980) at 0.01 level. Hence $H_2$, the mean post test score of anxiety among orthopaedic clients is lower than the mean pretest scores, is accepted by the above findings.

**Objective 5 -To find out the association between the post test levels of pain among orthopedic patients with their demographic variables.**

Chi square values were calculated to find out the association between post test levels of pain with their demographic variables. It showed that there is no significant association between age, education, occupation, marital status family monthly income and religion and the post test level of pain score. It also shows that there is association between sex and pain ($X^2$ = 8.04). This study is consistent with the study conducted by Mary Walton. The findings suggested that there is no association between pain and the baseline demographic variables except sex. The study proved that with regard to gender, the effect of effleurage back massage was statistically significant in males than in females ($P < 0.05$). Hence $H_3$, there is significant association between the post test scores of pain among orthopaedic patients with the demographic variables is not accepted except for sex.

**Objective 6 -To find out the association between the post test levels of anxiety among orthopedic patients with their demographic variables.**

Chi square values are calculated to identify the association between the levels of anxiety and their demographic variables. Table 6 shows that there is no association between anxiety & their demographic variables like age, sex, education, occupation, marital status, family monthly income and religion This study is supported by Mary Walton. Findings of the study proved that there is no association between anxiety & demographic variables ($p<0.05$). Hence $H_4$, there is significant association between the post test scores of anxiety among orthopaedic patients with the demographic variables is not accepted.

# CHAPTER – VI

## SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATIONS

**SUMMARY OF THE STUDY :-**

The aim of the study was to assess the effectiveness of effleurage back massage technique in reducing pain and anxiety among orthopedic clients in LKM Hospital at Erode. The design used for this study is one group pre test post test design.The conceptual framework was based on modified Katharine Kolkaba's Comfort Theory( 1994).The sample size was 60 orthopaedic patients with lower extremity skeletal traction and confined to bed.The samples were selected by purposive sampling technique and were assessed for levels of pain and anxiety before & after effleurage back massage technique.

Visual Analogue Scale was used to measure the level of pain and anxiety was measured by The Anxiety Rating Scale. Physiological parameters such as temperature, pulse rate, respiratory rate and blood pressure were also assessed to measure anxiety using biophysiological instrument.

The investigator gave brief introduction about the study and pretest was conducted for 15 minutes using the visual analogue scale,the anxiety rating scale and biophysiological instrument. Effluerage back massage was given for 15 minutes once in a day for three days per patient.5 minutes after the intervention post test scores of pain and anxiety were measured using the same scales. The effectiveness of effluerage back massage was assessed by paired 't' test.

Chi-square test was used to find out the significant association between pain and anxiety with the selected demographic variables of orthopaedic patients with lower extremity skeletal traction.

The study revealed that the post test scores of pain 1.25 (SD+0.78) & anxiety 41.16(SD+3.6) was significantly lower than the pre test scores of pain 5.6(SD+1.01) and anxiety 41.16(SD+3.6) after providing effleurage back massage among orthopedic clients .

**Major findings of the study :-**

- ❖ Higher percentage 18(30%) of the orthopedic clients were in the age group 31 and 40 years.
- ❖ Most of the orthopedic clients 47(78.3%) were males.
- ❖ Higher percentage 19(31.7%) of them have had primary education.
- ❖ Majority of them were self employed 18(30%) and private employed 18(30%).
- ❖ Most of the population 37(61.7%) were married.
- ❖ Higher percentage 28(46.7)% earn between 5001 and 10,000 rupees.
- ❖ Almost 50(83.4%) of the orthopaedic patients were Hindus.
- ❖ During pretest majority 57(95%) had moderate pain, 2(3.3%) had mild pain & 1(1.7%) had severe pain, where as in post test almost 48(80%) had mild pain and 12(20%) had no pain.

❖ Regarding anxiety in pretest 54(90%) of the population had mild anxiety 5(8.3%) had moderate anxiety and 1(1.7%) had normal anxiety levels whereas post test levels showed that 51(85%) of the orthopaedic clients had normal level of anxiety and 9(15%) had moderate anxiety.

❖ There is no significant association between pain and their selected demographic variables except for sex.

❖ There is no significant association between anxiety and their selected demographic variables.

**CONCLUSION :-**

The present study revealed that there was significant reduction of pain and anxiety among orthopaedic patients with lower extremity skeletal traction and confined to bed in LKM Hospital.Erode. During pretest majority 57(95%) of the orthopaedic patients had moderate pain where as in post test majority of the orthopaedic patients 48(80%) had mild pain .Regarding anxiety, in pretest 54(90%) of the population had mild anxiety whereas in post test 51(85%) of the orthopaedic clients had normal level of anxiety. Based on the statistical findings it is evident that the provision of effleurage back massage will help to reduce pain (t=27.18) and anxiety (t=27.6) among orthopaedic patients who are confined to bed thereby improve the psychological and physiological well being of the patients.

**IMPLICATIONS :-**

The findings of the study have certain important implications for nursing service, education, administration and nursing research.

**NURSING SERVICE :-**

❖ The findings of the study enlighten the fact that effleurage back massage can be used to reduce the level of pain and anxiety among orthopaedic patients with skeletal traction.

❖ Nursing personnel is in the best position to provide this therapy to orthopaedic patients of different diagnosis undergoing hospitalization.

❖ Health promotion is one of the vital functions of the nurse and nurse can use back massage as a therapeutic regimen at 3 levels of prevention(i.e. primary/secondary and tertiary levels)

**NURSING EDUCATION :-**

❖ The study findings revealed that massage was effective in reduction of pain and anxiety.To practice this, the nursing personnel need to be well equipped with adequate knowledge and practice regarding the massage therapy.

❖ This findings can be utilized to organize in-service education or continuing education programmes so that the nurses who are working in the hospital setup can provide this therapy to reduce pain and anxiety among orthopaedic patients.

❖ The nurse educator can create awareness about the benefits of back massage therapy by preparing references which provides information about techniques of back massage its therapeutic effects and dissemine it to the student nurses

**NURSING ADMINISTRATION :-**

❖ Nursing personnel can organize continuing nursing education program on selected back massage technique in all health sectors.

❖ Cassettes and compact discs about massage therapy can be made available to nursing staff in the wards and to nurse educators in nursing education institutions

❖ Nursing administration can arrange in service education programmes for directing and motivating staff towards following complimentary therapies like massage therapy.

❖ Nursing administration should help to evaluate the patients' satisfaction periodically.

**NURSING RESEARCH :-**

❖ This study findings can effectively be utilized by the emerging researchers.

❖ This study may provide a foundation to conduct studies on larger and different populations to strongly prove the efficacy of effleurage back massage technique.

**RECOMMENDATIONS :-**

❖ A longitudinal study can be undertaken to assess the changes in biological & psychological aspect of health on practicing selected back massage technique.

❖ A comparative study can be done to find out the effects of back massage and other non pharmacological measures like aroma therapy & music therapy.

❖ This similar study can be replicated on large samples there by findings can be generalized to a large population.

**LIMITATIONS :-**

❖ Some samples were not willing to participate in the study.

❖ Investigator found that it was time consuming to conduct the interview schedule for anxiety questionnaire because of the different level of understanding.

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## BISHOP'S COLLEGE OF NURSING

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Ref: BCN/127/1/4/2010

Date...........
06.04.2010

To,

The Managing Director,
L.K.M.Hospital,
Erode.

Respected Sir,

This is to certify that Mrs.P.Hemalatha is a bonafide student of our college doing her M.Sc.,(N) programme II year. As part of her requirement under, The Tamil Nadu Dr.MGR. Medical University, Chennai, she has to do a project on " A Study to evaluate the effectiveness of effleurage back massage technique in reduction of pain and anxiety among orthopaedic patients".

Kindly permit her to carryout a study in your esteemed hospital.

Thanking you,

Yours faithfully,

PRINCIPAL,
BISHOP'S COLLEGE OF NURSING,
C S.I. MISSION COMPOUND,
DHARAPURAM-638 656,
TIRUPUR DISTRICT

Permitted.
7.4.'10.

Dr.S.Natesan,
M.B.B.S., M.S., Ortho., D.Ortho.,
CONSULTANT ORTHO SURGEON
LKM HOSPITAL,
ERODE - 638 009.

# APPENDIX - B

## LETTER REQUESTING EXPERTS OPINION FOR CONTENT VALIDITY

**From**

    **Ms. P.Hemalatha,**
    **M.Sc., Nursing II Year,**
    **Bishop's College of Nursing,**
    **Dharapuram.**

**To**

    **SUB:**    Requesting expert's opinion for content validity of the study **to assess the effectiveness of effleurage back massage technique in reduction of pain and anxiety among orthopaedic patients in LKM Hospital, Erode.**

A tool has been developed **"To assess the effectiveness of effleurage back massage technique in reduction of pain and anxiety among orthopaedic patients in LKM Hospital, Erode".** This has been developed as a part of research work. Kindly evaluate my tool and give your opinion and suggestions. I will be thankful and grateful for your kind consideration.

Thank you,

Yours Sincerely,

**(P. HEMALATHA)**

**Enclosures :**
    1. Certificate for content validity
    2. Statement of Problem, Objectives, hypothesis
    3. Description of the tool and tool for data collection
    4. Self addressed envelope

# APPENDIX - C

## LIST OF EXPERTS FOR VALIDITY OF THE TOOL

1. **Mrs. Sheela Rosalena, M.Sc, Nursing**
   Principal ,
   2/1, Kondapa Gardep,
   Jeeva Nagalli ,
   Bangalore – 56005.

2. **Mrs. Amirtha Shanthi, M.Sc, Nursing**
   Asso. Professor,
   College of Nursing,
   PIMS,
   Pondicherry .

3. **Mrs. Shobana, M.Sc, Nursing**
   Asso. Professor,
   Annai JKK College of Nursing ,
   Kumarapalayam,
   Namakkal District – 638 183.

4. **Mr. Ananth,M.Sc, Nursing.,**
   Reader,
   Mahalingam College of Nursing,
   Sakthi Nagar,
   Bhavani.

5. **Dr.Natesan,M.B.B.S.,MS Ortho.,D.Ortho.,**
   Consultant Ortho Surgeon,LKM Hospital,
   Erode – 638 009**.**

# APPENDIX - D

## CERTIFICATE FOR VALIDITY

This is to certify that the "A Study to evaluate the effectiveness of effleurage back massage technique in reduction of pain and anxiety among orthopedic clients in LKM Hospital.Erode" has been validated by me and found appropriate with mentioned suggestions.
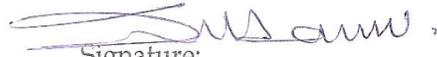
Signature:

Name:

Designation:

Hospital:

# CERTIFICATE FOR VALIDITY

This is to certify that the project tool on "A study to evaluate the effectiveness of effleurage back massage technique on reduction of pain and anxiety among orthopaedic patients in L.K.M Hospital.Erode" has been validated by me and found appropriate with mentioned suggestions.

Signature : Nanthi

Name : S.Amietha santhi

Designation : Asst. Prof.

College : pondicherry
Institute of Medical Sciences

# CERTIFICATE FOR VALIDITY

This is to certify that the project tool on "A study to evaluate the effectiveness of effleurage back massage technique on reduction of pain and anxiety among orthopaedic patients in L.K.M Hospital.Erode" has been validated by me and found appropriate with mentioned suggestions.

Signature

Name Mrs. SHOBANA. J

Designation Asst. Professor

College Annai J.K.K.S.A. college of Nursing

# CERTIFICATE FOR VALIDITY

This is to certify that the project tool on "A study to evaluate the effectiveness of effleurage back massage technique on reduction of pain and anxiety among orthopaedic patients in L.K.M Hospital.Erode" has been validated by me and found appropriate with mentioned suggestions.

Signature : M. Anand
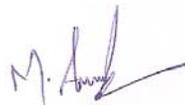
Name : M. ANAND

Designation : READER

College : Dr. Mahalingam College of Nursing.

## APPENDIX - E

## CERTIFICATE OF ENGLISH EDITING

## <u>TO WHOM SO EVER IT MAY CONCERN</u>

This is to certify that the dissertation work, "A study to assess the effectiveness of effleurage back massage in reduction of pain and anxiety among orthopaedic patients in LKM Hospital. Erode" done by Mrs. Hemalatha.P, II Year M.Sc (Nursing) student of Bishop's College of Nursing, Dharapuram is edited for English Language appropriateness by P. SAMPATH M.A., M.Phil, M.Ed.

Date        :

Address   :

Signature

P.SAMPATH

**APPENDIX - F**

## CERTIFICATE OF TAMIL EDITING

## TO WHOM SO EVER IT MAY CONCERN

This is to certify that the dissertation work, "A study to assess the effectiveness of effleurage back massage in reduction of pain and anxiety among orthopaedic patients in LKM Hospital. Erode" done by Mrs.Hemalatha.P, II Year M.Sc (Nursing) student of Bishop's College of Nursing, Dharapuram is edited for Tamil Language appropriateness by Mrs. Siranjeevi, M.A.,B.Ed.

Date        : 13. 01. 11

Address    : NO, 9 ,
            C. S I  NAGAR,
            DHARAPURAM,
            TIRUPUR DISTRICT

Signature

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# APPENDIX - F

## SECTION – A

## DEMOGRAPHIC VARIABLES

Please read the following questions carefully and select the answer and place a tick mark (√) in appropriate space provided on the right side of each question.

1. **Age (in Years)**

   a)  20-30 years

   b)  31- 40 years

   c)  41-50 years

   d)  51-60 years

**2. Sex**

   a)  Male

   b)  Female

**3. Educational status**

   a)  No formal education

   b)  Primary education

   c)  High school

   d)  Higher secondary

   e)  Degree

**4. Occupation**

   a)  Self employee

   b)  Government employee

   c)  Private employee

   d)  Daily Wages

   e)  Unemployed

**5**. **Marital status**

    a)  Single

    b)  Married

    c)  Widow

    d) Divorcee

**6.**  **Family monthly income**

    a)  Less than Rs.3000

    b)  Rs. 3001-Rs.5000

    c)  Rs. 5001- Rs.10000

    d) Rs.10,001 and above

**7.**  **Religion**

    a)  Hindu

    b)  Muslim

    c)  Christian

    d) Others

**A) Pain Assessment Scale**

**Visual Analogue Scale**

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

No
Pain      **Mild Pain          Moderate Pain      Severe**
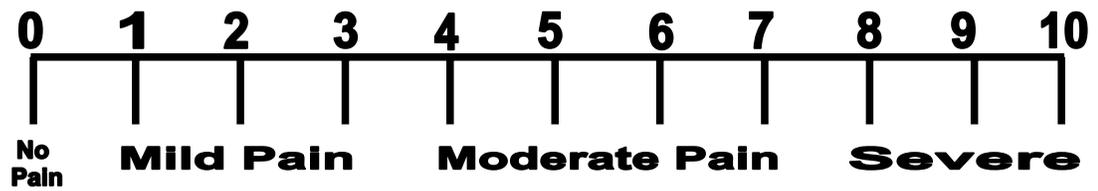
| Sl. No | Questions | Rarely 1 | Some times 2 | Many times 3 | Often 4 |
|---|---|---|---|---|---|
| 1. | Do you feel more nervous and anxious than usual? | | | | |
| 2. | Are you afraid for no reason at all? | | | | |
| 3. | Do you get upset easily? | | | | |
| 4. | Do you feel that you are unable to relax? | | | | |
| 5. | Do you think everything is all right and nothing bad will happen | | | | |
| 6. | Do you feel afraid of things going around you? | | | | |
| 7. | Are you bothered by headaches, neck and back pain? | | | | |
| 8. | Do you feel weak and get tired easily? | | | | |
| 9. | Do you feel calm and comfortable? | | | | |
| 10. | Do you feel that your heart is beating faster? | | | | |
| 11. | Do you feel insecured? | | | | |
| 12. | Do you fall asleep easily? | | | | |
| 13. | Do you have difficulty in breathing? | | | | |
| 14. | Are you able to spend your leisure time calmly? | | | | |
| 15. | Are you bothered by stomach aches or indigestion? | | | | |
| 16. | Do you have a feeling to empty your bladder often? | | | | |
| 17. | Are your hands usually dry and warm? | | | | |
| 18. | Do you feel your face getting hot and blushed? | | | | |
| 19. | Do you get a good night's rest? | | | | |
| 20. | Do you have nightmares? | | | | |

**b) THE ANXIETY RATING SCALE**

The Anxiety Rating Scale Questionnaire test has 20 questions. Each question is scored

on a scale of 1-4 There are fourteen questions (1,2,3,4,6,7,8,10,11,13,15,16,18,20)

worded toward increasing anxiety levels and six questions (5,9,12,14,17,19) worded

toward decreasing anxiety levels.

The scores range from 20-80.

- 20-44 Normal
- 45-59 Mild to Moderate Anxiety Levels
- 60-74 Marked to Severe Anxiety Levels
- 75-80 Extreme Anxiety Levels

Source:

http://www.bing.com/search?srch=106&FORM=AS6&q=zung+anxiety+scale

**c) Biophysiological measurements to assess the level of anxiety**

| S. No | Parameters | Pre test | Post test |
|---|---|---|---|
| 1. | Temperature | | |
| 2. | Pulse rate | | |
| 3. | Respiratory rate | | |
| 4. | Diastolic blood pressure | | |
| 5. | Systolic blood pressure | | |

### ரீழீறீ;றீ மீஜ்வீஹ் யீக்ஷ;றீஷ்ஜ்ழீஹ்; ழியீஷ;மீஜ்யீஷ;

| மீ. ஸ்க்ஷ; | ழியீஷ;மீஜ்யீஷ; | ஸ்பர்,ஸ்பர்ல்ளீயிழ லீமீயி | ஜ்ஜ்தீஹ்ம் மீமீவீஷ யீஷ | றீஹிம் மீமீவீஷ யீஷ ஸ; | ளீதீய்;யிதி |
|---|---|---|---|---|---|
| 1 | ஸ்ரீ;ஸீரீ ல்ளியிளீ; ழிரீ லீஹ்; ,ஹ்;ஹ்ல்ளீஹ்; ளீழீஜ்யீ ரீழீறீ;றீரீ;ரீ லீமீழீலீயீ நீக்ஷ்ல்;யீஷ்றிலீ;யீஷ லீ? | | | | |
| 2 | ,ரீ;ஸீரீ ல்ளியிஸீழீஹ்;ஹ்ல்ளீ; யீல்ஞ(கக்ஷளீஜீஹ்;ஹ்ல்ளீஹ்; ரீணீரீ;ரீலீயீஜீஷ்றிலீ;யீஷ லீ? | | | | |
| 3 | மீறிஹறீ;யீஷ; ஸ்வஜீ;ழீஜீஹ்; ளீபீ நீவீஷ கக்ஷ;கக்ஷீசீயீ;தி நீவ ;ஷ லீயீஜ்ஷ்றிலீ;யீஷ லீ? | | | | |
| 4 | நீஹறீ;யீஷ லீஹ்; ,வஷ ரீ;ரீலீஷ் ரிதீமீழீஜீஹ்;வீஷ் ஸ்பீ;கீ மீஜ்வீபீயீ;யீஜீஷ்றிலீ;யீஷ லீ? | | | | |
| 5 | ஸ்ஹ்;ஹ்ல் மீஜ்யீஷ்;ஜியீஷிளீ; கக்ஷீல்ஜ்ணீலீயீ ,ஹியீ;யீஜீஷ்ஸீழீபீ;கீளீ; ழீறிவீளீ ஜ்பீ;கீளீ; ழிமீலீஜ்றிலீஸீழீபீ;கீளீ; மீஜ்வீபீயீ;யீஜீஷ்றிலீ;யீஷ லீ? | | | | |
| 6 | நீஹறீ;யீவீஷ ஸிஷ்;ஷ்ஜ் மீறியீ;திளீ; மீஜ்யீஷ்;ஜியீவீஷ திஷ்ஜீழீ;யி ரீணீரீ;ரீலீயீஜீபீ;ஷ்றிலீ;யீஷ லீ? | | | | |
| 7 | ழீவீஹ்> ரியிதி ளீஷ்;கீளீ; யீளிழீ;யி மீஹ்ஜ் ஸீழீல்மீ;ழீஞஜியீஷ ; ,ஹியீ;யீஜீபீ;ஷ்பீமீலீ? | | | | |
| 8 | நீறீஹ்; ரீஹ்மீறிபீளீலீயீ ,ஹிரீ;ரீழீலீயீழிமீலீ ஸ்வஜீ;ழீஜீஹ்; ழிகக்ஷல்லீ;மீவீறிமீழீலீயீழிமீலீ நீக்ஷல்;யீஜீஷ்றிலீ;யீஷ லீ? | | | | |
| 9 | ளீபீ ளீவீளீழீஜ்கிறிபீ; ஸ்கக்ஷீவ யீலீஜ்ணீழீ;யிறிஞிளீ; ,ஹிரீ;ரீழீலீயீ நீக்ஷல்;யீஜீஷ்றிலீ;யீஷ லீ ? | | | | |
| 10 | நீஹறீ;யீஷ; ,ழீணீழீ;யிதீரீ;நி ழிமீயீளீல்லீயீ ,ஹிரீ;ரீழீலீயீ மீஜ்வீபீயீ;யீஜீஷ்றிலீ;யீஷ லீ? | | | | |

| மீ.<br>ஸ்கூ<br>; | முயிக ;மீஜீயீக ; | ஸ்பொர்,ஸ்ர்ஸ்களிழீலீமீ<br>யீ | கூஇீஜீம்<br>முஹீவீடீட யீ டீ ஜீஹீம்; | ரீஹீம்<br>முஹீவீமீட யீட ஜீஹீம்; | னீதியர்யதீ |
|---|---|---|---|---|---|
| 11 | ரீலீயியீலீரீ;ரீஜீபீ;வீ;ஜீ ,ஹிரீ;ரீழீலீயீ<br>நீகூஷீ;லீ;யீஜீவீ;றிலீ;யீட லீ? | | | | |
| 12 | ரீலிழீ;ழீஜீறிபீ; ஸ்வ ஜீழீஜீஹீ; நீவீ;ஹீ;யீஜீ<br>மீஜீலீயீஜீவீ;றிலீ;யீட லீ? | | | | |
| 13 | %கூஷீ;ளி மீஜீலிமீழீஜீஹீ; கூஜீஞெளளீ;<br>,ஹியீ;யீஜீவீ;ழீலீ? | | | | |
| 14 | நீஹீ;யீட ; ஙீண்;ஜி முமீஞெஹீ;யீவீ ளீவீளீழீஜீண்லீயீ<br>யீவீஜீயீ;யீ ரிதீயீஜீபீ;வீ;ழீலீ? | | | | |
| 15 | மீண்ீஜீவீ;கீ மீஹீஜீ ளீவீ;கீளீ; ஸ்கூஈீலீஜீளீலீபீ<br>முயீலீவ லீகீயீக ஜீபீலீஹீ;<br>ளீமீழீஜீரீ;ரீலீயீஜீவீ;றிலீ;யீட லீ? | | | | |
| 16 | நீஹீ;யீஹியீ;தி ளீதீயீ;யீதீ கூஜீஜீகீமீறிலீ; யீவீஜீயீ;யீழீ –<br>முழீழீலீபீ;கீயீஜீவீ;ழீலீ? | | | | |
| 17 | ஸீரீ;லீயிமீலீயீ நீஹீ;யீட ; நீவ ;வ ஹீ;வீயீ<br>ஸீமீயிஸீமீயிரீ;ரீலீயீஜிளீ; <ஞெ ரீழீளீவீ;கீளீ;<br>,ஹியீ;திளீலீ? | | | | |
| 18 | ளீமீ;மீரீ;ஸீரீலீஞியி நீஹீ;யீட ; ரியீளீ;<br>கூஜீமீரீ;ரீலீயீஜிளீ; ஸீமீரீ;ரீளீலீயீஜிளீ;<br>,ஹியீ;யீஜீவீ;ஸீழீபீ;கீ நீகூஷீலீ;யீறிவீ;றிலீ;யீட லீ? | | | | |
| 19 | ,ஞெமீஜீஹீ; மீபீ;வீ;லீயீ யி}யீ;யீளீ; மீஹியீஜீபீ;வீ;ழீலீ? | | | | |
| 20 | ,ஞெமீஜீஹீ; ஸீயீறீ;றீ யீபீஜீயீக ; மீஹியீஜீபீ;வீ;ழீலீ? | | | | |

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## APPENDIX -G

**Therapeutic Back Massage Technique Tips:**

Lie the patient on their belly on a firm or in the side lying position in a comfortable surface. Make sure you can reach their whole back without straining yourself.

**Back Massage Technique, Tip 1:**

Fig 1:Whole Hand Effleurage

Warm the massage oil or powder in the hands, and apply a modest amount with whole .Use the whole surface of both hands (see diagram). Stroke firmly upwards from the lower back all the way up to the neck, then (gentler pressure), circle around and back to the lower back region (5 to 10 minutes).

**Back Massage Technique, Tip 2:**

Fig 2 Effleurage using Heel of the Hand

There is a smaller area of contact, so the pressure is deeper. Both hands work in circles - start at the lower back. Move in a circle, first outward, then upward and return to the center. Gradually progress to the upper back (5 minutes).
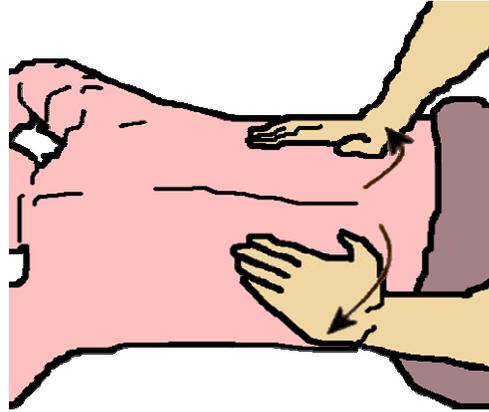
**Back Massage Technique, Tip 3:**

Fig 3 Effleurage using reinforced Fingers

Stand on one side of the patient.. Push with the flats of the fingers (one hand on top of the other) away from the center line, then glide back toward the spine. Start at the lower back, and work up to the upper back (5 minutes).