

**EFFECTIVENESS OF AROMATHERAPY MASSAGE ON POST
OPERATIVE PAIN AND ANXIETY AMONG PATIENTS WHO
HAD UNDERGONE ABDOMINAL SURGERIES**



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

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**A STUDY TO EVALUATE THE EFFECTIVENESS OF
AROMATHERAPY MASSAGE ON POST OPERATIVE PAIN
AND ANXIETY AMONG PATIENTS WHO HAD UNDERGONE
ABDOMINAL SURGERIES FROM SELECTED HOSPITAL
AT MADURAI**

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ABSTRACT

A study to evaluate the effectiveness of aromatherapy massage on post operative pain and anxiety among patient who underwent abdominal surgeries in selected hospital at Madurai. Quasi experimental pre test-post test comparison group design was done by using purposive sampling technique, among post operative patients who undergone major abdominal surgeries. 30 samples were received aromatherapy massage in experimental group and 30 samples who received routine care were assigned in control group. The experimental group received aromatherapy massage for 30 minutes for 3 consecutive days. Numerical Rating Pain Scale was used to assess the pain perception, and Modified Sheehan's Patient Rated Anxiety Scale was used to assess the anxiety level. Descriptive and Inferential statistics were used to analyze the data. The findings revealed that, on 3rd day the mean post test pain perception of the experimental group (0.46) was lower than the control group (5.16). On 3rd day, the mean post test anxiety score of the experimental group (6.33) was lower than the control group (35.46). The obtained ' γ ' value for experimental group (0.278) was lower than the control group (0.308). The above findings imply that the aromatherapy massage has a significant positive relationship between pain and anxiety among post operative patients. There was no significant association between the level of pain perception with selected demographic variables (age, gender, educational status, marital status, religion, income and type of surgery). There was no significant association between the level of anxiety with selected demographic variables (age, gender, educational status, marital status, religion, income and type of surgery). So it can be concluded that aromatherapy massage is effective in reducing pain and anxiety among post operative patients. Based on the findings the researcher recommends, a similar study can be done on a longitudinal basis and

phenomenological study can be done to assess the effectiveness of aromatherapy massage in reducing other variables like stress, depression, insomnia and post operative nausea and vomiting.

CERTIFICATE

This is the bonafide work of **Ms. Lancy. J. I.** M.Sc., Nursing II year student from Sacred Heart Nursing College, Ultra Trust, Madurai, submitted in partial fulfilment of the Degree of Master of Science in Nursing under The Tamilnadu Dr.M.G.R. Medical University, Chennai.

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CHAPTER – I

INTROUDCTION

BACKGROUND OF THE STUDY

“Pain is such an uncomfortable feeling that even a tiny amount of it is enough to ruin every enjoyment”

- Liebenskind Melrack, 2007

One of the principles laid down by International Council for Nurses (ICN, 2000) is that fundamental responsibility of the nurse is to alleviate suffering. Failure to comfort the person is therefore the failure to fulfill the professional commitment to nursing.

Surgery can be defined as the art and science of treating diseases, injuries and deformities by operation and instrumentation. Surgery may be performed for the purpose of diagnosis, cure, palliation, cosmetic improvement and prevention. Surgery may be elective in which, it is carefully planned and anticipated. The need for surgery may sometimes arise with sudden and unanticipated urgency.(Lewis Heitkemper, 2009).

According to government Rajaji Hospital, Madurai, survey report (2006) out of total number of 4940 cases of abdominal surgery performed 1775 cases were those of minor abdominal surgeries. In 2007, out of total number of 4506 abdominal surgeries performed,1481 cases were of minor abdominal surgery.

Postoperative complications are a constant threat to the millions of people undergoing surgical interventions. Whether patients are managed in a hospital setting, an ambulatory care facility, or in a free-standing operating suite, the development of

postoperative complications can lead to long-term disability and possibly death (Rolf, 2008).

Most common post operative complications include nausea, pain, vomiting, diarrhea, wound sepsis, wound infection, anxiety and stress. Fear of pain and discomfort is nearly universal. It includes concern about feeling pain during and after surgery. Despite the availability of analgesics, and pain relieving techniques, pain remains a common problem and a significant fear for the patient during the post operative period. (Wilkinson, 2007).

Pain may be the result of surgical manipulation, positioning, or the presence of internal devices such as endotracheal tube or catheter, or it may occur as the patient begins to mobilize post operatively. (Mullen, 2008).

Pain is a multidimensional experience that should include mood, activity and quality of life. Surgical pain may be caused by many factors which include, type of location of incision, the amount of retraction needed during the procedure, the extent and duration of procedure will all impact pain level. (Pyati, 2007).

The experience of pain goes beyond the physical experience components as well. The stress and limitation that result from chronic pain can lead to the development of chronic pain syndrome, which includes depression, anxiety, feeling of helplessness, frustration and anger. In such incidents, massage therapy is a non-pharmacological method of treatment. This helps to manage pain suffering of patients with long-term or terminal illness. (Wieland, 2003).

Anxiety is a common subjective experience, signals that a threat of some type has stimulated the stress response. The complex of subjective feelings associated with anxiety includes apprehension, feelings of uncertainty, uneasiness, dread, and worry. Mild anxiety generates heightened awareness of environment and current situation and may enhance a person's ability to deal with a stressor, whereas higher levels of anxiety alter cognitive function and may produce hypervigilance, distraction, reduced ability to concentrate, altered memory, and confusion.(Jose De Andrés, 2008).

Anxiety may precipitate activation of the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis. This activation produces a variety of physiological responses such as increased oxygen consumption, reduced immune response, and altered coagulation and autonomic tone. (Mc Callie et al, 2006).

Anxiety is estimated to occur in as many as 70% to 80% of post operative patients. Patients experience anxiety not only because of the physiological alterations that occur but also because of perceived threats related to the hostile care environment, isolation from familiar faces, excessive and unfamiliar noise, disturbed sleep, the presence of sophisticated and unfamiliar technology, loss of privacy etc.(Martin,2008).

The nurses attempts to prevent physiological and psychological problems among post operative patients, by providing adequate support for the patient.The need for nurses to become more patient-centered in their approach has become widely recognized, with the provision of patient information and education having become an increasingly important part of modern health care, with the need for people receiving treatment for health-related problems and their relatives being provided with information being more frequently asserted .(Bannister, 2007).

Nonpharmacologic methods of pain management include physical therapies, such as back rubs, massage, and acupressure, as well as cognitive and behavioral therapies, such as imagery, distraction, and meditation. These measures should be used as a supplement rather than a substitute for pharmacologic intervention.(Thomas Feelay, 2008).

Complementary medicine (Alternative medicine) refers to wide range of treatments that include mind body therapies, homeopathy, and herbal medicine. Mind body therapies can influence the immune system help to manage pain and reduce anxiety and stress. (Joyce M.Black, 2007).

Massage benefits the body for several reasons. Firstly it stimulates the specific nerves that reduce the transmission of pain throughout the body. Secondly, it improves the circulation of blood, which helps people relax and promotes a general feeling of well being which helps people cope with their pain more readily.(Barrie R.Cassileth,2006).

The use of essential oils for pain management is becoming an increasingly common means of treating pain. Aromatherapy is the application of aromatic, or essential oils.Aromatherapy is a form of alternative medicine that uses volatile plant materials, known as essential oils, and similar aromatic compounds from plants, for the purpose of improving a person's mood, cognitive function or health.(Hunsley, 2010).

Essential oils can be used safely to assist with pain relief. There are many different oils which can be used to assist with the relief of pain and discomfort. These

pure essential oils can be added to a base oil or cream and rubbed or gently massaged. (Rastogi, 2008).

Coping with pain or any form of discomfort is emotionally taxing and distressing. Other pure essential oils can be used to help cope with the psychological aspect of dealing with pain including Lavender Oil which is excellent for people who are suffering from emotional pain, anxiety or distress. Lavender promotes a feeling of calmness, confidence and relaxation. (Chan FY, 2009).

Lavender also soothes the spirit and provides relief from anger and exhaustion whilst restoring and healing the body. Bekker A.Y. (2006) conducted a study on evaluation of aromatherapy in treating postoperative pain, in which he concluded that patients in the lavender group reported a higher satisfaction rate with pain control than patients in the control group.

Taheren, (2008) conducted a study on the effectiveness of aromatherapy in reduction of pain and its associated behavioral changes among major abdominal surgery and proved that administration of aromatherapy as complementary therapy to the hospital pain management protocol enhanced the control of pain, and brought about beneficial behavioral changes and enabled greater comfort and relaxation of the clients. Hence aromatherapy can be used as safe and inexpensive adjunct to conventional medicine.

Nursing is a profession that can be practiced in varied as well as unique ways. Nursing care can be provided through conventional means in traditional settings or practiced in domains labeled as alternative or complementary. Massage therapy was an alternative therapy of a holistic nursing practice. Although pain and discomfort are

expectations following surgery, inadequate pain management is unacceptable in today's society, (Mitzel-Wilkinson, 2000).

The application of essential oils may be described as a supplementary nursing method, which was defined by Graf (2006) as follows:

A human and ecologically beneficial form of nursing work, away from old, frozen concepts, which have become a routine, towards a more responsible and differentiated nursing method, taking the patient's wishes and practicability of the situation into account, with the aim to preserve, stimulate or restore independence what will benefit the patient more.

In conclusion, it can be suggested that, pain and anxiety among the post operative patients can be reduced with the help of aromatherapy massage to create a sense of well being.

SIGNIFICANCE AND NEED FOR THE STUDY

“You can change your life, when you can change your mind”

-Jeffrey (2009)

Surgery may be carefully planned and anticipated event in a person's life (Elective surgery), or the need for surgery may sometimes arise with sudden and unanticipated urgency (emergency surgery). Surgery may be performed for any of the following reasons, like, diagnosis, palliation, cosmetic improvement, prevention and exploration. (Bauer, 2007).

Pain after surgery is often multifactorial and arises from different sources. The sources of pain may include a combination of incision pain, pain from deeper visceral

structures, and dynamic pain or pain on movement, such as during straining, coughing, or mobilizing that may be severe. Physiological responses to pain create harmful effects that prolong the body's recovery after surgery. Patients routinely report mild to moderate pain even though pain medications have been administered. (Hillard, 2008).

Levreault (2010) stated that, At times the nurse may be the only person who believes that the patient has pain. This can be a frustrating experience for the nurse, requiring patience and energy.

Agency for Health Care and Policy and Research (AHCPR, 2005) recommended for clinical approach in pain management,

- A- Ask about pain regularly; assess pain systematically.
- B- Believe the patient and family in their reports of pain and what relieves it.
- C- Choose pain control option appropriate for the patient, family and setting.
- D- Deliver interventions in a timely, logical co-ordinated fashion.
- E- Empower patients and their families. Enable patients to control their course to the greatest extent possible.

Anxiety is a subjective experience and its occurrence in surgical patients is a current problem with important clinical implications. It is an unpleasant emotional state or reaction that can be distinguished from others, such as anger or grief, by a unique combination of experiential qualities and physiological changes. (Spielberg and Rickman 2009).

Kerry (2009) stated that, Anxiety is a universal human phenomenon; it is often manifested in individuals at various times during diagnosis, treatment or recurrence. It

can sometimes affect a person's behavior regarding their health. For patients undergoing treatment, anxiety can also heighten the expectancy of pain other symptoms of distress and sleep disturbances and can be a major factor in anticipatory nausea and vomiting. It has been noted that anxiety can lead to early death if untreated.

Interesting parallels are apparent between the subjective sensation of pain and the subjective feeling of anxiety. For decades, many healthcare providers lacked knowledge about pain, and many thought that patients' self-reports of pain were inaccurate and unreliable.(Solterbeck, 2007).

Massage aromatherapy is a type of alternative medicine that uses essential oils and other aromatic plant compounds, which are aimed at improving a person's health or mood. It is believed that the inhalation of essential oils stimulate the part of brain connected to smell, the olfactory system, a signal is sent to the limbic system of the brain that controls emotions and retrieves learned memories. This causes chemicals to be released which make the person feel relaxed, calm or even stimulated. If the aromatherapy includes the massage it relaxes the muscles. (Robb, 2009).

Aromatherapy can be used for stress, anxiety, insomnia, headaches, muscular aches, menstrual problems, digestive problems, circulation problems etc. Aromatherapy is generally applied in three ways, i.e. aerial diffusion, direct inhalation and topical applications. The types of aromatherapy are cosmetic aromatherapy, massage aromatherapy, olfactory aromatherapy. (Vanfleet ,2000).

Massage can provide several benefits to the body such as increased blood flow, reduced muscle tension and neurological excitability and increased sense of well

being. Massage can produce mechanical pressure helps to increase the blood flow. Lower abdominal massage helps to relax the abdominal muscles helps to reduce dysmenorrhea. (Qulonn ,2007).

Aromatherapy uses included anxiety, depression, hypertension, insomnia, migraine, tension, stress related to hypertension, dysmenorrhea, menstrual regulation and infertility problems etc.It is possible that most of the aromatherapy uses could be proven and that aromatherapy massage alleviates many stress conditions, including muscular and also some internal symptoms such as dysmenorrhea. (Kaurmaninder, 2008).

Aromatherapy oils are generally safe and easy to use and people have been successful using Aromatherapy pure essential oil either on their own or combined in a blend to assist with pain relief. American Pain Society, & American College of Physicians (2007) conducted a study on the effect of aromatherapy for relieving low back pain and good evidence was found that aromatherapy was moderately effective for relieving chronic and sub acute low back pain. Fair evidence also found that acupuncture, massage, yoga, and functional restoration are also effective for chronic low back pain. The holistic benefits of combining aromatherapy pure essential oils and massage therapy, is well known to assist with relief from pain and discomfort and is suitable for people of all ages.(Kweekkeboon, 2009).

Shin, B.C.and Lee, M.S. (2007) conducted a study on effects of aromatherapy acupressure on hemiplegic shoulder pain and motor power in stroke patients. Stroke patients with hemiplegic shoulder pain were randomly assigned to either an aromatherapy acupressure group or an acupressure group with aromatherapy acupressure using lavender, rosemary, and peppermint. Each acupressure session

lasted 20 minutes and was performed twice-daily for 2 weeks. The results revealed that the pain scores were markedly reduced in both groups at post-treatment, compared to pretreatment. The motor power significantly improved at post-treatment, compared to pretreatment in both groups.

Kim, J.T, et.al; (2006) briefly reports about evaluation of aromatherapy in treating postoperative pain. This study compared the analgesic efficacy of postoperative lavender oil aromatherapy was given to patients undergoing breast biopsy surgery. Result signifies patients in the lavender group reported a higher satisfaction rate with pain control than patients in the control group.

Katic (2010), conducted a study to evaluate the effect of aromatherapy on alleviating pain, anxiety and stress among post operative patients. 32 subjects suffering from pain, anxiety and stress were selected. Among them, half were randomly assigned to a control group and the other half to the aromatherapy test group. The test group received six fortnightly massages lasting for 40 minutes. Statistical analysis of the results indicated, a significant difference between aromatherapy and control group.

Despite of improvement in pharmacologic treatment managing a patient's pain and anxiety in the acute care setting is an ongoing challenge, with great potential impact on patient satisfaction and many of the literature says that, nurses plays a major role in patients satisfaction. The nurses have their own values and practical experience. Mind body complementary nursing intervention can be used throughout the patient's journey with pain and anxiety in different settings, from inpatient units and ambulating clinics to the patient home. According to Sister Callistaroy, nursing is not only assessment, diagnosis, goal setting, intervention and evaluation but also is a

practice – centered discipline geared toward persons and their responses to stimuli and adaptation to the environment. ([http:// www. aromatherapy.savvy-cafe.com](http://www.aromatherapy.savvy-cafe.com) , 2009).

Hence the investigator felt the need to perform an experimental study to assess the effectiveness of aromatherapy massage on reduction of pain and anxiety among post operative patients who undergone major abdominal surgeries. As a form of nursing intervention, it could provide an opportunity for the nurse to practice a holistic approach to patient care.

STATEMENT OF THE PROBLEM

A study to evaluate the effectiveness of aromatherapy massage on post operative pain and anxiety among patient who underwent abdominal surgeries in selected hospital at Madurai.

OBJECTIVES

1. To assess the level of pre test and post test pain among patients with abdominal surgery before and after giving aromatherapy massage for experimental group.
2. To assess the level of pre test and post test anxiety among patients with abdominal surgery before and after giving aromatherapy massage for experimental group.
3. To assess the level of pre test and post test pain among patients with abdominal surgery for control group.
4. To assess the level of pre test and post test anxiety among patients with abdominal surgery for control group.

5. To evaluate the effectiveness of aromatherapy on pain among patients with abdominal surgery in experimental group.
6. To evaluate the effectiveness of aromatherapy on anxiety among patients with abdominal surgery in experimental group.
7. To find out the relationship between post test pain and post test anxiety among subjects in experimental group and control group.
8. To determine the association between post test level of pain with selected demographic variables such as age, gender, educational status, marital status, religion, income and type of surgery.
9. To determine the association between post test level of anxiety with selected demographic variables such as age, gender, educational status, marital status, religion, income and type of surgery.

HYPOTHESES

Hypotheses were tested at 0.05 level of significance.

- H₁- The mean post test pain score after administration of aromatherapy massage will be significantly lesser than the mean pre test pain perception score of the subjects who had undergone major abdominal surgery in experimental group.
- H₂- The mean post test anxiety score after administration of aromatherapy massage will be significantly lesser than the mean pre test anxiety score of the subjects who had undergone major abdominal surgery in experimental group.
- H₃- The mean post test pain score of the experimental group who received aromatherapy massage will be significantly lesser than the mean post test pain perception score of the control group.

- H₄- The mean post test anxiety score of the experimental group who received aromatherapy massage will be significantly lesser than the mean post test anxiety score of the control group.
- H₅- There will be significant positive relationship between post test pain and post test anxiety score of the subject in experimental and control group.
- H₆- There will be significant association between post-test level of pain among experimental group with selected demographic variables (age, gender, educational status, marital status, religion, income and type of surgery).
- H₇- There will be significant association between post-test level of anxiety among experimental group with selected demographic variable (age, gender, educational status, marital status, religion, income and type of surgery).

OPERATIONAL DEFINITION

EFFECTIVENESS

It means to bring desired changes in a person.

In this study, it refers to the most beneficial outcome of aromatherapy massage in reducing the level of pain and anxiety among patients who undergone open abdominal surgeries. Pain is measured by numerical pain rating scale and anxiety is measured by modified Sheehan's anxiety rating scale.

AROMATHERAPY MASSAGE

It refers to the systematic and scientific manipulation of the soft tissues at the posterior aspect of the trunk by using fingertips, finger pads and palms of the hands, with the help of essential oils, which is extracted from aromatic plants and flowers.

In this study it refers to the following massage technique with the help of mixing Lavender (10 drops) and Sesame oil (20ml). Massage therapy was given in foot and neck for about 30 minutes, and the following techniques were used.

a. EFFLEURAGE

It is the movement of the palmer aspects of hand over the external surface of the body with constant moderate pressure, in the direction of the venous and lymphatic drainage every massage begins and ends with effleurage.

b. KNEADING

In this technique, tissues are pressed down on to the underlying structures and pressure is applied way along the long axis of the underlying bone, so that it utilizes the palmer aspect of either whole finger or part of the finger to apply pressure.

c. TOE LOOSENING

It refers to the using of thumb and index finger close to the base of each joint, gently stretch each toe and then rotate each toe both clockwise and anti-clockwise. This technique will increase the flexibility of the toes and will also loosen the muscle around the neck and shoulders.

d. ANKLE ROTATIONS

This technique involves by grasping the top of the foot in the other hand and slowly and gently rotate the ankle several times in one direction. It will increase the mobility in the lower back and pelvis.

e. FOOT ROCKING

This technique refers to by placing the palms of the hands on either side of the foot; move them alternately and rapidly from side to side so that the foot vibrates. This movement stimulates circulation and relaxes the muscles in the foot, ankle and calf.

POST OPERATIVE PAIN

It refers to pain during the period after surgery or pain occurring in the period following a surgical operation.

In this study, it refers to the pain perception score obtained from subjects by numerical pain rating scale who undergone open abdominal surgery. The subjects who had moderate to severe pain were included in the study.

ANXIETY

It is the state of being uneasy apprehensive or worried about what may happen, concern about a possible future event. All clients are vulnerable to feeling anxiety as they seek health care problems.

In this study, it refers to the anxiety score, obtained by the patient who has undergone open abdominal surgery, in Modified Sheehan Patient Rated Anxiety Scale. The subjects who had moderate to severe anxiety were included in the study.

ABDOMINALSURGERY

Any operation that involves an incision into the abdomen. In this study, it refers to the patients who had undergone for major abdominal surgeries. (Abdominal hysterectomy, Cholecystectomy, Herniorraphy and Lower Segmental Caesarian Section).

ASSUMPTIONS

The study was based on the assumptions that,

1. All the patients who underwent abdominal surgery will experience pain and anxiety.
2. Pain perception and anxiety level will vary from patient to patient.
3. Aromatherapy massage is based on healing arts and grounded in scientific principles, and used as an antispasmodic and anxiolytic and thereby it reduces the pain and anxiety in an acceptable way.

DELIMITATION

The following delimitations were set for the study.

1. Patients who were admitted in the post-operative ward of Saravana Hospital, Madurai during data collection period were the subjects.
2. Aromatherapy massage was administered only for 30 minutes for three consequent days.
3. The data collection period was six weeks.

CONCEPTUAL FRAMEWORK BASED ON ROY'S ADAPTATION MODEL

The conceptual framework for this study based on Sister Calista Roy adaptation model, (1939) which involves four concepts.

Person

Nursing

Health

Environment

The adoptive system has four components like input, process, effectors and output. For the present study the above mentioned components will be modified.

INPUT

In Roy's system input is identified as STIMULI, which can come from the environment or from within a person. In this study input refers to aromatherapy massage with lavender oil for 30 minutes for three consecutive days.

THROUGHPUT

Throughput makes use of a person's process and effectors. In this study throughput refers to the nursing intervention with lavender oil aromatherapy massage which is having the action of antispasmodic, analgesic and anxiolytic. The "smell" receptor in the nose communicates with parts of the brain that serve as a store house for emotions and memories. Hence it stimulates activity of brain cells similar to the way some sedative medications work.

EFFECTORS

Effectors refer to the physiological and psychological response to the nursing intervention which may be reduction in pain and anxiety.

OUTPUT

Output refers to the outcome of the system, when the system is a person. Outcome refers to the person's behavior. In this study output refers to the reduction in severity of pain and anxiety, and the patients able to do daily activities and shows interest in their activities and the interacted with people.

CHAPTER – II

REVIEW OF LITERATURE

Researchers almost never conduct a study in an intellectual vacuum. Their studies are undertaken with the content of an existing base of knowledge. Researchers generally, undertake a literature review to familiarize them about the topic under the study. (Polit&Hungler2008).

Related literature was reviewed in depth, so as to broaden the understanding of the selected problem. The idea was to develop a deeper insight into the problem area and to identify high level of pain and anxiety among post operative patients and to evaluate the effectiveness of aromatherapy massage to reduce post operative pain and anxiety.

Review literature in this chapter is discussed under the following headings:

- ❖ Literature related to post operative pain assessment and pain management.
- ❖ Literature related to post operative anxiety assessment and anxiety management.
- ❖ Literature related to the effect of aromatherapy massage in reducing pain and anxiety among post operative patients.
- ❖ Literature related to nursing role in holistic approach.

Literature related to post operative pain assessment and pain management

Rhiannon Harris (2008) stated that, Managing pain remains one of the biggest challenges in medical care today, with chronic disabling pain in particular affecting millions of people around the world.

Beth Dupree (2007) said that, the pain threshold is remarkably similar in all persons regardless of gender, social, ethnic or cultural differences. These differences play a definite role in individual's perception of pain. The meaning of pain and the verbal and nonverbal expressions given to pain are apparently learned from interaction within the primary social group cultural influences may impose unrealistic expectations.

Dalton (2006) suggested that nurses who are aware of their own feelings about the pain experience with additional professional experience and continuing education more frequently assess and comprehensively evaluate the post operative pain experienced by their clients. Recommendations to improve post operative pain management and aid in selecting appropriate treatment strategies include of assessing the pain, coping skills of client and determining which client might benefit from an understanding of the use of complementary therapy to control pain.

Care & Mann (2005) suggested that, The Numerical Rating Scale (NRS) is a simple and a quick way to assess to patient's pain and evaluate the effectiveness of an intervention.

De Roud et al., (2007) assessed the pain monitoring programme and combined nurse education, pain assessment and pain management techniques. The use of numerical pain scale education was focused on attitude and knowledge of pain

assessment with analgesic and non- pharmacologic treatment. Patients seen by nurse enrolled in pain monitoring programme (n= 345) patients were compared with a control group those nurse did not receive pain- monitoring programme(n= 358 patients). Pain monitoring programme intervention improves communication. An investigator concluded that using a simple method such as numerical rating scale, together with education programme, attention was focused in a systemic way on patient's pain, complaints and creates a common language between patients and nurses.

Hamin(2008) conducted a study on patient and nurse assessment of quality of care in post operative pain management within five surgical wards in (general abdominal surgeries and gynecology) a central country hospital in Sweden. The participants were two hundred and nine in patients and 64 registered nurses. The response rates were 96% for the patients and 99% for the nurses; there were 196 paired patient- nurse assessments. The strategic and clinical quality indicators in post operative pain management patient questionnaire was used which comprises 14 items in four subscales (communication, action, trust, environment). The items were scored on a 5 point scale with higher values indicating a higher quality of care. Five complementary questions on levels of pain intensity and overall satisfaction with pain relief were scored on an 11- point scale/ twelve of the 14 items in that patient questionnaire two of the complementary questions were adjusted for use in nurse questionnaire. The patient's mean (SD) score on total scale (scale range 14-70) was 58.6 (8.9) and the nurse's mean (SD) score (scale range 12-60) was 48.1 (6.2).

The percentage of patients who scored 1 or 2 for an individual item (disagreement) ranged from 0.5% to 52.0%, while for nurses the percentage ranged

from 0.0% to 34.8%. 42 patients (24%) reported more pain than they expected; these patients assessed the quality of life to be lower. There were differences between patient and nurse assessments concerning the environment subscale, the question on overall satisfaction, and patient's experience of worst possible pain intensity. The results proved valuable baseline data and identified important areas for quality improvement in post operative pain management.

Kiren et al., (2009) developed a study to test the agreement between the Visual Analogue Scale (VAS) and a Verbal Numerical Rating Scale (VNRS) in measuring acute pain and measured the minimum clinically significant changes in VNRS. Patients scored their pain by the VAS and the VNRS, and then re-scored their pain every 30 minutes for up to two hours. Patients also recorded whether their pain had reduced or worsened. Agreement between scores was evaluated, and where patients scored their pain as 'a bit worse' or 'a bit better' the mean change in VNRS was calculated. A total of 309 paired observations were obtained from 79 patients. The VAS and VNRS were highly correlated ($r = 0.95$, 95%). The VNRS was significantly higher than the VAS for the paired observations, with 95% of the differences between VAS and VNRS lying between 2.3 and 1.3 cm. The minimum clinically significant difference in VNRS was 1.4 cm (95%). He concluded that the VNRS performs as well as VAS in assessing changes in pain. However, although the VAS and VNRS are well correlated, patients systematically score their pain higher on the VNRS, with an acceptably wide distribution of the differences.

Good (2007) conducted a study on Nursing care after abdominal surgery, to test and compare the efficacy of non pharmacological methods, patient teaching about pain management and the combination of both among South Korean male and female

abdominal surgical patients. Randomly assigned to one of the three treatment groups and control group. The intervention of pain was tested in 452 abdominal surgical patients before and after 20 minutes period of rest, once on the day of surgery, and twice on post operative day. Outcome measures include post operative pain, anxiety, side effects of opioids and immunity. Pain sensation and distress and saliva for salivary cortisol and IgA was assessed at the pre-test and post-test. Knowledge of the effects of patients teaching and noninvasive methods to reduce post operative recovery with lower health care costs. He found that combination of non-pharmacological interventions relieved post operative abdominal pain significantly more than Patient Controlled Analgesia (PCA) alone. The effect of this non-pharmacological adjuvant for pain was also clinically significant; patients reported up to 31% less pain than when PCA opioids alone were used.

Beare & Myers (2009) stated that, Pain management is a challenge that every nurse faces, regardless of the practice setting. In fact, the nurse's role in pain management is probably more important than that of any other member of the health team. Probably no other area of nursing involves patient advocacy as much as pain control. In all nursing fields, the nurse advocates the patient by classifying concerns, answering questions supplying all the information the patient needs make decisions about his or her care and supporting the patient's decision.

Literature related to post operative anxiety assessment and anxiety management

Health experts are sending out an international alert that mental health problems are dramatically increasing worldwide. World Health Organization (WHO) warns that anxiety is set to become the main cause of disability and the second leading health problem by 2020. (2006).

Tyron (2007) explained that, Anxiety is in a negative emotion that occurs in response to perceived threats that can come from internal or external sources and can be real or imagined.

Melzack(2009) stated that, Anxiety is as common as almost considered universal in our society. Low levels of anxiety are adaptive and can provide the motivation required for survival.

Gorden (2006) found that, Anxiety becomes problematic when the individual is unable to prevent the anxiety from escalating to a level that interferes with the ability to meet basic needs. Such individuals require interventions to relieve their anxiety.

Eases (2009) has done a study to assess anxiety among post operative patients in general hospital in the north west of Netherland. The data was collected through oral test administered in general post operative wards, every day morning between 8 am and 12 pm. The anxiety level was measured by Sheehan's Patient Rated Anxiety Scale. The samples were collected through non- randomized convenient method. The results of the study showed that 83% of postoperative patients had severe anxiety according to Sheehan's Patient Rated Anxiety Scale and proved that Sheehan's Patient Rated Anxiety Scale is effective in assessing the anxiety level of the patients.

Garland (2008) conducted a nonrandomized study on anxiety reduction and healing arts programme for facilitating reduction in anxiety and promoting spirituality among post operative patients. A sample of post operative patients (n=60) were assessed through Sheehan's Patient Rated Anxiety Scale and were attended Healing Arts programme for six weeks. Participants who attend the Healing Arts

programme showed more improvement on measures of anxiety ($p=0.038$) and mood disturbance ($p= 0.0004$) . The result concluded that Healing Arts programme improve facilitation of reduction in anxiety and enhancing spirituality among post operative patients.

Ferret (2009) conducted an experimental study at Tallahassee memorial health care USA, to determine the effect of live music on decreasing anxiety among post operative patients who undergone open abdominal surgeries. Randomly selected patient were assigned to experimental ($n=25$) and control ($n=25$) conditions. Subjects in the experimental group received 20 minutes of familiar live music. Results of the study showed statistically significant improvement for the experimental group on the measures of anxiety, fear, and diastolic blood pressure. Descriptive values indicated that, on average, the experimental group was influenced positively by the music intervention and participants improved their quality of life during post operative period.

Taekan (2009) suggested that complementary and alternative therapies or integrative therapies are part of a new era of health care and stated that, Aromatherapy is one of the fastest growing therapies in the world today.

Rhokh(2008) conducted a study to investigate the effects of aromatherapy massage among post operative patients on reduction of anxiety and improving self esteem. A quasi experimental, control group, pre-test post-test design was used. Aromatherapy massage using lavender oil was given to the experimental group for 20 minutes for 3 weeks period of time. The intervention produced s significant differences in blood pressure and pulse rate. The result suggested that aromatherapy massage extends positive effects on anxiety and self-esteem.

Priyalatha (2011) conducted a descriptive study to assess the level of anxiety among post operative patients who underwent major abdominal surgeries. About 60 subjects were randomly selected and by administering Hospital Anxiety Depression Scale the data were collected. Among the total subjects, nearly 80% were men and majority (25%) within the age group of 41-65 years. About 68.3% had no previous history of surgery, while 56.67% of the subjects had no previous experience of hospitalization. Results showed that (48.33%) half of the subjects were with moderate to severe levels of anxiety. It was also noted that there was significant association ($p < 0.05$ levels) between previous history of surgery, with the levels of anxiety. Nurses who stay round the clock with them play a vital role in taking measures to minimize anxiety during their stay thereby enhancing their health related quality of life.

Lustman(2010) stated that, Nurses have understanding of anxiety and are more frequently provide physical and psychological support than a physician, which suggest that nurses will be open to further training to support adequately.

Literature related to the effect of aromatherapy massage in reducing pain and anxiety among post operative patients

Conroy (2008) said that, Complementary medicine refers to a wide range of treatments that include mind body therapies, homeopathy and herbal medicine. Complementarytherapies such as music and massage, herbal teas to aid digestion and relieve tension, reduce pain and anxiety. A number of complementary and alternative interventions are currently being used to treat pain and anxiety.

Aromatherapy is reputed to be least 6000 years old, and is believed to have been practiced by most of the world's ancient citizens. Early man lived closely with

his surroundings and was in tune with nature.(<http://www.aromatherapy.savvy-cafe.com>,2009).

Hanton(2009) explained that, Aromatherapy is a form of alternative medicine that uses volatile liquid, plant materials known as essential oils and other aromatic compounds from plants for the purpose of affecting a person's mood and health. Aromatherapy is concerned with psychological, physiological and pharmacological effects of essential oils introduced by means of inhalation, olfaction and dermal application. It can work in real direct, practical ways to help to reduce pain and anxiety.

Densie (2007) conducted a two group experimental repeated measures ,on the use of , aromatherapy massage to manage pain and anxiety among post operative patients who undergone open abdominal surgeries. A sample of 30 patients was recruited. The experimental group received 30 minutes of aromatherapy massage for 5 consecutive days for 6 weeks periodof time. The study demonstrated positive outcomes for painrelief,decreased anxiety, and decreased length of stay and proved that, complementarytherapy holds the promise of increasing positive outcomes.

Fazio (2007) found aromatherapy massage to be coping strategy for post operative patients. Patients who undergone surgery usually experience pain, anxiety and stress because of the surgical procedures. Aromatherapy massage is a simple, therapeutic tool that can help counteract surgical patient's pain, anxiety and stress. 130 patients who undergone major abdominal surgeries were randomly assigned in two groups. Members of one group received routine post operative care. Members of other group received massage therapy for 6 days after surgery. The authors measured patient's anxiety levels, pain perception and narcotic medication requirements. The

patients in the massage group experienced less post operative anxiety and pain, and they required almost 50% less narcotic medications after their surgical procedures than patients in the control group.

Susan (2009) conducted a study to find the use of aromatherapy with the post operative patients to decrease pain, anxiety and depression and to promote increased sense of well being. The study measured the responses of 30 post operative patients to humidified essential lavender oil aromatherapy. Vital signs as well as levels of pain, anxiety and depression and sense of well being were measured using 11 point verbal analogs. Each subject was measured on three different days before and after a 60 minutes session consisting of (1) no treatment (2) water humidification (3) lavender oil aromatherapy. Results reflected a positive change in blood pressure and pulse, pain, anxiety, depression and sense of well being after both the humidified water treatment and the lavender treatment.

Lessy(2008) conducted a study to assess the effect of lavender aromatherapy on pain, cognitive function and emotion of post operative patients. This study was to develop an aromatherapy foot massage programme and to evaluate the effect of lavender aromatherapy on pain, cognitive function and emotion. Lavender aromatherapy was administered for 2 weeks and resulted in significant difference in cognitive function and emotion and reduction in pain level. The conclusion of the study was that a lavender aromatherapy foot massage programme is effective on emotions and reduction in pain.

Pemberton (2008) conducted a quasi experimental study to assess the effects of the topical application of a combination of the essential oils of lavender oil mixed in carrier oil containing sesame oil on pain and anxiety among post operative patients.

Pre- post test was used with 70 participants. Convenient sampling technique was adopted for the study. The researcher used 1-10 point rating scale to assess pre and post test level of pain and anxiety. Data collection was done for the period of 26 days. The result concluded that experimental group who received lavender oil massage had lower anxiety and pain scores and proved that lavender oil massage is effective in reducing post operative pain and anxiety.

Smith (2010) suggested that, Aromatherapy is the fastest growing of all complementary therapies among nurses. Although aromatherapy has been used by the public for thousands of years and by nurses throughout the world during the last 15 years, it is only in the last few years that aromatherapy has been recognized by the society as a part of holistic nursing. Aromatherapy is now set to become one of the most popular tools that nurses can use to enhance their nursing care and simultaneously empower themselves.

Literature related to nursing role in holistic approach

Van Fleet (2008) defined, Holistic Healing as 'Health' itself means 'hale' or 'whole', physical and spiritual healing cannot be compartmentalized. During 19th people reaffirmed the relationship between mind, body and spirit.

American Holistic Nurse's Association (2005) stated that they maintain standards of holistic nursing practice that define and establish the scope of holistic practice and describe the level of care expected from a holistic nurse.

Perry and Roy (2010) said that, Nurses with proper credentials can organize health fairs throughout the community that focus on alternative medicine. Among nurses, aromatherapy is the second most commonly used complementary therapy.

Edelman and Mandle(2005) stated that, in this holistic health model clients are involved in their healing process, thereby assuming some responsibility for health maintenance.

Marlaine (2008) concluded that, aromatherapy in nursing is used to facilitate person-environment relationships that enhance health and healing.

CHAPTER III

RESEARCH METHODOLOGY

The research methodology indicates the general pattern of organizing the procedure of gathering valid and reliable data for investigation. This chapter provides a brief description of the method adopted by the investigator in this study.

This chapter includes the research approach; research design, the setting of the study, sample and sampling technique. It further deals with the development of tools, procedure for data collection and plan for data analysis.

RESEARCH APPROACH

The experimental approach was used in this study, to determine the effectiveness of aromatherapy massage on reduction of post operative pain and anxiety among patient who underwent open abdominal surgeries.

RESEARCH DESIGN

The research design used in the study was quasi experimental pre test post test comparison group design. Diagrammatic representation of the design is given below.

Group	<i>Day 1</i>	<i>Day 2</i>	<i>Day 3</i>
Experimental group	O1abX O2ab	O1abX O2ab	O1abX O2ab
Control group	O1ab O2ab	O1ab O2ab	O1ab O2ab

O1ab → Pain perception and Anxiety score before manipulation

O2ab → Pain perception and Anxiety score after manipulation

X → Aromatherapy Massage

VARIABLES

Aromatherapy Massage - Independent variable

Pain and Anxiety -Dependent variable

SETTING OF THE STUDY

This study was conducted in Saravana Hospital, which is 4km away from the Sacred Heart Nursing College, Madurai. It is a 200 bedded Hospital and it has all the departments such as medicine, surgery, neuromedicine, neuro surgery, urology, cardio thoracic medicine, paediatrics, maternity and gynecology etc. There is a separate pre-operative ward and post-operative ward. The post-operative ward consists of 20 beds. The total number of surgeries conducted per month will be 80 which include abdominal hysterectomy, cholecystectomy, and lower segmental caesarian section. The setting was chosen because of the researcher's accessibility to sample and feasibility of conducting the study.

POPULATION

The target population of the study was post-operative abdominal surgery patients in the surgical ward of Saravana Hospital, Madurai.

SAMPLE

Samples were the post-operative patients who undergone major surgeries like abdominal hysterectomy, ,LSCS ,Cholecyctomy,who fulfilled the inclusion criteria and admitted in the post operative ward of the Saravana Hospital, Madurai.

SAMPLE SIZE

The total sample size was 60 out of which 30 patients were assigned to the experimental group and 30 patients were assigned in control group. Depending upon the availability of the sample and the type of surgeries performed, the patients were alternatively assigned to the experimental group and control group.

SAMPLING TECHNIQUE

The purposive sampling technique was used for this study. According to Polit and Hungler (2004) “Purposive or judgmental sampling is based on the belief that a researcher knowledge about the population can be used to handpick sample members to be included in the sample”. Since it was not possible to do simple random sampling and the researcher used purposive sampling technique and hence this technique was found appropriate for the purpose of the study.

CRITERIA FOR SAMPLE SELECTION

The sample was selected based on the following inclusion and exclusion criteria.

INCLUSION CRITERIA

1. Patients who had undergone general abdominal surgeries.e.g. Abdominal Hysterectomy, Cholecystectomy, LSCS.
2. Patients who were on 2nd post operative day.
3. Both male and female patients.
4. Patients in the age group of 20-60 years.
5. Patients who were admitted in the post-operative ward of Saravana Hospital, Madurai.
6. Patients who had from moderate to severe pain and anxiety.
7. Patients who were willing to participate in the study.

EXCLUSION CRITERIA

1. Patients who had complete sedation.
2. Patients who were allergic to aroma oil.
3. Patients who were getting analgesics while giving aromatherapy massage.
4. Patients who had wound infection and wound evisceration.

RESEARCH TOOL AND TECHNIQUE

It consists of 3 parts

1. Demographic Variable.
2. Numerical Rating Pain Scale.
3. Modified Sheehan Patient Rated Anxiety Scale.

The tool was prepared by the investigator after going through the related literature and with the guidance of experts in the field.

DESCRIPTION OF THE TOOL

The instrument used for the study had 3 parts.

Part I**Demographic Data**

It consisted of age, sex, religion, education, occupation and marital status and information related to surgery.

Part II**TOOL I**

Numerical Rating Pain Scale was used to assess the pain level in pre-test and post-test. It consisted of numbers ranging from 0 to 10. The number 0 indicates no

pain. As the number higher, they stand for pain that is getting worse. A 10 means the pain is as bad as it can be.

The scores were categorised as follows

- 0 – No pain
- 1-3 Mild pain
- 4- 6 Moderate pain
- 7-10 severe pain

TOOL II

This was modified form of Sheehan Patient Rated Anxiety Scale. The original scale had 30 items. For the present study the items were reduced to 15 and the content of the item were modified to suit the anxiety level of the patient. Each item had four graded options (1-4) depending upon the degree of anxiety. In the anxiety scale a value of ‘1’ to the first option (none), ‘2’ to the second column (mild), ‘3’ to the third (moderate) and ‘4’ to the fourth column (severe). Maximum obtainable score was 60, which was converted into percentage.

The score were ranged as follows

- | | |
|------------------|-----------|
| No anxiety | - 0 - 15 |
| Mild anxiety | - 16 -30 |
| Moderate anxiety | - 31- 45 |
| Severe anxiety | - 46 - 60 |

PART III

It consists of opinion questions regarding, benefit of Aromatherapy massage.

TESTING OF THE TOOL

Content validity

Validity of the tool was established by submitting the tool to five experts the field of Medical and Surgical Nursing and Medical experts. The tool was validated regarding the adequacy of the content and the sequence and framing of questions. Based on their valid suggestions reframing of the content of the tool was done.

Reliability

According to Polit and Hungler (1999) the reliability of an instrument that fields qualitative data is a major criterion for assessing its quality and adequacy. Essentially the reliability of an instrument is the degree of consistency with which is measures the attribute it is supposed to be measuring. The inter-rater method and split half technique was used to established reliability. The reliability of the Numerical Rating Pain Scale was established by Inter-Rater method. The reliability of themodified form of Sheehan Patient Rated Anxiety Scale was established by Split-Half method. The reliability co-efficient for pain was found to be $r = 0.98$ and for anxiety scale it was $r = 0.88$.

Development of Content for Massage

A protocol was developed for administering massage therapy. Based on the review of literature, steps of the procedure were listed down. The content included in the content of massage therapy was submitted to five experts.

PILOT STUDY

In order to test the feasibility of the study a pilot study was conducted among six patients in the same manner as the final study. The pilot study conducted among six patients who undergone open abdominal surgery (AbdominalHysterectomy).

Three were assigned to the experimental group and three to the control group. Data were analyzed and the findings revealed that the study was feasible.

DATA GATHERING PROCESS

Before starting the study the researcher met the hospital authorities and obtained permission for conducting the study. After explaining the purpose of the study, the verbal consent was obtained from the subjects, and then the data was collected from the selected subjects, based on the criteria.

All the patients in the post-operative ward who had undergone major abdominal surgeries (abdominal hysterectomy, cholecystectomy, and LSCS) and who fulfilled the inclusion criteria were selected. The data collection was done for six weeks form 27-06-2011 to 06-08-2011.

On the first day of sample selection the demographic data, pain status, anxiety level of the subjects were assessed, and the experimental group was given massage for 30minutes for 3 consecutive days.

Massage was given with the mixing of lavender oil (10 drops) and sesame oil (20ml). 2 hours later after completion of dressing, massage therapy was given. Privacy was maintained during massage session and the patient was in supine position during the massage therapy treatment. Massage was given in the areas of foot and neck with the following techniques like stroking, rotation, kneading, and effleurage, which provide relaxation to the patient.

Post test was done after 45 minutes of completing the massage session, for 3 consecutive days.

Same like that , for the control group, on the first day of sample selection the demographic data, pain status, anxiety level of the subjects were assessed. Post test was done after 45 minutes without giving aromatherapy massage.

An evaluation was carried out for the experimental group after massage on each day for three days. The opinion questionnaire was given to the subjects in experimental group to express their opinion regarding effectiveness of massage therapy on fifth day.

Plan for Data Analysis

After the data collection, the collected data were organized, tabulated, summarized and analyzed. The data were analyzed according to objectives of study by using descriptive and inferential statistics.

1. Analysis of frequencies and percentage for demographic data.
2. Hypothesis related to the effectiveness of massage therapy reducing in the pain perception and anxiety level was tested using paired and independent 't' test, mean and standard deviation.
3. Chi-square test of significance was used to find out the association between the level of pain and anxiety and selected demographic variables. (age, gender, educational status, marital status, religion, income and type of surgery).

Protection of Human Subjects

Research proposal was approved by the dissertation committee, prior to the pilot study and the main study permission was obtained from the Head of the Department of Medical-Surgical Nursing, Sacred Heart Nursing College, Madurai.

Permission was also obtained from the trustee of Saravana Hospital, Madurai. An oral consent of each study patient was obtained before starting the data collection.

Assurance was given to the patients that confidentiality would be maintained. Rights for the subjects to withdraw from the study were explained. There was absence of physical and psychosocial strain to study subjects.

Summary

This chapter dealt with the research methodology adopted for the study. It include the research approach, research design, setting, population, sample size, selection criteria, sampling technique, research tool, testing of the tool, development of informational booklet, pilot study, data collection process, plan for data analysis and protection of human subjects.

CHAPTER – IV

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the description of the sample, classification, analysis and interpretation of the data collected to evaluate the achievement of the objectives of the study and the discussion of the study findings. The data collected is tabulated and described as follows:

Presentation of the findings of study

- Section I - Demographic characteristics of the sample
- Section II - Distribution of sample according to the level of pain and anxiety in experimental group.
- ❖ Distribution of samples according to the level of pain before and after administration of aromatherapy massage in experimental group.
 - ❖ Distribution of samples according to the level of anxiety before and after administration of aromatherapy massage in experimental group.
- Section III - Distribution of sample according to the level of pain and anxiety in control group.
- ❖ Distribution of samples according to the level of pain in control group.
 - ❖ Distribution of samples according to the level of anxiety in control group.

Section IV - Effectiveness of aromatherapy massage on reduction of post operative pain and anxiety.

Section V - Relationship between pain and anxiety among experimental group and control group

Section VI - a) Association between the level of pain and the demographic variables in experimental group.

b) Association between the level of anxiety and the demographic variables in experimental group.

Section VII - Opinion of the subjects regarding the benefit of Aromatherapy Massage

SECTION - I

Demographic profile of the sample

This section deals with demographic characteristics of the subjects such as age, gender, educational status, religion, marital status, income, occupation, type of surgery.

Table 1: FREQUENCY, PERCENTAGE DISTRIBUTION OF SUBJECTS WITH REGARD TO SELECTED DEMOGRAPHIC VARIABLES

Demographic Variables	Experimental group n =30		Control group n=30		Total	
	f	%	f	%	F	%
	N=60					
Age (In years)						
20-30	1	3.3	1	3.32	1.20	
31-40	5	16.7	6	20.11	18.33	
41-50	20	66.7	17	56.7	37	61.66
51-60	4	13.3	6	20.0	10	16.66
Gender						
Male	9	30.0	14	46	23	38.33
Female	21	70.0	16	53.33	37	61.66
Educational status						
Illiterate	14	46.7	20	66.7	34	56.66
Primary	5	16.7	4	13.39	15	
Higher Secondary	7	23.3	6	20.013	1.66	
Graduate	4	13.3	0	0	4	6.66

Table Conti....

Demographic Variables	Experimental group n =30		Control group n=30		Total	
	F	%	F	%	F	%
Religion						
Hindu	29	96.7	28	93.3	57	95
Christian	1	3.3	2	6.7	3	5
Muslim	0	0	0	0	0	0
Occupation						
Coolie	27	90.0	30	100	57	95
Government	0	0	0	0.0	0	0
Private	1	3.3	0	0.0	1	1.66
Business	2	6.7	0	0.0	2	3.33
Marital status						
Married	30	100	26	86.7	56	93.33
Divorce	0	0	3	10.0	3	5
Widow	0	0	1	3.3	1	1.66
Income /month(Rs.)						
3000 – 5000	18	60.0	20	66.7	38	63.33
5000 – 7000	10	33.3	10	33.3	20	33.33
7000 – 9000	2	6.7	0	0	2	3.33
Above 9000	0	0	0	0	0	0
Type of Surgery						
Abdominal Hysterectomy	28	93.3	27	90.0	55	91.66
LSCS	1	3.3	1	3.3	2	3.33
Cholecystectomy	1	3.3	2	6.7	3	5

The data in (table 1) shows that the majority of the sample 20 (66.7 %) in the experimental group, and 17 (56.7%) in the control group were between the age group of 41-50 years.

Regarding the gender, the majority of the sample 21 (70%) in the experimental group were females, and 16 (53.3%) in the control group were females.

Regarding the educational status, 14 out of 30 (46.7%) in the experimental group and 20 (66.7%) in the control group were of illiterates.

With regard to religion, 29 (96.7%) in the experimental group and 28 (93.3%) in the control group were Hindus.

With regard to occupation, it shows that the majority 27 (90.0%) in the experimental group and 30 (100%) in the control group were coolie workers.

Regarding the marital status, it shows that majority, 30 (100%) in the experimental group and 26 (86.7%) in control group were married.

Regarding the type of surgery, 28 (93.3%) in the experimental group and 27 (90.0%) in the control group had undergone abdominal hysterectomy.

SECTION II

Distribution of sample according to the level of pain in experimental group

Table 2: Distribution of the subject according to the level of pain before and after aromatherapy massage in experimental group.

Variables	Experimental group			
	Before Massage therapy		After Massage therapy	
	N	%	N	%
No pain	0	0	20	66.6
Mild	0	0	10	33.3
Moderate	1	3.3	0	0
Severe	29	96.6	0	0

Based on the pain perception level, the subjects were classified into four groups.

0 –No pain, 1-3 Mild pain, 4-6 Moderate pain, 7-10 Severe pain,

Data on table 2 shows that before administration of aromatherapy massage 29(96.6%) subjects had severe pain and 1(3.3%) samples had moderate pain.

Whereas after administration of aromatherapy massage it was reduced to 10(33.3%) had mild pain and 20(66.6%) had no pain in experimental group.

Table 2(a): COMPARISION OF PRE TEST AND POST TEST PAIN PERCEPTION AMONG EXPERIMENTAL GROUP

Day	Experimental group	N	Mean	M.D	S.D	't' Value
DAY 1	Pre test	30	8.03	1.17	0.80	10.79
	Post test		6.86		0.77	
DAY 2	Pre test	30	6.06	1.26	0.63	13.32
	Post test		4.80		0.55	
DAY 3	Pre test	30	3.40	2.94	0.93	14.86
	Post test		0.46		0.77	

(P<0.05)

To compare the mean pre testpost test pain perception, the null hypothesis was stated as follows:

H₁ There will be no significant difference between meanpre test and post test pain perception score after aromatherapy massage in experimental group who had undergone major abdominal surgery at 0.05 level of significance.

Data on table 2 (a) shows that the mean pre test pain perception was higher on 1st day (8.03), but after aromatherapy massage the pain was reduced (6.86).When comparing to 2nd day, after administration of aromatherapy massage post test pain perception score was lower (4.80) than pre test pain perception score (6.06).

Likewise on 3rd day the post test pain perception score was (0.46) which is significantly lower than pre testmean (3.40) pain perception scores.

The obtained 't' value has significant improvement (14.86) on 3rd day than previous days at 0.05 level. This indicates that the difference between the mean were a true difference and has not occurred by chance. So the researcher rejects the null hypothesis and accept the research hypothesis.

The above findings imply that the aromatherapy massage has a significant effect in reducing the pain among post operative patients.

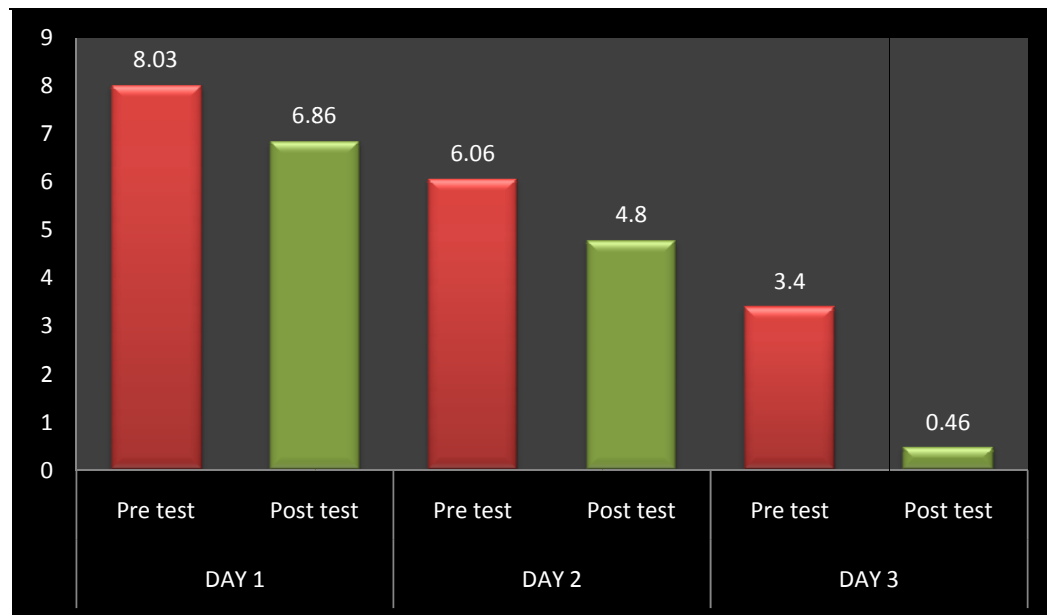


FIG.2

**COMPARISON OF PRE TEST AND POST TEST PAIN PERCEPTION
AMONG EXPERIMENTAL GROUP**

Distribution of sample according to the level of anxiety in experimental group

Table 2 (b): Distribution of the subject according to the level of anxiety before and after aromatherapy massage in experimental group

Experimental group				
Level of Anxiety	Before Massage therapy		After Massage therapy	
	N	%	N	%
Normal	0	0	18	60
Mild	0	0	12	40
Moderate	9	30	0	0
Severe	21	70	0	0

Based on the anxiety level, the subjects were classified in to groups.

0-15 Normal, 16-30 Mild, 31-45 Moderate, 46-60 Severe.

Data on table 2(b) shows that before administration of aromatherapy massage 21(70%) subjects had severe anxiety and 9(30%) had moderate anxiety.

Where as after administration of aromatherapy massage it was reduce to 30(100%) had normal in experimental group.

TABLE 2(c): COMPARISON OF PRE TEST AND POST TEST LEVEL OF ANXIETY OF EXPERIMENTAL GROUP

Day	Experimental group	N	Mean	M.D	S.D	't' Value
DAY 1	Pre test	30	47.30	10.90	5.18	11.13
	Post test		36.40		3.72	
DAY 2	Pre test	30	29.56	8.90	4.71	8.93
	Post test		20.66		4.35	
DAY 3	Pre test	30	15.63	9.30	3.36	14.02
	Post test		6.33		1.49	

(P<0.05)

To compare the mean pre testpost test level of anxiety, the null hypothesis was stated as follows:

H₂There will be no significant difference between meanpre test and post test anxiety scoreafter aromatherapy massage in experimental group who had undergone major abdominal surgeryat 0.05 level of significance.

Data on table 2(c) shows that the mean pre testanxiety scores on was higher on 1st day (47.30), but after aromatherapy massage the anxiety was reduced (36.40).When comparing to 2nd day, after administration of aromatherapy massage post test anxiety score was lower (20.66) than pre test anxiety score (29.56).

Likewise on 3rd day the post test anxiety score was (6.33) which is significantly lower than pre test mean (15.63) anxiety scores.

The obtained 't' value has significant improvement (14.02) on 3rd day than previous days at 0.05 level. This indicates that the difference between the mean were a true difference and has not occurred by chance. So the researcher rejects the null hypothesis and accept the research hypothesis.

The above findings imply that the aromatherapy massage has a significant effect in reducing the anxiety among post operative patients.

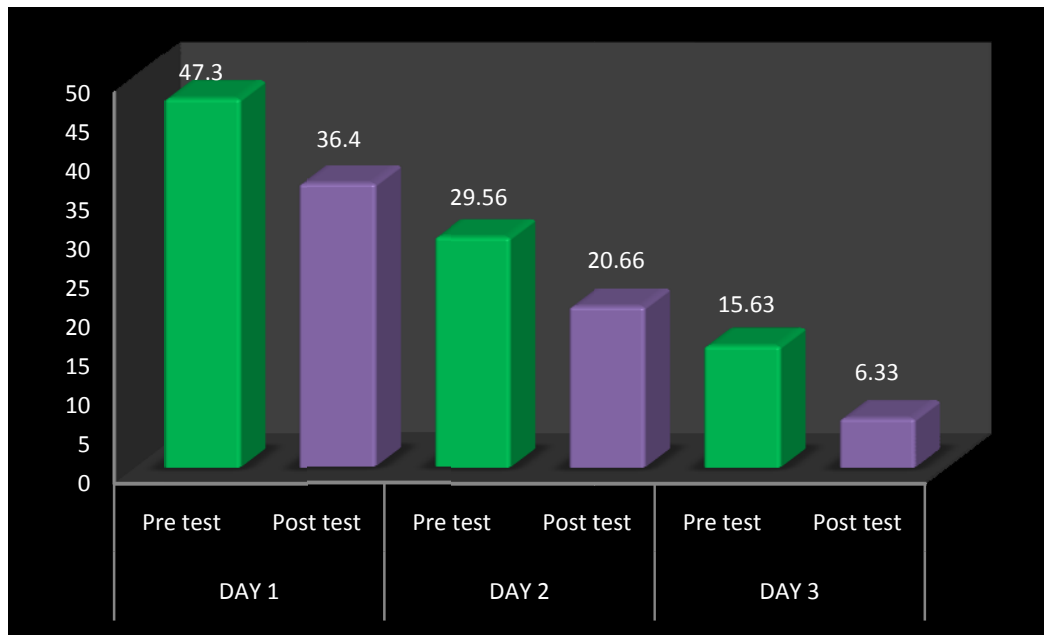


FIG 3

**COMPARISON OF PRE TEST AND POST TEST ANXIETY AMONG
EXPERIMENTAL GROUP**

SECTION III

TABLE 3: Distribution of the subject according to the level of pain in control group

Variables	Pre test		Post test	
	N	%	N	%
No pain	0	0	0	0
Mild	0	0	1	3.33
Moderate	1	3.33	29	96.6
Severe	29	96.6	0	0

Based on the pain perception level, the subjects were classified into four groups.

0 –No pain, 1-3 Mild pain, 4-6 Moderate pain, 7-10 Severe pain,

Data on table 3 shows that 29(96.6%) subjects had severe pain and 1(3.3%) samples had moderate pain in the pre test in the control group.

Whereas in post test it was reduced, 29(96.6%) subjects had moderate pain and had 1 (3.3%) mild pain in control group.

TABLE 3(a): COMPARISON OF PRE TEST AND POST TEST PAIN PERCEPTION AMONG CONTROL GROUP

Day	Control group	N	Mean	M.D	S.D	't' Value
DAY 1	Pre test	30	8.03	0.47	0.61	4.47
	Post test		7.56		0.56	
DAY 2	Pre test	30	7.10	0.34	0.80	2.76
	Post test		6.76		0.72	
DAY 3	Pre test	30	6.10	0.94	0.84	5.88
	Post test		5.16		0.79	

(P<0.05)

Data on table 3 (a) shows that the mean pre test pain perception on was higher on 1st day (8.03), and in the post test pain was reduced (7.56). When comparing to 2nd day, post test pain perception score was lower (6.76) than pre test pain perception score (7.10).

Likewise on 3rd day the post test pain perception score was (5.16) which is significantly lower than pre test mean (6.10) pain perception scores.

The obtained 't' value has significant improvement (5.88) on 3rd day than previous days at 0.05 level.

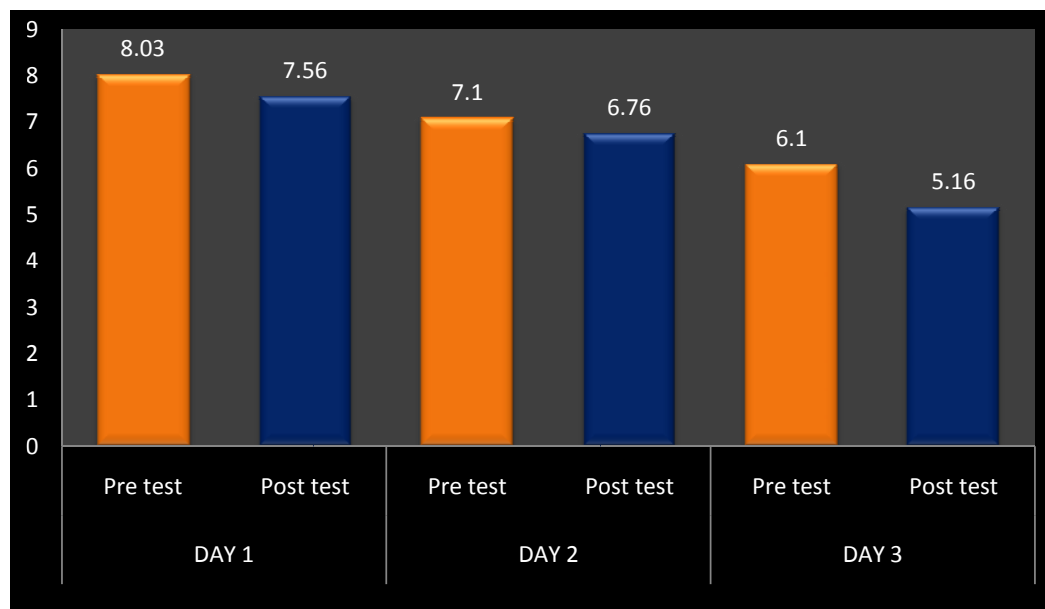


FIG. 4

**COMPARISON OF PRE TEST AND POST TEST PAIN PERCEPTION
AMONG CONTROL GROUP**

**TABLE 3(b): Distribution of the subject according to the level of anxiety
in control group.**

Level of Anxiety	Control group			
	Pre Test		Post Test	
	N	%	N	%
Normal	0	0	0	0
Mild	0	0	6	20
Moderate	7	23.33	21	70
Severe	23	76.66	3	10

Based on the pain perception level, the subjects were classified into four groups.

0-15 Normal, 16-30 Mild, 31-45 Moderate, 46-60 Severe.

Data on table 3(b) shows that 23(76.66%) subjects had severe anxiety and 7(23.33%) samples had moderate anxiety in the pre test in the control group.

Whereas in post test it was reduced, 3(10%) subjects had severe anxiety, 21(70%) had moderate anxiety, 6(20%) had mild anxiety in control group.

TABLE 3(c): COMPARISON OF PRE TEST AND POST TEST LEVEL OF ANXIETY OF CONTROL GROUP

Day	Control group	N	Mean	M.D	S.D	't' Value
DAY 1	Pre test	30	48.16	2.63	4.54	3.27
	Post test		45.53		4.65	
DAY 2	Pre test	30	42.13	2.27	5.09	2.59
	Post test		39.86		5.89	
DAY 3	Pre test	30	37.26	1.80	6.15	2.78
	Post test		35.46		6.87	

(P<0.05)

Data on table 3 (c) shows that the mean pre test anxiety score on was higher on 1st day (48.16), and in the post test anxiety score was reduced (45.53). When comparing to 2nd day, post test anxiety score was lower (39.86) than pre test anxiety score (42.13).

Likewise on 3rd day the post test anxiety score was (35.46) which is significantly lower than the pre test mean (37.26) anxiety scores.

The obtained 't' value has significant improvement (2.78) on 3rd day than previous days at 0.05 level.

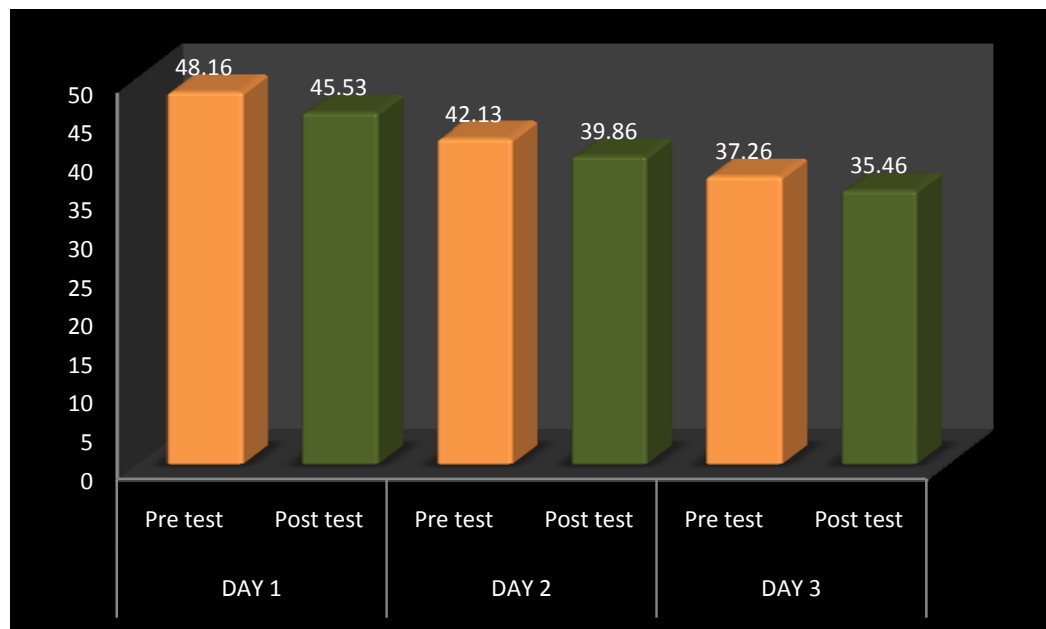


FIG 5

**COMPARISON OF PRE TEST AND POST TEST ANXIETY
AMONG CONTROL GROUP**

SECTION IV

Effectiveness of aromatherapy massage on reduction of post operative

Pain and Anxiety

TABLE 4: COMPARISON OF MEAN POST TEST PAIN PERCEPTION OF EXPERIMENTAL AND CONTROL GROUP

Day	Group	N	Mean	M.D	S.D	't' Value
DAY 1	Experimental group	30	6.86	0.70	0.56	4.18
	Control group	30	7.56		0.77	
DAY 2	Experimental group	30	4.80	1.96	0.55	14.99
	Control group	30	6.76		0.72	
DAY 3	Experimental group	30	0.46	4.70	0.77	23.67
	Control group	30	5.16		0.79	

(P<0.05)

To compare the mean pre testpost testpain perception of experimental and control group, the null hypothesis was stated as follows:

H₃ There will be no significant difference between meanpre test and post test pain perception of experimental massage who received aromatherapy and control group at 0.05 level of significance.

Data on table 4 shows that on 1st day, the mean post test pain perception of the experimental group was lower (6.86) than the control group (7.56).

When comparing to 2nd day the mean post test pain perception of the experimental group was lower (6.76) than the control group (4.80).

Likewise on 3rd day the mean post test pain perception of the experimental group was lower (0.46) than the control group (5.16).

On 1st day the obtained 't' value of experimental and control group was (4.18). On 2nd day the obtained 't' value of experimental and control group was (14.99). On 3rd day the obtained 't' value of experimental and control group was (23.67).

When comparing 1st and 3rd day the obtained 't' value has a significant improvement at 0.05 level. This indicates that the difference between the mean were a true difference and has not occurred by chance. So the researcher rejects the null hypothesis and accept the research hypothesis.

The above findings imply that the aromatherapy massage has a significant effect in reducing the pain perception among post operative patients.

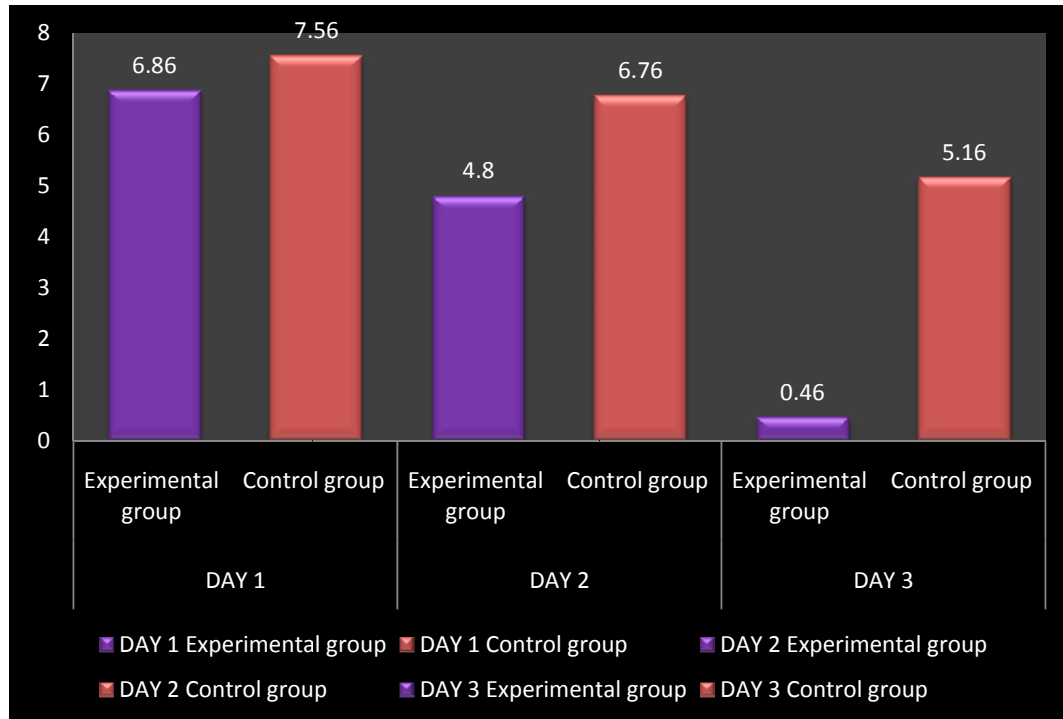


FIG 6

**COMPARISON OF MEAN POST TEST PAIN PERCEPTION OF
EXPERIMENTAL AND CONTROL GROUP**

Table 5: COMPARISON OF MEAN POST TEST LEVEL OF ANXIETY OF EXPERIMENTAL AND CONTROL GROUP

Day	Group	N	Mean	M.D	S.D	't' Value
DAY 1	Experimental group	30	36.40	9.13	3.72	10.05
	Control group	30	45.53			
DAY 2	Experimental group	30	20.66	19.20	4.35	13.83
	Control group	30	39.86			
DAY 3	Experimental group	30	6.33	29.13	1.49	21.36
	Control group	30	35.46			

(P<0.05)

To compare the mean pre test post test anxiety score of experimental and control group, the null hypothesis was stated as follows:

H₄ There will be no significant difference between pre test and post test anxiety of experimental massage who received aromatherapy and control group at 0.05 level of significance.

Data on table 5 shows that on 1st day, the mean post test anxiety score of the experimental group was lower (36.40) than the control group (45.53).

When comparing to 2nd day the mean post test anxiety score of the experimental group was lower (20.66) than the control group (39.66).

Likewise on 3rd day the mean post test anxiety score of the experimental group was lower (6.33) than the control group (35.46).

On 1st day the obtained 't' value of experimental and control group was (10.05). On 2nd day the obtained 't' value of experimental and control group was

(13.83). On 3rd day the obtained 't' value of experimental and control group was (21.36).

When comparing 1st and 3rd day the obtained 't' value has a significant improvement at 0.05 level. This indicates that the difference between the mean were a true difference and has not occurred by chance. So the researcher rejects the null hypothesis and accept the research hypothesis.

The above findings imply that the aromatherapy massage has a significant effect in reducing the anxiety score among post operative patients.

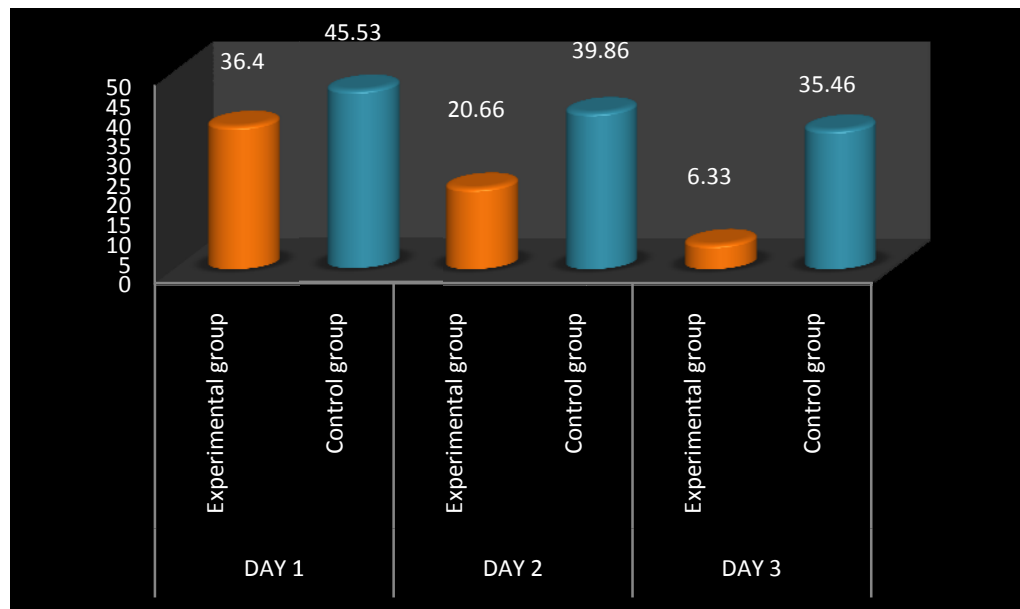


FIG 7

**COMPARISON OF MEAN POST TEST ANXIETY OF
EXPERIMENTAL AND CONTROL GROUP**

SECTION V

TABLE 6: RELATIONSHIP BETWEEN PAIN AND ANXIETY SCORES IN EXPERIMENTAL AND CONTROL GROUP

Group	Variable	Mean	S.D	' γ ' Value
Experimental group	Pain	0.46	0.77	0.278
	Anxiety	6.33	1.49	
Control group	Pain	5.16	0.77	0.308
	Anxiety	35.46	6.87	

($\gamma < 0.05$)

To find out the relationship between pain and anxiety scores in experimental and control group, the null hypothesis was stated as follows:

H₅ There will be no significant positive relationship between post test pain and anxiety scores in experimental and control group at 0.05 level of significance.

Table 6 summarizes that the mean post test pain perception score of experimental group 0.46 is higher than the mean post test pain score of the control group (5.16).

Likewise the mean post test anxiety score of the experimental group (6.33) is higher than the mean post test anxiety score of the control group (35.46). The obtained ' γ ' value for experimental group (0.278). The obtained ' γ ' value for control group (0.308). The obtained ' γ ' value has a significant improvement at 0.05 level. So the researcher rejects the null hypothesis and accepts the research hypothesis.

The above findings imply that the aromatherapy massage has a significant positive relationship between pain and anxiety among post operative patients.

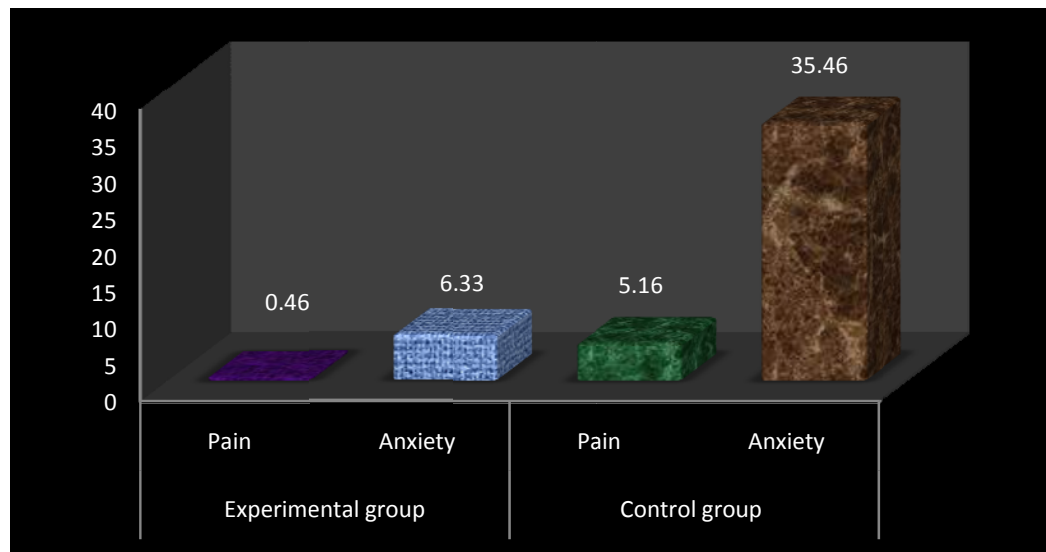


FIG 8

**RELATIONSHIP BETWEEN PAIN AND ANXIETY SCORES IN
EXPERIMENTAL AND CONTROL GROUP**

SECTION – VI

Table -7A: ASSOCIATION BETWEEN THE PAIN PERCEPTIONS OF THE EXPERIMENTAL GROUP WITH DEMOGRAPHIC VARIABLES.

Variables	below Mean	Above mean	Level of pain	
			N	χ^2
Age (In years)				
20-30	0	1	30	#1.68
31-40	4	1		
41-50	12	8		
51-60	1	3		
Gender				
Male	7	2	30	#2.22
Female	10	11		
Educational status				
Illiterate	8	6	30	#0.64
Primary	2	3		
Higher Secondary	5	2		
Graduate	2	2		
Religion				
Hindu	16	13	30	#0.69
Christian	1	0		
Muslim	0	0		
Occupation				
Coolie	16	11	30	#0.02
Business	1	1		
Private	0	1		
Government	0	0		

Table Conti....

Variables	below Mean	Above mean	Level of pain	
			N	χ^2
Marital status				
Married	17	13	30	#0.17
Divorce	0	0		
Widow	0	0		
Income /month(Rs.)				
3000 - 5000	10	8	30	#0.03
5000 - 7000	5	5		
7000 - 9000	2	0		
Above 9000	0	0		
Type of Surgery				
Abdominal Hysterectomy	5	11	30	#1.05
LSCS	2	2		
Cholecystectomy	5	5		

* Significant

Not significant

To find out there is an association between the level of pain perception after the administration of aromatherapy massage and selected demographic variables (age, gender, educational status, marital status, religion, income and type of surgery). The null hypothesis is stated as follows:

H₀ There will be no association between the experimental group pain perception after the administration of aromatherapy massage and selected

demographic variables (age, gender, educational status, marital status, religion, income and type of surgery).

In order to find out the association between pain perceptions after administration of aromatherapy massage and selected variables. Chi –square test is computed. There is no association found between pain and age as obtained chi-square value was 1.68 at 3 df (7.82).

Regarding pain level and gender, the calculated value was 2.22 at 1df (3.84) and not significant at 0.05 level.

It is found that, there is no association between educational status and pain perception. The obtained chi-square value was 0.64 at 3 df (7.82).

It is found that there is no association between marital status and pain perception. The obtained chi-square value was (0.17) at 3df (7.82).

Regarding pain perception and religion the calculated chi-square value was 0.695 at 2df (5.99) and shows that there is no association and it was not at significant level.

It is found that there is no association between type of surgery and pain perception. The obtained chi-square value was 1.05 at 3df(7.82).

This may be inferred that aromatherapy massage is effective in reducing post operative pain without any influence of the selected demographic variables, such as age, gender, educational status, marital status, religion, income and type of surgery.

**Table 7-B: ASSOCIATION BETWEEN THE LEVEL OF ANXIETY OF THE
EXPERIMENTAL GROUP WITH DEMOGRAPHIC VARIABLES**

Variables	below Mean	Above mean	Level of Anxiety	
			N	χ^2
Age (In years)				
20-30	1	0	30	#6.28
31-40	3	2		
41-50	12	8		
51-60	0	4		
Gender				
Male	5	4	30	#0.01
Female	11	10		
Educational status				
Illiterate	8	6	30	#0.31
Primary	3	2		
Higher Secondary	4	3		
Graduate	1	3		
Religion				
Hindu	15	14	30	#0.36
Christian	1	0		
Muslim	0	0		
Occupation				
Coolie	15	12	30	#0.60
Business	0	2		
Private	1	0		
Government	0	0		

Table Conti....

Variables	below Mean	Above mean	Level of Anxiety	
			N	χ^2
Marital status				
Married	16	14	30	#0.34
Divorce	0	0		
Widow	0	0		
Income / month(Rs.)				
3000 - 5000	10	8	30	#0.80
5000 - 7000	5	5		
7000 - 9000	1	1		
Above 9000	0	0		
Type of Surgery				
Abdominal Hysterectomy	10	6	30	#1.5
LSCS	5	6		
Cholecystectomy	1	2		

*Significant

Not significant

To find out there is an association between the level of anxiety after the administration of aromatherapy massage and selected demographic variables (age, gender, educational status, marital status, religion, income and type of surgery). The null hypothesis is stated as follows:

H₇ There will be no association between the experimental group level of anxiety after administration of aromatherapy massage and selected demographic

variables such as age, gender, educational status, marital status, religion, income and type of surgery.

In order to find out the association between level of anxiety after administration of aromatherapy massage and selected variables. Chi-square test is computed. There is no association found between level of anxiety and age as obtained chi-square value was 6.28 at 3df (7.82).

Regarding the level of anxiety and gender, the calculated value was 0.01 at 1df (3.84) and not significant at 0.05 level.

It is found that, there is no association between educational status and level of anxiety. The obtained chi-square value was 0.31 at 3 df (7.82).

It is found that there is no association between marital status and level of anxiety. The obtained chi-square value was (0.34) at 3df (7.82).

Regarding the level of anxiety and religion the calculated chi-square value was 0.36 at 2df (5.99) and shows that there is no association and it was not at significant level.

It is found that there is no association between type of surgery and level of anxiety. The obtained chi-square value was 1.54 at 3df (7.82).

This may be inferred that aromatherapy massage is effective in reducing post operative level of anxiety without any influence of the selected demographic variables, such as age, gender, educational status, marital status, religion, type of surgery.

SECTION VII

Table 8: OPINION OF SUBJECTS REGARDING BENEFIT OF AROMATHERAPY MASSAGE

Details of opinion questions	n%	
1. Are you experiencing relief from pain today?		
a). Yes	30	100
b).No	0	0
2. After receiving aromatherapy massage whether you able to sleep without any pain or disturbance?		
a).Yes	28	93.33
b).No	2	6.67
3. Do you feel that your mind is relaxed after receiving aromatherapy massage?		
a).Yes	28	93.33
b).No	2	6.67
4. Did you realize that your anxiety level had significantly come down after receiving aromatherapy massage?		
a).Yes	28	93.33
b).No	2	6.67

Table Conti....

Details of opinion questions n%

5. After taking

aromatherapy massage do
you feel happy about the
reduction of your pain and
anxiety?

a).Yes	30	100
b).No	0	0

6. If you happen to undergo
surgery again would you be
willing to undergo
aromatherapy massage?

a).Yes	30	100
b).No	0	0

7. Would you help other to
undergo aromatherapy
massage by talking to them
about the advantages of the
massage?

a).Yes	30	100
b).No	0	0

About 30 (100%) experienced relief from pain after aromatherapy massage. 28(93.3%) subjects were slept without any pain and disturbance. 2 (6.67%) had experienced pain and discomfort. About 28(93.3%) were felt that their mind was relaxed after receiving aromatherapy massage and 2 (6.67%) had mild anxiety.

After receiving aromatherapy massage 28 (93.3%) were realized that their anxiety level had come down and 2 (6.67%) had mild anxiety. About 30 (100%) felt happy about reduction of pain and anxiety, after receiving aromatherapy massage. About 30 (100%) were willing to receive aromatherapy massage again. 30 (100%) said that they will help others to receive aromatherapy massage.

This chapter dealt with the analysis of the data using descriptive and inferential statistics.

CHAPTER V

DISCUSSION

The study assessed the effectiveness of aromatherapy massage, on reduction of pain and anxiety among post operative patients who had undergone major abdominal surgeries. The findings of the study are discussed in the chapter with reference to the objectives and hypothesis.

Demographic Profile of the Sample

- ❖ With regard to age 20 (66.7%) in experimental group and 17 (56.7%) in control group were between 41-50 years.
- ❖ With regard to gender, 21 (70%) in experimental group and 16 (53.3%) in control group were females.
- ❖ With regard to education, 14(46.7%) in experimental group and 20 (66.7%) in control group were illiterates.
- ❖ It was found that 27 (90%) in experimental group and 30 (100%) in control group were coolie workers.
- ❖ Regarding marital status, 30 (100%) in experimental group and 26 (86.7%) in control group were married.
- ❖ It was found that 29 (96.7%) in experimental group and 28 (93.3%) in control group were Hindus.
- ❖ Most of the subjects in experimental group 28 (93.3%) and in control group 27 (90%) were undergone abdominal hysterectomy.

Distribution of sample according to the level of pain in experimental group

Table 2 shows that majority of the subjects 29(96.6%) had sever pain perception and 1(3.3%) samples had moderate pain level before administration of aromatherapy massage, where as after administration of aromatherapy massage, 10(33.3%) had mild pain and 20(66.6%) had no pain in experimental group.

Comparison of pre test and post test pain perception among experimental group

Table 2 (a) shows that the mean pre test pain perception on was higher on 1st day (8.03), but after aromatherapy massage the pain was reduced (6.86).

When comparing to 2nd day, after administration of aromatherapy massage post test pain perception score was lower (4.80) than pre test pain perception score (6.06). Likewise on 3rd day the post test pain perception score were (3.40), (0.46) which was significantly lower than previous days mean pain perception scores.

The obtained 't' value has significant improvement (14.86) on 3rd day than previous days was at 0.05 level. This difference in experimental group was due to the effect of aromatherapy massage.

A similar study conducted by Ponnarasi, (2008) documented that the effectiveness of aromatherapy in reduction of pain and its associated behavioural changes among major abdominal surgery patients. The simple random sampling technique was used to select the 60 samples for the study. It was used repeated measures assessment over five weeks post operative patients. 60 patients participated and were randomized to a control group receiving routine care (n=30) and experimental group receiving aromatherapy massage (n=30) for five weeks. Result was significantly lowered in the aromatherapy group than in the other group at both

post –test time (first day Beta=-2.48, 95%, CI -3.68 to -1.29 P<0.001, second day Beta = -1.97, 95% CI-3.66 to -0.29, P=0.02 and the severity of pain (first day Beta= 0.31, 95% CI = 0.05 to 0.57, P=0.02 second day Beta 0.03, 95% CI:0.10 to 0.56 P=0.006) than that found in the other group. The findings suggest that aromatherapy using topically with essential oils is effective in decreasing the severity of pain. The study result signifies that administration of aromatherapy as complementary therapy to the hospital pain management protocol enhanced the control of pain, brought about behavioral changes and enabled greater comfort and relaxation of the clients. Hence, aromatherapy can be used as safe and inexpensive adjunct to conventional medicine.

Distribution of sample according to the level of anxiety in experimental group

Table 2 (b) shows that majority of the subjects 21(70%) had severe anxiety and 9(30%) had moderate anxiety before administration of aromatherapy massage, whereas after administration of aromatherapy massage 30(100%) subjects had no anxiety in experimental group.

Comparison of pre test and post test level of anxiety among experimental group

Table 2 (c) shows that the mean pre test anxiety score was higher on 1st day (47.30%), but after aromatherapy massage the anxiety was reduced (36.40%). When comparing to 2nd day, after administration of aromatherapy massage post test anxiety score was lower (20.66%) than pre test anxiety score (29.56%). Likewise on 3rd day the post test anxiety score were (6.33%), which is significantly lower than previous days mean anxiety scores. The obtained 't' value has significant improvement (14.02) on 3rd day than previous days was at 0.05 level.

Wilkinson, S, et.al (2007)has done a study on effectiveness of aromatherapy massage in the management of anxiety and depression among post operative patients. 40 patients referred to complementary therapy services with clinical anxiety and/or depression, were allocated randomly to a course of aromatherapy massage or usual supportive care alone. Patients who received aromatherapy massage had lower anxiety and depression compared with those receiving usual care 6 weeks postrandomization. Patients receiving aromatherapy massage also described greater improvement in anxiety at both 6 and 10 weeks postrandomization. The authors findings indicated that the patients in the experimental group had significantly lower anxiety level than those of patients in the control group.

Comparison of mean post test pain perception of experimental and control group

Table 4 shows that shows that on 1st day, the mean post test pain perception of the experimental group was lower (6.86%) than the control group (7.56%). When comparing to 2nd day the mean post test pain perception of the experimental group was lower (6.76%) than the control group (4.80%). Likewise on 3rd day the mean post test pain perception of the experimental group was lower (0.46%) than the control group (5.16%). On 1st day the 't' value obtained of experimental and control group was (4.18). The 't' value obtained on 2nd day of experimental and control group was (14.99) . On 3rd day the obtained 't' value of experimental and control group was (23.67).

The present study findings coincide with the findings of Axelrod (2006), who conducted a study, to determine the effect of aromatherapy massage on pain among post operative patients. The design used in this study was pre test post test quasi-experimental design. The sample consisted of 40 patients. The essential oil used was

lavender oil. It was mixed with carrier oil composed of almond 45%, sesame (45%) and they were diluted to 1.5% after blending. The data were analyzed using 't' test and paired 't' test.

The mean level of the pain in the experimental group 1.69 after the use of aromatherapy massage was lower than the mean post test level of pain 2.78 of the control group. It was inferred that the aromatherapy massage is effective in bringing down the level of pain among post operative patients.

Comparison of mean post test level of anxiety in experimental and control group

Table 5 shows that on 1st day, the mean post test anxiety score of the experimental group was lower (36.40) than the control group (45.53). When comparing to 2nd day the mean post test anxiety score of the experimental group was lower (20.66) than the control group (39.66). Likewise on 3rd day the mean post test anxiety score of the experimental group was lower (6.33) than the control group (35.46). On 1st day the obtained 't' value of experimental and control group was (10.05). On 2nd day the obtained 't' value of experimental and control group was (13.83). On 3rd day the obtained 't' value of experimental and control group was (21.36).

The findings in the present study coincide with the findings of Edris, (2007), who conducted a study to determine the effect of aromatherapy massage on anxiety among post operative patients who had undergone major abdominal surgeries. The individuals in the experimental group were given 20 minutes of foot massage. After administration of massage therapy the anxiety level was measured using State Trait Anxiety Inventory. The authors' findings indicated that the post test anxiety level

of the experimental group was lower than the control group. This study supports the above findings.

Relationship between pain and anxiety scores in experimental and control group

Table 6 summarizes that the mean post test pain perception score of experimental group 0.46 is higher than the mean post test pain score of the control group (5.16). Likewise the mean post test anxiety score of the experimental group (6.33) is higher than the mean post test anxiety score of the control group (35.46). The obtained correlation value of the experimental group (0.278) was lower than the control group (0.308).

The present study findings co-inside with the findings of Torres Maria (2005), who conducted a study on the effect of aromatherapy massage in relaxation of the post operative surgical patient.

The subjects consisted of 30 post operative major surgical patients admitted in the post operative ward. The psychological variable of anxiety was measured using the four dimensional anxiety scale. The findings of the study showed that statistical significant were noted on the patient's respiratory rates in all post test results following aromatherapy intervention and once on the second post test day one for blood pressure. However, this specific group of patients who received aromatherapy massage intervention showed lower heart rate, blood pressure, and anxiety scores compared to the other patients. The above findings imply that the aromatherapy massage has a significant positive relationship between pain and anxiety among post operative patients.

Association between pain perceptions of the experimental group with the demographic variables.

In order to find out the association between the level of pain reduction and with selected variables, the chi square was computed. It was found that there was no association between the level of pain and selected demographic variables. It may be inferred that the aromatherapy massage is effective in bringing down the level of pain among post operative patients without any influence of selected variables such as (Age, Gender, Education, Marital status, Religion, Income and Type of surgery).

The findings of the present study coincide with Todd Neale (2008), who conducted a study to assess the effectiveness of aromatherapy massage in reducing pain and stress among patients with abdominal surgery. The quasi experimental, pre test post test control group design was adopted for this study. Purposive sampling technique was used to select 60 samples. Numerical pain rating scale was used for data collection. The mean level of pain in experimental group (1.37) after the use of aromatherapy massage was lower than the mean level of pain (3.16) before the use of aromatherapy massage. There was no association between level of pain and selected variables of subjects of experimental group (Age, Gender, Education, Marital status, Religion, Income and Type of surgery). It may be inferred that the aromatherapy massage is effective in bringing down the level of pain without any influence on selected demographic variables.

Association between the level of anxiety of the experimental group with the demographic variables.

In order to find the association between the level of anxiety reduction and with

selected variables, the Chi-square was computed. It was found that there was no association between the level of anxiety and selected demographic variables. It may be inferred that the aromatherapy massage is effective in bringing down the level of anxiety without any influence of selected variables such as (Age, Gender, Education, Marital status, Religion, Income and Type of surgery).

Present study findings co-inside with the findings of Darjilin (2009). He assessed the effectiveness of aromatherapy massage in reducing anxiety among post operative patients with abdominal surgery. Pre-experimental one group pre-test and post test design was adopted for this study. Modified Hamilton Anxiety Scale was used. The mean level of anxiety in experimental group (82.94) after the use of aromatherapy massage was lower than the mean level of anxiety (112.4) before the use of aromatherapy massage. There was no association between the level of anxiety and selected variables of subjects of experimental group (Age, Gender, Education, Marital status, Religion, Income and Type of surgery).It may be inferred that the aromatherapy massage is effective in bringing down the level of anxiety without any influence on selected demographic variables.

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