EFFECTIVENESS OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) ON PAIN AND BEHAVIOURAL RESPONSES AMONG PRIMIGRAVID MOTHERS DURING FIRST STAGE OF LABOUR, AT LABOUR WARD, GOVERNMENT RAJAJI HOSPITAL, MADURAI

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CERTIFICATE

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- A. Mizbath

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ABSTRACT

Title: Effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital. **Objectives:** To assess the level of pain and behavioural responses. To evaluate the effectiveness of TENS on pain and behavioural responses. To associate the level of pain and behavioural responses among primigravid mothers and their socio demographic and obstetrical variable. To correlate the level of pain and behavioural responses. **Hypotheses:** There is a statistically significant difference between pretest and posttest level of pain and behavioural responses. There is a statistically significant difference between posttest level of pain and behavioural responses. There is a statistically significant association between the level of pain and behavioural responses among primigravid mothers and their socio demographic and obstetrical variables. There is a statistically significant correlation between the level of pain and behavioural responses. **Methodology:** True experimental – pretest posttest control group design used. 60 subjects selected by Simple random sampling. Intervention was given four times a day. **Results:** Karl pearson coefficient of correlation r =0.46 at $p \leq 0.001$ level of significance. **Conclusion:** TENS is a simple, non-invasive, non-pharmacological, alternative method used in labour ward.

Keywords: TENS, Pain, Behavioural responses, Primigravid mother, First stage of labour.

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CHAPTER – I

INTRODUCTION

"***Mothers are magician they turn pain into hope, hardship into lessons and tears into laughter*.**"

- Kelly'

Child bearing is a natural physiological event. However, this creative process is a challenge that may place the body at risk. The pregnant Mothers's body undergoes tremendous hormonal and physical changes during the 9 months prior to childbirth. In women the increase in pain threshold begins approximately 18 days before the onset of labour and further increases during labour.

Childbirth is never the same and it may differ between mother and in labour too; but in the modern era it is considered as a social event. 'Pain and suffering' is an ever present image and experience among mother from the dawn of history to contemporary time. It has been expressed vividly through the major visual, literary and musical arts. Although artists throughout the century have depicted their experience through a variety of art forms, it is also relevant for us to concentrate on our own meaning, from everybody's impression of pain.

As labour advances the body of the uterus, the cervix and the vagina together form a uniformly curved canal called birth canal. Normally at the onset of labour with the head non engaged, the pelvic structures anterior to the vagina are urethra and bladder and those posterior to the vagina are the urethra and bladder, those posterior to the vagina are pouch of douglas with coils of intestine, rectum, anal canal, perineum and anococcygeal raphe. **(Dutta. DC, 2017)**

As the head descends down with progressive dilatation of the cervix, it displaces the anterior structures, upward and forwards and the posterior structures downward and backward, as if the head passing through a swing door. The bladder which remains a pelvic organ throughout the first stage becomes an abdominal organ in the second stage of labour. However there is no stretching of urethra as it was previously. Rather the urethra is pushed anteriorly with the neck of the bladder still lying in the vulnerable position behind the symphysis pubis.

The changes in the posterior structure due to downward and backward displacement are marked when the head is sufficiently low down and in the stage of Crowning. The perineum which is a triangular area of about 4 cm thickness becomes a thinned out membraneous structure of less than 1cm thickness. The anus from being a close opening becomes dilated to the extent of 2-3cm in length, while its anterior wall remains the same 4cm in length. The canal becomes almost a semicircle. **(Dutta. DC, 2017)**

The precise mechanism of initiation of labour is still obscure. Endocrine and mechanical stretch pathways as obtained from animal experiments however put forth the following hypotheses.

- ➔ Uterine distention
- ➔ Feto placental contribution
- ➔ Oestrogen
- ➔ Progesterone
- ➔ Prostaglandins
- ➔ Oxytocin
- ➔ Neurologic factor

Uterine distention Stretching effect on the myometrium by the growing fetus and liquor amni can explain the onset of labour at least in twins or polyhydramnios. However optimal distention theory fails to account for the otherwise causeless preterm labour

Fetoplacental Contribution Cascade of events activate fetal hypothalamic pituitary adrenal axis prio to the onset of labour that increases the CRH (Corticotrophin-releasing hormone) which may leads to the accelerated production of oestrogen and prostaglandins from the placenta.

Oestrogen the probable mechanisms are increases the release of oxytocin from maternal pituitary, promotes the synthesis of receptors for oxytocin in the myometrium and decidua. It also stimulates myometrial contractile protein.

Progesterone Increased fetal production of cortisol inhibits the conversion of fetal pregnenolone to progesterone. Progesterone levels therefore fall before labour. It is the alteration in the estrogen progesterone ratio rather than in the fall in the absolute concentration of progesterone

Prostaglandins these are important factors which promote and maintain labour. The major sites of synthesis of prostaglandins are- amnion, chorion, decidul cells, and myometrium. Synthesis is triggered by rise in estrogen level, glucocorticoids, mechanical starching in late pregnancy.

Oxytocin level reaches the maximum at the moment of birth. Fetal plasma oxytocin level is found increased during spontaneous labour compared to that of mother. Its role in human labour is not yet established similar to other paracrine hormones like relaxin and prolactin.

Neurolgic factor although labour may start indenervated uterus, labour may also be initiated through nerve pathways. Both α *and* β adrenergic receptors are present in the myometrium, estrogen causing α receptors and progesterone and β receptors to function predominantly. **(Dutta. D.C, 2017)**

There is considerable loss of energy especially in the second stage of labour due to uterine contractions and bearing down efforts. Deficiency of carbohydrate supply which is the main source of energy, leads to incomplete oxidation of fat resulting in ketoacidosis. The degree of metabolic acidosis is chiefly determined by the nutritional status of the patient and duration of labour. The resulting metabolic acidosis of normal labour is well compensated by increased pulmonary ventilation and elimination of CO_2. There is increased cardiac output with increase in stroke volume and pulse rate (not exceeding 100/mt). Blood pressure may be raised by 10 mm systolic during uterine contraction. Body temperature may be slightly raised (but below100^{o} F). There may be sweating and loss of fluids from the body. Emptying time of the stomach is delayed up to 48 hrs and the gut becomes distended. This is of importance while considering administration of general anesthesia. There is inevitable injury of the genital tract from the cervix down to the perineum of varying magnitude. These result in permanent legacy of relaxed perineum, vagina and of a slit in the external os. **(King T, 2015)**

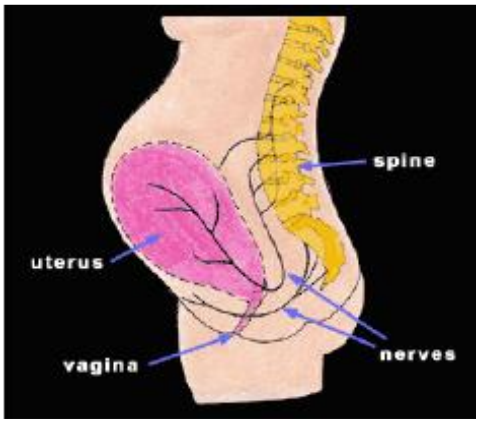


Figure 1: The nerve fibers travel from the spinal cord to the uterus, cervix and vaginal areas.

Clinical course of First stage of labour in normal labour the pains are felt more anteriorly with simultaneous hardening of the uterus which is bodily pushed forwards. Initially the pains are not strong enough to cause discomfort and come at varying intervals of 15-30 minutes with duration of about 30 seconds. But gradually the interval becomes shortened with increasing intensity and duration so that in late first stage the contraction comes at intervals of 3-5 minutes and last for about 45 seconds. The relation of pain with uterine contraction is of great significance. **(King T, 2015)**

During labour pains are usually felt shortly after the uterine contraction begin and pass off before complete relaxation of the uterus. If one the other hand the pains are felt before uterine contraction and last after the contractions pass off, a tendency of prolongation of the first stage may be anticipated. Clinically the pains are said to be good if they come at intervals of 3-5 minutes and at the height of contraction the uterine wall is only slightly depressed away from the fetal body by moderate pressure of the fingers. The pain experienced by the mother is very variable and bears no constant relation with dilatation of the cervix. **(Gross MM, 2016)**

Progressive anatomical changes in the cervix such as dilatation and taking up are inferred through vaginal examination. Cervical dilatation relates with dilatation of the external os and taking up is determined by obliteration of the projection of the cervix in to the vagina.

In primigravida the cervix may be mistaken for one that is fully dilated. While in multipara dilatation and taking up occur simultaneously which are more abrupt following rupture of the membranes. The anterior lip of the cervix is the last to be effaced. The first stage is said to be completed only when the cervix is completely retracted over the presenting part during contractions. **(Newburn M, 2014)**

Lundgren I, (2013) in primigravid the latent phase of first stage was considered to be more at about 8 hours, and effacement or taken up of cervix occurs; the cervical dilatation averaging only 0.35cm/hour. In multipara, the latent phase was less about 4 hours and both cervical effacement and dilatation occurs concurrently. Because of variable length of latent phase, it was not easy to plot the cervical dilatation along the graph.

The intensity of the pain increases. The pains come at intervals of 2-3 minutes and last for about 1-1½ minutes. It becomes successive and unbearable in the terminal phase. It is the additional voluntary expulsive efforts that appear in the last second stage (expulsive phase). This is commenced by the nerve reflexes set up due to stretching of the vagina by the presenting part. In majority the pushing down efforts, start just prior to full dilatation of the cervix. It is of immense help in accelerating the expulsion of the fetus. At the height of uterine contraction, the women the women closes her glottis, holds her respiration at the height of inspiration, clutches whatever is available and voluntary contracts the abdominal muscles in an attempt to expel the fetus.

Pain is a multi-dimensional subjective phenomenon and hence it is difficult to define. Everyone experiences pain and each can define it in different ways as their own personal experience. Pain is important to alleviate but it is not the quantum of pain a woman experiences but whether she will meet her goals in coping with pain that influence her perception of the birth experience as good or bad. Although the pain threshold is remarkably similar in all persons regardless of sexual, social, ethnic or cultural differences they play a definite role in the individuals.

According to **Montes-S L (2014)** Pain is considered to be both a physical and psychological perception, and also it was a response from injury or physical changes

as results in physiological changes in our body. Pain is described as a compound occurrence that is very special (and sometimes isolating) for the human being. This was consistently predisposed by a person's beliefs, traditions, thoughts, reservations and manners. From the last 20 years the perception of pain was renowned as being what an individual perceived about it.

The expectation and the probability of pain may enhance increased nervousness and discomfort in a person that results in increase the perception of pain that occurs during childbirth. As a result if a woman is terrified and uneasy about the childbirth, the need for pain relief methods also can be higher. It was recommended with the intention of women to believe that was in control of the resolution about what has to be happen to them in labour will perceive reduction in intensity and perception of pain. They were also being more probable to feel encouraging about their labour incident after the childbirth.

Pain is distinguished to be the most recurrent complaint during labour. Gate control theory has explained non pharmacological pain relief methods are associated with laboring women. It is possible that the comforting sensory input that was stimulated from stroking, effleurage and kneading activates the gate control theory and it activates closing mechanism at spine level. These effects can be possible with tissue manipulation, and it stimulates the release of endogenous opiates. **(Sheeba.R, 2013).**

Pain management is a prime important task for health care providers. Pharmacologic and non-pharmacologic are the two approaches used for pain management. In Pharmacologic approach, drugs are used for the elimination of the physical sensation of labor pain, whereas non-pharmacologic approaches are mainly

focused toward avoidance of pain or suffering. Suffering is a distressing situation characterized by helplessness, loss of control and even fear of death of the mother or baby. Non-pharmacological pain relief method are transcutaneous electrical nerve stimulation.

Transcutaneous Electrical Nerve Stimulation (TENS) is the use of electric current produced by a device to stimulate the nerves for therapeutic purposes. TENS, by definition, covers the complete range of transcutaneously applied currents used for nerve excitation although the term is often used with a more restrictive intent, namely to describe the kind of pulses produced by portable stimulators used to treat pain. The unit is usually connected to the skin using two or more electrodes. A typical battery - operated TENS unit is able to modulate pulse width, frequency and intensity. Generally TENS is applied at high frequency (>50 Hz) with an intensity below motor contraction (sensory intensity) or low frequency (<1 0 Hz) with an intensity that produces motor contraction. While the use of TENS has proved effective in clinical studies, there is controversy over which conditions the device should be used to treat.

Pain TENS devices available to the domestic market are used as a non-invasive nerve stimulation intended to reduce both acute and chronic pain. One review from 2007 felt that the evidence supports a benefit in chronic musculoskeletal pain. Results from a task force on neck pain in 2008 found no clinically significant benefit to TENS for the treatment of neck pain when compared to a placebo treatment. A 2010 review did not find evidence to support the use of TENS for chronic low back pain. There is tentative evidence that it may be useful for painful diabetic neuropathy. As of 2015, the efficacy of TENS therapy for phantom limb pain is not known as no randomized controlled trials have been performed.

In principle, an adequate intensity of stimulation is necessary to achieve pain relief with TENS. An analysis of treatment fidelity (meaning that the delivery of TENS in a trial was in accordance with current clinical advice, such as using "a strong but comfortable sensation" and suitable, frequent treatment durations) showed that higher fidelity trials tended to have a positive outcome.

A few studies have shown objective evidence that TENS may modulate or suppress pain signals in the brain. One used evoked cortical potentials to show that electric stimulation of peripheral A-beta sensory fibers reliably suppressed A-delta fiber nociceptive processing .Two other studies used functional magnetic resonance imaging (FMRI): one showed that high-frequency TENS produced a decrease in pain-related cortical activations in patients with carpal tunnel syndrome, while the other showed that low-frequency TENS decreased shoulder impingement pain and modulated pain-induced activation in the brain.

Kaplan B. et al., (2012) studied the effect of TENS on pain during labor and delivery. Hundred and four women participated. A questionnaire has been given to them to know the magnitude of pain relief bearable them by TENS while in delivery. The evaluation was documented with medical finding during delivery. More than 72% subjects reported TENS was effective during labor for the reduction of pain. 67% subjects responded optimistically about TENS and go with in future deliveries. Therefore, they have concluded that TENS is an effective non-pharmacological method is a good pain reliever in first stage of labor and moreover there is no side effect to mother and baby.

TENS has an important role to play to alleviate women’s pain during labour, to prevent the mother from becoming unduly tired and thereby causing nervousness and fatigue. TENS is widely used and well-appreciated, and is an effective method to

relieve the pain. Action of TENS stimulates the production of natural endorphins and enkephalins, and also their ability to impede increasing pain stimuli. One of its distinct advantages is that it includes the partner in the events surrounding the birth of their baby. By using TENS many husbands are able to assist and support their wives during labour and childbirth to a much greater degree. **Walsh (1999)** reported that partners feel a purposeful role. A reduction in the demand for pethidine was also found.

The electrodes are placed at the level of T10 and L1 on the mother's back. These have been found effective for the control of pain during the first stage of labour. TENS stimulate the fibres of touch receptors to inhibit neurons in the pain pathways. People may rub or massage a painful area to relieve the pain. TENS functions in the same way.

As labour progresses the pain becomes increasingly severe and is referred to the abdomen, lower lumbar and upper sacrum areas supplied by T10 to L1. TENS is the best pain relief measures during the first stage of labour. By applying the electrodes over T10 to L1 pain receptors can be blocked. TENS does not have a harmful effect on the foetus.

In the inhibitory mechanism of pain there is an increased concentration of beta endorphine and enkephline in the pre-optic area and the thalamus. During pregnancy plasma level of endorphine are elevated compared with non-pregnant women. This concentration increases during labour and is at its peak at delivery or in the post partum period.

This physiological state of women can modify their pain experience during labour. The majority of women consistently rate pain in labour as severe; pain is not

always reported as a negative event. Twenty-eight women were questioned regarding their pain in labour and out of that 91% reported high levels of pain.

The role of the midwife is to encourage and assist women to anticipate positively the birth of their baby. Two researchers in Japan revealed in their study on the intensity memorised labour pain that self-control is the most important predictor of satisfactory child birth experience for mothers. TENS has the potential to satisfy the necessary criteria for an ideal method in labour. In the present study, like all others reported to date, no side effects were noted.

TENS was designed to relieve pain by sending gentle electrical impulses through the skin to the nerve. This suppresses pain by blocking the pain signals before they reach the brain. TENS sends gentle impulses through lead wires that are connected to electrodes. These electrodes are strategically placed at appropriate pain sites on the body. Because there are many different kinds of pain and each individual is unique, pain relief varies from person to person. Some users experience pain relief only while the TENS unit is turned on.

By providing with TENS it will give relief of pain as well as relaxation to the mother during labour. It shortens the duration of labour. By applying the TENS people was motivated towards the use of TENS. Use of analgesic and its side effects can be prevented by the application of TENS. Cost is affordable; it is less than the analgesic.

From the experience of the investigator, it has been found that, administration of sedatives, analgesic is the commonest method used to relieve pain in women during labour. This causes less bearing down effect on the mother and increased respiratory distress in the neonates. Above all she is not able to experience the thrill of giving birth to a baby. This motivated the investigator to find out the effectiveness of using non-pharmacological and non-invasive measures for pain relief during labour.

Therefore the investigator desired to find out the effectiveness of TENS application during labour.

1.1 Need for the study

Advances in technology continue at a fast pace within obstetrics, particularly with the dominant medical model of care and elective epidural provision. Some women are passive **(Blakka and Schauer, 2014)**, they do not want to feel pain and want the professionals to take control and make their decisions for them. A proportion of women was high risk due to obstetric or medical problems and others prefer or simply choose the technocratic medical model of care. Women often fear childbirth and want others to manage them in order that they feel safe in hospital **(Heinze and Sleigh, 2015)**.

In the opposite belief system or paradigm women do not want to experience a medical model of care, which is managed and controlled. These women want a natural model of care, they actively engage, seek knowledge and want to be in control of their childbirth. They want to promote a more natural childbirth and the experience that goes with it. These women often have less fear, engage with professionals and need support to make choices and decisions for themselves.

WHO, 2017 Women who hold this belief system often have aims for a home birth, birth centre experience or a midwife-led birth in hospital and want a normal outcome. Within this belief system pregnancy and birth are seen much more as normal physiological processes, in which medical intervention is inappropriate unless it is clinically indicated and evidence-based. Midwives can assist by promoting the normal pathway, using their expertise in normal birth, and supporting women who choose to use non-pharmacological pain control, such as TENS.

The publication of ‘Towards a Healthier Nation’ (2016) highlighted the growing awareness of the limitations of the medicalised model of maternity care. Following this, ‘Vision 2017’, drawing on the views of midwives and other key stakeholders, stated that ‘maternity care is not just a delivery service: it makes a major contribution to family wellbeing and wider public health’. It identified the need ‘to create a service which listens to women’ and highlighted that pregnancy and childbirth are not isolated clinical incidents, but major life events of enormous psychological and social significance for women and their families. It is vital that women feel able to exercise informed choice and control over their care at this time. Part of this informed choice relates to whether women choose to use pharmacological analgesics or to use more natural methods of pain control. Both require support from the professionals who are providing care for women.

Alternatively women with the opposite belief system may have considered the option of using pharmacological analgesia and with the knowledge and information available to her, she may choose to use other forms of non invasive, natural pain control of which TENS may be considered.

Midwives have a responsibility to ensure that all women receive care that is based on the notion of partnership and which respects the individuality of a woman and her family. Women have the right to make their own decisions and midwives have a duty to provide them with evidence based information so that they can make choices for care (NMC, 2017). Midwives care for a huge spectrum of women with varying beliefs to which they bring their own beliefs and experience in providing this service for women. Provision of care is complex and multi-layered with the belief system of the woman, the beliefs of the midwife and societies’ expectations of what a midwifery service should provide.

In our changing society, the norms and expectations surrounding childbirth are interwoven with an increasing reliance on technology and rising intervention rates. Set against this is the drive to promote normality. The National Service Framework (2016), advocate that women should be supported to have as normal a pregnancy and birth as possible, with medical interventions recommended only if they are necessary and are of benefit to the woman and her baby. With the shift in service provision, comes a shift in the attitudes, beliefs, and behaviour of childbearing women and their families, and a re-evaluation of what is considered culturally and socially to be the norm.

Maternity Matters (2014) stated that – 'Individualised care offered by a midwife, specialist support provided to those most at risk and normal birth without medical intervention wascome a more realistic option for every parent'.

National Institute for Health and Clinical Excellence, NICE 2013) with throughout the midwifery and community childbirth organisations, the idea of 'normal birth' is being debated and promoted as never before (Darra, 2014) particularly in the light of increasing intervention in childbirth. National and international guidelines which under in maternity service provision encourage 'normal' birth practices Normal birth is therefore very much on the agenda for midwives and providers of maternity services in terms of providing safe, appropriate care for women and defining professional roles.

The experience of labour pain is complex and women's choices for analgesia in labour and birth depend on the woman's belief system. These are viewed differently having been shaped by women's individual ideas, feelings, knowledge, past experience and present expectations. The medically managed where the aim is to relieve or eliminate pain using pharmacological analgesia such as opioids and the use of elective epidurals is chosen by some women. The opposite paradigm where the

normal or more natural pathway that actively involves women in their control of labour pain using methods such as breathing, mobilisation and TENS in order to a promote normal outcome is preferred by other women. TENS has been part of this paradigm or belief system for women who want to remain in control, actively take part in their labour and seek non-pharmacological pain control. This research study has therefore investigated this by asking women about their experiences of TENS for pain control in labour and birth.

According to the statistics of GRH, Madurai District, during the year of 2018 in an average 1100 -1200 mothers delivered with normal labour in labour ward.

1.2 Statement of the Problem

"A study to evaluate the effectiveness of transcutaneous electrical nerve stimulation (TENS) on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai"

1.3 Objectives of the study

1. To assess the level of pain and behavioural responses among primigravid mothers during the first stage of labour, at labour ward, GRH, Madurai.
2. To evaluate the effectiveness of TENS on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, GRH, Madurai.
3. To associate the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, GRH, Madurai and their selected socio demographic variables and obstetrical variables.
4. To correlate the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, GRH, Madurai and their selected socio demographic variables and obstetrical variables.

1.4 Hypotheses

H_1: There is a statistically significant difference between pre test and post test level of pain and behavioural responses among primigravid mothers in intervention group during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.

H_2: There is a statistically significant difference between post test level of pain and behavioural responses among primigravid mothers in intervention group and control group during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.

H_3: There is a statistically significant association between the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai and their socio demographic and obstetrical variables.

H_4: There is a statistically significant correlation between the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai and their socio demographic and obstetrical variables.

1.5 Operational definitions

Effectiveness

In this study effectiveness refers to the extent to which the transcutaneous electrical nerve stimulation has its impact on the pain tolerance ability and favourable response shown by the mothers during the first stage of labour as measured by pain assessment scale (numerical scale) and modified structured observation checklist.

Labour Pain

Labour pain refers to the rhythmical uterine contraction with increase in intensity, frequency, duration, and culminate in vaginal delivery of the baby.

TENS (Transcutaneous Electrical Nerve Stimulation)

In this study TENS (Transcutaneous Electrical Nerve Stimulation) refers to the application of electrical impulses through conductive electrodes placed on the skin at L1 and S3 (sacral dimple level).

First stage of labour

First stage of labour refers to onset of true labour pain to fully dilation of the cervix.

Behavioural responses

In this study behavioural responses refers to activities of the mothers such as grinding of teeth, loud cry, clenching fists, holding tight one is providing care etc, during the first stage of labour.

Primigravid mothers

Primigravid mothers it refers to those pregnant for the first time.

1.6 Assumptions

- Primigravid mothers will have varying level of pain perception.
- Primigravid mothers in labour express various behavioural responses.

1.7 Delimitations

The study is limited to

- Cervical dilation between 3 cm to 7 cm.
- Primigravid mothers.

1.8 Projected outcome

TENS will reducing pain and behavioural responses and enhance the pain and behavioural responses among primigravid mothers.

REVIEW OF LITERATURE

CHAPTER – II

REVIEW OF LITERATURE

Review of literature is a key step in research process. It refers to extensive exhaustive and systematic examination of publication relevant to the research project.

The researcher analysis existing knowledge before dealing into a new area of study, when interpreting the result of the study, and when making judgment about application at a new knowledge in nursing practice

This Chapter deals with in two part

Part I: Review of literature

Part II: Conceptual frame work

Part I

The related literature is organized and presented under the following headings

2.1 Literature related to perception of labour pain

2.2 Literature related to non pharmacological pain relief methods during labour and childbirth.

2.1 Literature related to Perception of Labour Pain

Adebayo Adekunle Akadri and Oluwaseyi Isaiah Odelola, (2018), conducted a cross sectional study to assess labour pain perception among parturient at two tertiary Hospital in south West Nigeria. 132 sample were selected. Among them 86.4 % mothers desired some form of pain relief. The mean age of parturient was 30.6 and pain perception was 7.0.It concluded that gestational age, baby's weight, BMI and occupation had statistically significant ($p = 0.010$) association with pain perception.

Jasleen Kaur and Harbans Kaur, (2017), conducted a pre-experimental study to assess the effectiveness of massage therapy on severity of labour pains and anxiety among parturient mothers admitted in labour room during active phase of labour in Civil Hospital, Falandhar. A sample of 60 mothers were selected by non – probability purposive sampling technique. The finding of the study revealed that the mean difference between pre intervention and post interventional severity of labour pain was 60.25 and anxiety was 15.05 which was statistically significant at $p < 0.001$. It concluded that the message therapy was effective in decreasing the severity of labour pain and anxiety.

Sepideh Gareh Sheyklo, et.al., (2016), conducted a meta-analysis study to assess the effect of entonox for pain management in labour a systematic review were the Department of Obstetrics and Gynecology Dezful University of Medical Science, Dezful Tabri, Iran .With the data base sample were selected with randomized control trials, with a Comparison group study and Meta-analysis of the study the difference was significant ($p < 0.05$). The result of 57.6% mother satisfaction rate show that mother in extonox group has a high level of satisfaction rate. Vaginal childbirth is known as the best method of childbirth but unfortunately, in resent years the prevalence of this type of childbirth.

Agnes Anarado, et.al., (2015), conducted a descriptive cross sectional study to evaluate the knowledge and willingness of prenatal women in enugu southeastern Nigeria to use in labour non-pharmacological pain reliefs were department of nursing sciences, University of Nigeria, Nsukka Enugu campus Enugu state, Nigeria .With a pre test structured questionnaire was interviewer administered to convenient sample of 245 prenatal women at a specialist maternity hospital. The result ($p < 0.001$) the women willingness to use non pharmacological pain strategies in future in labour which is associated which is increased the knowledge of the method and the parity.

Nadine Wickboldt MD, et.al., (2015), conducted a observational single – centered study to determine the continuous assessment of labour pain using handgrip force included 43 parturients. After calibration of the dynamometer for individual hand muscle strength, pain was recorded during early and late labour using a dynamometer and an NRS. All contractions recorded by external tocogram were also registered by the dynamometer. Handgrip force was moderately correlated with pain scores on the NRS. Mean handgrip force during contractions had the highest correlation coefficient (Pearson's r=0.67) compared with peak handgrip force (r=0.56) and area under the curve of handgrip force (r=0.55). The feedback of intensity and duration of pain could optimize patient-controlled remifentantil application for obstetric analgesia and other situations of highly variable pain intensity.

Abby E. Garlock, et.al., (2014), conducted a quasi experimental study to assess the effect of comfort education on maternal comfort and labour pain were piedmont region hospital of western north Carolina .among the pretest / posttest comparison group design were the 80 participant was selected as sample. No significant difference was found in maternal comfort or pain between the intervention group that received comfort education and the control group. Comfort education did

result in change for plans to maintain comfort during labor (p = 0.00), an increased use of comfort measures during labor (p = .000), and an increased probability of continuation with original plans for pain control during labor. Providing education for maintaining comfort during labor can allow women to make informed choices during labor.

Anwalu Muthamed, et.al ., (2011), conducted cross sectional survey study to examine the perception of pain in labour among parturients in Hajia Gambo Sawaba General Hospital at Zaria city. The sample of 51 were selected by accidental sampling technique. The study findings showed that 46 % mothers had mild pain, 37 % had moderate pain, 15 % had severe pain and 2 % had no pain. The research concluded that fear of labour and uncomfortable position were that aggrevating factor of pain. Reassurance helps to reduce the labour pain.

Wendy christiaens, et.al., (2009), conducted cross national comparison study to assess pain acceptance and personal control in pain relief in two maternity care models a national comparison of Belgium and the Netherlands. A women were invites to participate in the study by independent midwives and obstetrician during antenatal visit in 2004 -2005. Two questionnaires were filled out by 611 women, one at 30 weeks of pregnancy and one within the first 2 weeks after child birth either at home or in hospital. However, only women having a hospital birth without obstetric intervention were include in this analysis. A logistic regression analysis has been performed. The personal control of pain relief (p = -0.0340). This can partially be explained by low degree of personal control in pain relief, especially when co-occurring with positive pain attitudes.

Angela Baker, et.al., (2001), conducted a study on perception of labour pain by mothers and their attending midwives in the maternity unit of the Queen Elizabeth hospital, Adelaide at south Australia. A sample of 13 healthy pregnant mothers were selected by the sampling technique. Among them 5 were primipara women and 8 were multipara women. The study result showed that the mean visual analogue scale scores for the mothers during mild, moderate pain was 1.671 and severe pain was 2.157. The mean of mild moderate midwives were significantly ($p<0.05$) lower than severe pain .It concluded that both verbal and non verbal was perceived by the mother were used to assess pain levels.

Gulay Yildirim, et.al., (2000), conducted an experimental study to determine the effect of breathing and skin stimulation techniques on labour pain perception among pregnant mother in SSK Bakirkoy women and childrens Hospital, Turkey. A sample of 40 mothers were selected by non – random sampling. Among them 20 samples were allocated to experimental group and 20 sample to control group. The result of the study shows that the positive feelings about their deliveries in experimental group were 40% and 5 % in control group. The chi square value for difference in pain expression between the two groups was 6.827 and it was statistically significant ($p < 0.001$). It concluded breathing technique was effective on labour pain perception.

2.2 Literature related to non pharmacological pain relief method during labour and child birth

In an intrapartum care, pain management is a prime important task for health care providers. Pharmacologic and non-pharmacologic are the two approaches used for pain management. In Pharmacologic approach, drugs are used for the elimination

of the physical sensation of labor pain, whereas non pharmacologic approaches are mainly focused toward avoidance of pain or suffering. Suffering is a distressing situation characterized by helplessness, loss of control and even fear of death of the mother or baby. Non-pharmacological pain relief methods are

- Acupuncture and acupressure
- Application of heat and cold
- Aromatherapy
- Biofeedback
- Birth companion
- Hydro therapy
- Hypnosis
- Intradermal water blocks
- Maternal movement and positioning
- Music and audio analgesia
- Psycho prophylaxis
- Reflexology
- Relaxation and breathing
- Touch and massage
- Transcutaneous electrical nerve stimulation

Ramamoorthy Veyilmuthu, et.al., (2017), conducted a retrospective study assess the effect of transcutaneous electrical nerve stimulation on labour pain relief among primigravida and multigravida mothers. Department of obstetrics and Gynecology, PGS Hospital, Coimbatore, Tamil Nadu, India. Retrospective study data collected from 1041 women who used tens to cope up pain throughout the labour.

About 88% of women had vaginal delivery and had very good effect in coping up the labour pain and could be used during first stage and second stage of labour.

Ellen D Hodnett, et.al., (2014), conducted a meta analysis study to determine the continuous support for women during childbirth. Lawerence S Bloomberg faculty of nursing university of Toronto, Toronto, Canada. 22 trials involving 15,288 women met inclusion criteria and provided usable outcome data. result are random effect analyses, unless otherwise noted and the continuous support during labour has clinically meaningful benefits for women and infants and no known harm .All women have support throughout labour and birth.

M Belen Conesa Ferrer, et.al., (2013), conducted a correlation descriptive study to assess the effectiveness comparative study analysis women's childbirth satisfaction and obstetrics out comes across two different models of maternity care. There are two university hospital in south eastern pain and convenience sample 204 of the biomedical model 202 of the humanized model in the humanized model of care ($p=0.005$) in the analysis of the result per items statistically difference were found in the 8 of the 9 subscale. The humanized model of maternity care offer better obstetrical outcomes and women's satisfaction scores during the labour, birth and immediate postnatal period than does the biomedical model.

Deepak, Avinash Kaur Rana, et.al., (2013), conducted a quasi experimental study to assess the effect of acupressure on intensity of labour pains and duration of first stage of labour among primigravida mothers. National Institute of Acupressure Research, Training and Treatment, Chandigarh. with a total 60 subject were enrolled and 30 in experimental group and 30 control group and pain score were assessed with numerical pain rating scale and the result were ($p < 0.001$) and it is 0.05 level of

significant . Hence acupressure could be used in clinical practice in order to improve the quality of car in labour and delivery.

Nasser sal sabili, et.al., (2011), conducted a prospective study to be evaluate the effectiveness of TENS on the pregnancy rate in women undergone assisted reproductive technique (ART) and embryo transfer at Tehran. 230 sample were selected, randomly. Clinical pregnancies were documented in 36 of 117 patient (38%) in the TENS group were as pregnancy rate in the control group was 19.8% (23 out of 116) pregnancy rate was highly significant in tens group ($p < 0.005$) MANOVA did not show any difference of demographic, spermparameters and number of egg by good embryo quality between two group ($p > 0.04$).

R.E. Liebano, C.G. Vance, et.al., (2010), conducted a cross sectional study to assess the effect of transcutaneous electrical nerve stimulation and conditioned pain modulation influence the perception of pain in humans. Health and Rehabilitation Science Research Institute, University of Uylster, UK. 60 healthy adult were randomly allocated in two groups CPM puls placebo TENS. There was a significant positive association between PPT during CPM and during actives TENS (r^2 0.46; p=0.003). TENS application increased PPT however, combining CPM and TENS does not increased the CPM effect on PPT is associated with the effect of TENS and PPT.

Julie Bonapace, Nils chailet, et.al., (2009), conducted a multicenter case controlstudy to evaluation of the Bonapace method a specific educational intervention to reduce pain during childbirth. Among Quebec on pain perception during labour delivery compared tradition childbirth training program (TCTPs) and BM with a sample of 25 women. Overall significant lower pain perception for both intensity

(45%, $p < 0.01$) and unpleasantness (46%; $p < 0.01$). These significant difference in pain perception between TCTP and the BM gest that the emphasis on pain modulation and technique during labour combination with child birth pain management.

An –Shine chao, et.al., (2007), conducted a cross sectional study to assess the effectiveness pain relief applying trancutaneous electrical nerve stimulation (TENS) on acupuncture points during the first stage of labour department of Obstetrics and Gynecology, Chang Gung Memorial Hospital and Chang Gang University College of Medical, Tooyuan, Taiwan. A randomized double blind placebo controlled trial. There were 60msample were taken in the first stage of labour and they were random selected of sample of the mother willingness of the using of the same analgesic method for a future childbirth was also significantly different TENS 48 / 50 (96 %) vs TENS placebo 33/50 (66%). Operative delivery was increased outcome were not different. The application of TENS on specific acupuncture points could be non invasive adjunct for pain in the first stage of labour.

Part - II

2.3 Conceptual framework

Conceptual frame work is an organized phenomenon which deals with concepts that are assemble by virtue of their relevance to the common theme.

The conceptual framework used in this study is based on Sr. Callista Roy's Adaptation Model (1963). Roy's considers the recipient of care to be an open, adaptive system and also react to and interact with other system in environment. Dysfunction in one component affect entire system.

It consist of

- Input
- Throughput
- Output

Input

In Roy's system input stimuli which can come from the environment or from within the person. Stimuli are classified focal (immediately confronting the person), contextual (all other stimuli that are present), or residual (non specific, such as cultural belief or attitude about illness). It also include a person's adaptation level (the range of stimuli to which a person can adapt easily). Each person's adaption level is unique and constantly changing.

In this study input refers to stimuli is (focal) the researcher applying the Transcutaneous Electrical Nerve Stimulation (TENS) that electrical impulses through conductive electrodes placed on the skin at L1 and S3 (sacral dimple level), four times a day among primigravid mothers with first stage of labour in intervention group along with obstetrical variables.

Throughput

Throughput makes use of a person adaptive system or effectors (Self – concept mode, Interdependence mode, Physiological mode, Role function mode).

In this study throughput refers to pain relief by means of the pain gate mechanism involves activation (excitation) of the A beta (Aβ) sensory fibres, and by doing so, reduces the transmission of the noxious stimulus from the 'c' fibres, through the spinal cord and hence on to the higher centres. The Aβ fibres appear to appreciate being stimulated at a relatively high rate (in the order of 80 - 130 Hz or pps).

Coping mechanism

Coping mechanism are the process or behaviour pattern that a person uses for self control can be inherited or learned such as regulator and cognator. These are the subsystem of the persons adaptive system.

Regulator

This regulator subsystem consist of input stimuli, can come from the external environment or from within the person. The internal process including chemical, neural, endocrine transmit. The stimuli causing out in the way of physiological responses.

In this study input stimuli by the researcher in the way of giving application of TENS. It will cause neural stimuli to activation (excitation) of the A beta (Aβ) sensory fibres, and by doing so, reduces the transmission of the noxious stimulus from the 'c' fibres, through the spinal cord and hence on to the higher centres. The Aβ fibres appear to appreciate being stimulated at a relatively high rate (in the order of 80 - 130 Hz or pps), will cause output responses such as change in the pain and behavoiural responses.

Cognator

The cognator subsystem regulates self-concept, role function, interdependence and control internal processes related to higher brain function, such as perception, information, processing, judgment and emotion.

In this study cognator subsystem control internal process related to higher brain function such as perception of the pain in different manner and the way to express the emotion (express the pain verbally, take deep breath, request to see family member, look tired, rolls head from side to side, lies on her left side, relaxes in between the contraction, verbally express her needs, allow to assess vital sign and FSH).

Adaptive mode

Adaptive mode is the part of the internal processes and act as a system effector and to adapt with the stimuli and express in the stimuli and express in the way of behaviour it include self – concept mode, interdependence mode, physiological mode, role function mode. It can be identified either adaptive or inadaptive responses by adaptive mode.

In this study physiological function in the adaptive mode is the change in the pain level and in self concept, mothers believes and feels about one self in the way of obey the researcher words (physical self) and in role function, the mothers identify the role in a given situation is a secondary level (as a mother) and in interdependence with researcher by the way of seeking help and attention to the advice given by the researcher in order to meet their needs.

Output

Is a outcome of the system – persons behaviour. Output may be effective response or ineffective responses.

In this study effective response refers to changes in pain level and behavioural responses. Ineffective responses is intervention does not attain the goal (no change in the pain level and behavioural responses) and it is measure by Numerical pain scale and Modified structured observation checklist for behavioural responses among primigravid in both interventional group and control group. Mothers who is receiving TENS application had effective response compare with control group mothers.

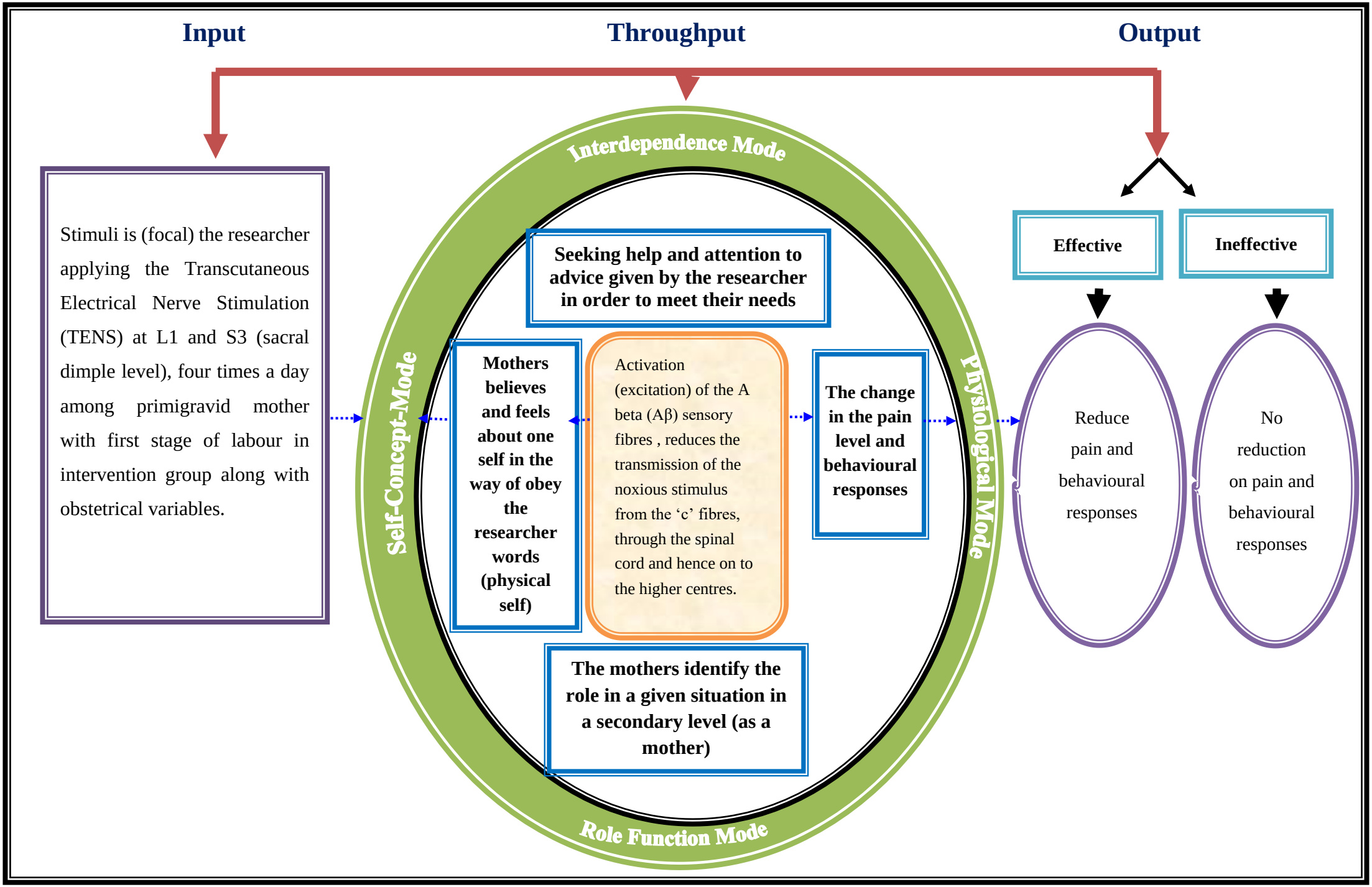


Figure 1: Modified Sr.Callista Roy's Adaptation Model (RAM)– 1963

RESEARCH METHODOLOGY

CHAPTER – III

RESEARCH METHODOLOGY

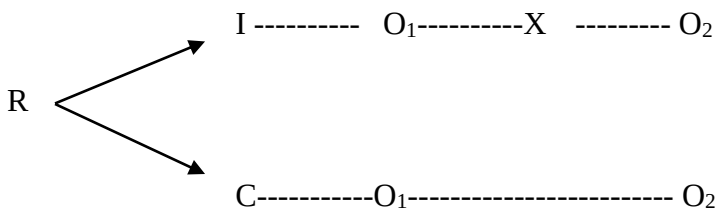
Research methodology includes the research design, variables of the study, setting, population, sample criteria for sample collection, sampling technique, sample size, description of the tool and scoring method, content validity, pilot study, procedure for data collection, plan for statistical analysis, protection of human rights and schematic representation of the study. The present study aimed to evaluate the effectiveness of TENS on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.

3.1 Research approach

The research approach is the most essential part of any research. The entire study was based on it **Quantitative evaluative research approach** was used to evaluate the effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) application on pain and behavioural responses.

3.2 Research design

The design is in this study is true experimental design (pre test – post test control group) design.



R - Randomization

I – Intervention group

C - Control group

O_1 - Pre test level of Pain and Behavioural responses on both intervention and control group.

X - Transcutaneous Electrical Nerve Stimulation (TENS) application, four times a day.

O_2 - Post test level of Pain and Behavioural responses on both intervention and control group.

3.3 Research variables

1. Independent variable

In this study the independent variable is (TENS) Transcutaneous Electrical Nerve Stimulation among primigravid mothers during first stage of labour.

2. Dependent variable

In this study dependent variable is pain and behavioural responses among primigravid mothers during first stage of labour.

3. Socio demographic variables

Socio demographic variables consist of Age in years, Religion, Types of family, Place of domicile, Food habit, Education, Occupation, Monthly income.

4. Obstetrical variables

Obstetrical variables consist of Gestation age in weeks, Uterine contraction, Dilatation of the cervix, Maternal temperature, Maternal pulse rate, Maternal respiration, Maternal blood pressure, Fetal heart rate, Position of the fetal, Presenting part, Duration of first stage of labour.

3.4 Setting of the study

The setting is selected based on acquaintance of the investigator with institutions, feasibility of conducting the study, availability of the sample, permission

and proximity of the setting to the investigation. The study was conducted in labour ward at Government Rajaji Hospital, Madurai**.** At present there are 3125 beds available in Multispecialty Medical College attached hospital and it provide comprehensive care to all.

The sanctioned bed for Obstetrics and Gynaecology Department is 415 and 125 allotted for Labour ward and bed occupancy is 100%. In an average 40 - 45 deliveries were conducted per day and in an average 1100 - 1200 mothers delivered by Normal vaginal delivers in every month.

3.5 Population

Target population

Primigravid mothers in the first stage of labour.

Accessible population

Primigravid mothers admitted in labour ward at Government Rajaji Hospital, Madurai.

3.6 Sample

The study comprised of primigravid mothers admitted in labour ward at Government Rajaji Hospital, Madurai and fulfilled the inclusion criteria for sample selection.

3.7 Sample size

The sample of the study is comprised of 60 primigravid mothers (30 intervention group and 30 control group).

3.8 Sampling technique

Probability sampling technique - Simple random (Flip a coin) method.

3.9 Criteria for sample selection

Inclusion criteria

1. Primigravid mothers with 38 weeks to 40 weeks gestation.
2. Cervical dilatation 3cm to 7cm in first stage of labour.

Exclusion criteria

1. Pre term and post term labour mothers.
2. Mothers with Pacemaker or any other implanted electronic devices.
3. Mothers who have an allergic response to the electrodes, gel or tape.
4. Mothers with skin disorder.

   e.g. dermatitis, eczema.

3.10 Description of research tool

Development of tool for data collection

The following tools are includes in this study. According to that the objectives of the study, the tool comprised to section.

Section I

Part - A

Socio Demographic variables

Socio demographic variables consist of Age in years, Religion, Types of family, Place of domicile, Food habit, Education, Occupation, Monthly income.

Part - B

Obstetrical variables

Obstetrical variables consist of Gestation age in weeks, Uterine contraction, Dilatation of the cervix, Maternal temperature, Maternal pulse rate, Maternal

respiration, Maternal blood pressure, Fetal heart rate, Position of the fetal, Presenting part, Duration of first stage of labour.

Section - II

Modified Structured checklist

Modified structured observation checklist on behavioural responses and Numerical pain scale.

3.11 Scoring procedure

Section – A: There was no score allotted for socio demographic variables.

Section – B: Observation checklist consist of 20 items questionnaire. Which is rated below

Scoring interpretation

A) Modified Structured observational checklist

The structured observational checklist is used to assess the behavioural responses of the primigravid mothers during the first stage of labour. This tool consist of 20 items. There were three divisions.

A - During contraction

B - Between contractions

C - Manifestation of participation

The maximum possible score was 20 and minimum is 0 and is separated by positive and negative responses.

B) Numerical pain scale

Henry K. Beecher. It consisted of a 10 cm scale divided into five parts.

0 – No pain

1 - 3 – Mild pain

4 - 6 – Moderate pain

7 - 9 – Severe pain

≥10 – worst pain possible

3.12 Testing of tool

Content validity

Validity refers to the degree to which an instrument measures what it is supposed to measure the content validity, the questionnaire was given to experts from the field of Obstetrics and Gynaecological Nursing, Professor and Head of Department of Obstetrics and Gynaecological Nursing, Government Rajaji Hospital, Madurai and statistician for their opinion and suggestion. Based on their valuable suggestion, reframing tool was done. All the experts their consensus and the tool was finalized. Tool was translated in to tamil and retranslated to English to confirm meaning of the tool.

Reliability

The reliability of an instrument is the degree of consistency with which it measures the attribute and it is supposed to be measuring over a period of time .The TENS application among primigravid mothers tool is modified structured checklist for behavioural responses and numerical pain scale one which underwent test retest for reliability. The pain score reliability correlation coefficient value is 0.87 and checklist for behavioural responses reliability score 0.84. The correlation coefficient is very high and it is a good tool for assessing the effectiveness of TENS application on pain and behavioural responses among primigravid mother during first stage of labour, at labour ward.

3.13 Pilot study

Formal permission was obtained from the ethical committee, Madurai Medical College, Madurai-20 and Obstetrics and Gynaecological Nursing Department Government Rajaji Hospital, Madurai-20. Pilot study was conducted from 25-02-2019 to 02-03-2019 in Labour ward at Government Rajaji Hospital, Madurai -20. Informed oral and written consent was obtained from the samples and the base line data was collected. 10 samples was taken and assign the samples into (5). Intervention group and (5) control group who met the inclusion criteria and pre test was conducted for both groups using the TENS application on pain and behavioural responses on first stage labour among primigravid mothers and the score was recorded. Inform the procedure to the patients Routine care with intervention was given to intervention group and routine care only was given to control group on the 6^{th} day by using TENS application with use of modified structured checklist for behavioural responses and numerical pain scale for first stage of labour.

3.14 Ethical consideration

The study was conducted after the approval from the Ethical committee, Madurai Medical College, Madurai-20. All the respondents of the study was carefully informed about the purpose of the study and their part during the study and how the privacy is protected genuinely. Confidentiality was ensured and written permission was obtained from all participants of the study.

3.15 Data collecting procedure

The study was conducted after obtained permission from the ethical committee, Madurai Medical College, Madurai-20 and Head of the Obstetrics and Gynaecological Nursing Department Government Rajaji Hospital, Madurai-20. From

18.03.2019 to 12.04.2019, the objectives of the study was explained clearly to the Head of the Department (Obstetrics and Gynaecology) and other paramedical personnel, who are posted in the labour ward, before starting the data collection in order to get the cooperation from the study. Study session was started with Introduction of self, Establishing rapport, Explanation regarding the purpose and the benefits of participating during the whole study programmes. Informed written and oral consent was obtained from the sample and the base line data was collected. 60 samples was selected by using Probability sampling technique - Simple random (Flip a coin) method and assigned the sample into (30) Intervention group (30) control group who met the inclusion criteria and pretest was done for both groups, intervention was given (TENS) and pain and behavioural responses on first stage labour among primigravid mothers was assessed by numerical pain scale for pain and modified structural checklist for behavioural responses.

Intervention: Transcutaneous Electrical Nerve Stimulation.

Explain the procedure to the mothers. Check the machine is turned off before placing the pads on your back. Place two of the pads on either side of mothers spine, with the tops of the pads at about lumbar 1 level. Place the other two lower down, at about the level of the sacral dimples level on mothers lower back. Switch the machine on, starting with the controls at the lowest setting. Turn them up gradually as your contractions get stronger, or when the pain in mothers get worse. Block afferent fibers and preventing pain to travel from uterus to spinal cord synapses, and facilitate release of endorphins use the boost button at the peak of each contraction. The boost function result in more intense, wave – like tingling or buzzing sensation. Remember to turn off the boost button again when the contraction has ended.

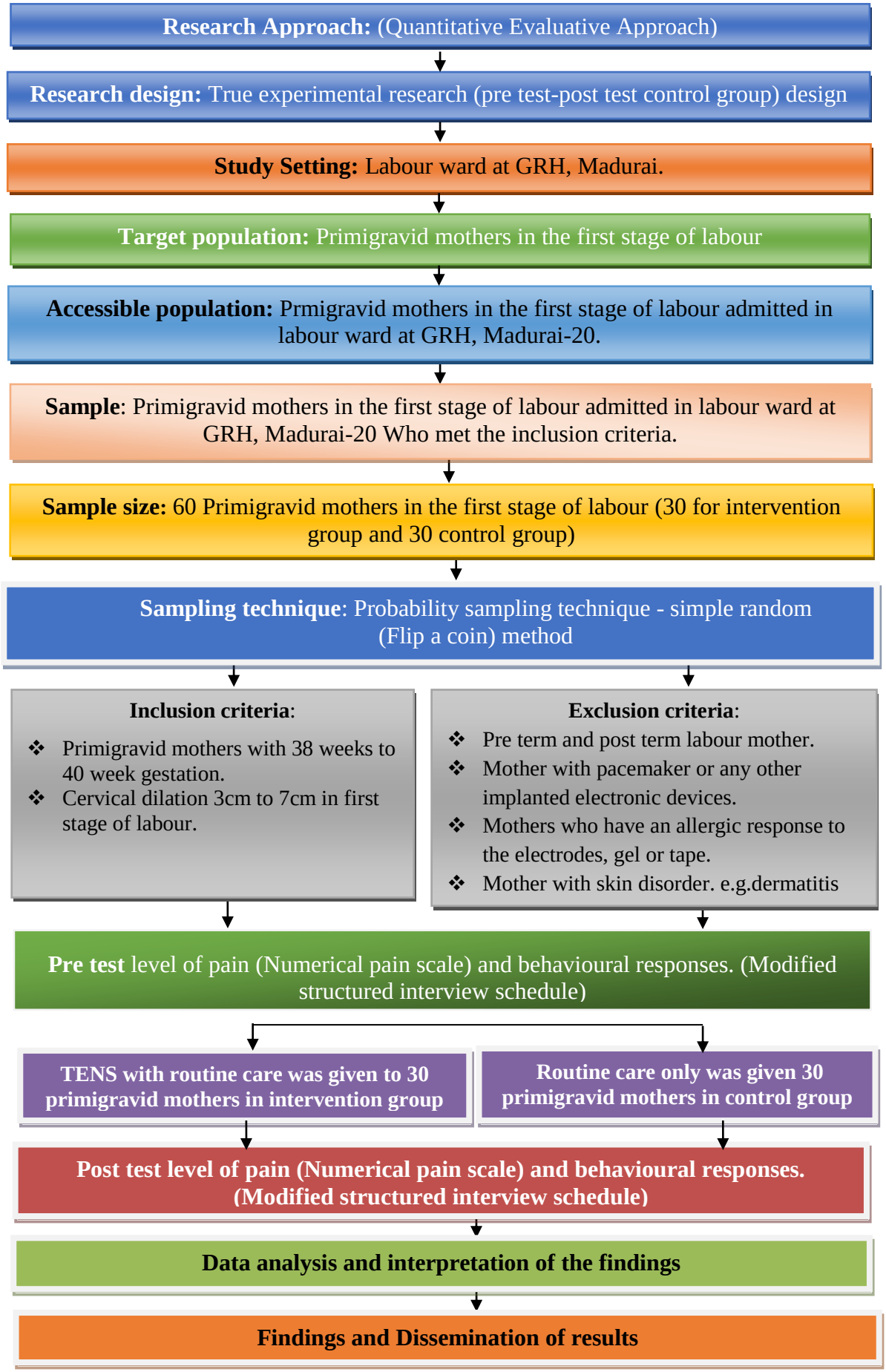
3.16 Plan for data analysis

Statistical analysis was done by using descriptive and inferential statistics. Socio demographic variable of the subject was analyzed using the methods of frequency and percentage distribution. Paired 't' test was used to evaluate the effectiveness of TENS application on pain and behavioural responses among primigravid mother during first stage of labour, at labour ward. Chi-square test was used to find out the association between the effectiveness of TENS application on pain and behavioural responses among primigravid mother during first stage of labour with selected socio demographic and obstetrical variables. Karl pearson coefficient of correlation was used to find out the correlation of between level of pain and behavioural responses among primigravid mothers during first stage of labour.

3.17 Protection of human rights

- The study was conducted after getting approval from the ethical committee of the Madurai Medical College, Madurai.
- The formal approval was obtained from the Head of the Obstetrics and Gynaecological Nursing Department Government Rajaji Hospital, Madurai.
- Informed oral and written oral and written consent was obtained from the subject and all information that is to be collected from the subjects was kept confidential at all times.
- Confidentiality was maintained throughout the study.
- Assurances was given that they can with draw at any times if they wish.
- Benefit of participating in this study was explained to all subjects and anonymity was maintained throughout the study.

3.18 Schematic Representation of Methodology



DATA ANALYSIS AND INTERPRETATION

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

Analysis is the process of categorizing, ordering, manipulating and summarizing of data to obtain an answer to the research question. The purpose of the analysis is to reduce the data intelligible and interpretable form, so that relation for the research problem can be studied and tested. In this chapter the data collected were edited, tabulated, analyzed and interpreted.

The analysis and interpretation of the data was organized under the following sections

Section I

Distribution of primigravid mothers during first stage of labour and their selected socio demographic and obstetrical variables, both in intervention group and control group

Section – II

Description of pre test level of pain and behavioural responses among primigravid mothers during first stage of labour in intervention group and control group

Section – III

Effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) on level of pain and behavioural responses among primigravid mother during first stage of labour in intervention group and control group

Section– IV

Description of association between the post test level of pain and behavioural responses among primigravid mothers during first stage of labour with their selected socio demographicand obstetrical variables in intervention group and control group.

Section– V

Description correlation of between level of pain and behavioural responses among primigravid mothers during first stage of labour with their selected socio demographicand obstetrical variables in intervention group and control group.

Section –I

Distribution of primigravid mothers during first stage of labour and their selected socio demographic and obstetrical variables, both in intervention group and control group

Table: 1

Frequency and percentage distribution of primigravid mothers during first stage of labour with their selected socio demographic variables, both in intervention group and control group.

n=60

Demographic variables		Group				χ^2
		Intervention(n=30)		Control(n=30)		
		f	%	f	%	
Age	< 18 years	0	0.00%	0	0.00%	χ2=1.66 p=0.19 (NS)
	19 -23 years	18	60.00%	13	43.33%	
	24 -28 years	12	40.00%	17	56.67%	
	> 28 years	0	0.00%	0	0.00%	
Religion	Christian	6	20.00%	6	20.00%	χ2=0.00 p=1.00 (NS)
	Hindu	24	80.00%	24	80.00%	
	Muslim	0	0.00%	0	0.00%	
Types of family	Nuclear	16	53.33%	18	60.00%	χ2=0.27 p=0.60 (NS)
	Joined	14	46.67%	12	40.00%	
	Extended	0	0.00%	0	0.00%	
Place of domicile	Rural	12	40.00%	11	36.67%	χ2=0.07 p=0.79 (NS)
	Urban	18	60.00%	19	63.33%	
	Sub urban	0	0.00%	0	0.00%	
Food habits	Vegetarian	8	26.67%	8	26.67%	χ2=0.009 p=1.00 (NS)
	Non vegetarian	22	73.33%	22	73.33%	
	Mixed	0	0.00%	0	0.00%	

Education	Non formal education	0	0.00%	0	0.00%	$\chi 2=0.62$ p=0.73 (NS)
	Primary education	13	43.34%	16	53.33%	
	Higher Secondary education	13	43.33%	11	36.67%	
	Graduate	4	13.33%	3	10.00%	
Occupation	Homemaker	20	66.67%	18	60.00%	$\chi 2=0.50$ p=0.77 (NS)
	Cooly	6	20.00%	6	20.00%	
	Private employee	4	13.33%	6	20.00%	
	Government employee	0	0.00%	0	0.00%	
	Self employee	0	0.00%	0	0.00%	
Monthly income	≤ Rs.5000	4	13.33%	7	23.33%	$\chi 2=4.31$ p=0.22 (NS)
	Rs.5001-Rs.10000	14	46.67%	18	60.00%	
	Rs.10001-Rs.15000	6	20.00%	3	10.00%	
	≥ Rs.15001	6	20.00%	2	6.67%	

The above table 1 depicts the frequency and percentage distribution of primigravid mothers during first stage of labour with their selected socio demographic variables, both in intervention group and control group.

With respect to age, in intervention group, majority of the subjects, 18 (60 %) were had between 19 – 23 years, 12 (40 %) was had between 24 -28 years and none of them less than 18 or more than 28 years, whereas in control group, majority of the subjects, 17 (56.67 %) were had between 24-28 years, 13 (43.33 %) was had between 19-23 years and none of them less than 18 years or more than 28 years.

Based on the religion, both in intervention group and control group, majority of the subjects, 24 (80%) were belongs to Hindu, 6 (20 %) was Christian and none of them Muslim.

While determining types of family, in intervention group, majority of the subjects, 16 (53.33 %) were nuclear family, 14 (46.67 %) was joined family and none extended family, whereas in control group, majority of the subjects, 18 (60 %) were nuclear family, 12 (40 %) was joined family and none extended family.

While discussing the place of domicile, in intervention group, majority of the subjects, 18 (60%) were hailed from urban area, 12 (40 %) was hailed from rural area and none of them from sub urban area, whereas in control group, majority of the subjects, 19 (63.33 %) were hailed from urban area, 11 (36.67 %) was hailed from rural area and none of them from sub urban area.

When comparing to the food habits,both in intervention group and control group, majority of the subjects, 22 (73.33%) were non-vegetarian, 8 (26.67 %) were vegetarian and none of them mixed food habits.

While determining the education status, in intervention group, majority of the subjects, 13 (43.34 %) were studied up to primary education, 13 (43.34 %) were studied up to secondary education, 4 (13.33%) were studied up to graduate and none of them non formal education, whereas in control group, majority of the subjects, 16 (53.33 %) were studied up to primary education, 11(20 %) was studied up to higher secondary education,3(10.00%) was studied up to graduate and none of them non formal education.

While illustrating the occupation, in intervention group, majority of the subjects, 20 (66.67 %) were homemaker, 6 (20 %) was coolie, 4 (13.33%) was private employee none of them and government employee or self employee, whereas in control group, majority of the subjects, 18 (60 %) were homemaker, 6 (20 %) were coolie and 6 (20 %) was private employee and none of them government employee or self employee.

As far as to concern of income of the family per month, in intervention group, majority of the subjects, 14 (46.67 %) were earned between Rs.5001-Rs.10000 or 4 (13.33 %) were earned less than Rs.5000,6 (20 %) were earned between Rs.10001- Rs.15000, 6 (20%) were earned more than Rs.15001, whereas in control group, majority of the subjects,18 (60 %) were earned between Rs.5001-Rs.10000, 7 (23.33 %) were earnedless than Rs.5000, 3 (10 %) were earned between Rs.10001-Rs.15000, 2 (6.67%) were earned more than Rs. 15001.

Table: 2

Frequency and percentage distribution of primigravid mothers during first stage of labour with their selected obstetrical variables, both in intervention group and control group

n=60

Obstetrical variable		Group				$\chi 2$
		Intervention(n=30)		Control(n=30)		
		f	%	f	%	
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	$\chi 2$=0.07 p=0.79 (NS)
	38-40 weeks	19	63.33%	18	60.00%	
	> 40 weeks	11	36.67%	12	40.00%	
Uterine contraction	Mild	0	0.00%	0	0.00%	$\chi 2$=0.63 p=0.42 (NS)
	Moderate	17	56.67%	20	66.67%	
	Severe	13	43.33%	10	33.33%	
Dilatation of the cervix	2-4 cm	13	43.33%	18	60.00%	$\chi 2$=1.66 p=0.19 (NS)
	4-6 cm	17	56.67%	12	40.00%	
	6-8 cm	0	0.00%	0	0.00%	
	8-10 cm	0	0.00%	0	0.00%	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	$\chi 2$=0.00 p=1.00 (NS)
	37.5•-38.4•	30	100.00%	30	100.00%	
	≥ 38.5•	0	0.00%	0	0.00%	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	$\chi 2$=0.00 p=1.00 (NS)
	80-100 bpm	30	100.00%	30	100.00%	
	≥ 110 bpm	0	0.00%	0	0.00%	
Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	$\chi 2$=0.10 p=0.75 (NS)
	13-16 breath per minute	6	20.00%	7	23.33%	
	17-22 breath per minute	24	80.00%	23	76.67%	
	≥ 23 breath per minute	0	0.00%	0	0.00%	
Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	$\chi 2$=0.00 p=1.00 (NS)
	100/70 − 130/90 mmHg	30	100.00%	30	100.00%	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	

Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	$\chi 2=1.83$ p=0.40 (NS)
	110-120 bpm	0	0.00%	1	3.33%	
	120-130 bpm	18	60.00%	14	46.67%	
	130-140 bpm	12	40.00%	15	50.00%	
Position of the fetal	Left Occiput Anterior	9	30.00%	12	40.00%	$\chi 2=2.62$ p=0.26 (NS)
	Right Occiput Anterior	18	60.00%	12	40.00%	
	Left Occiput Posterior	3	10.00%	6	20.00%	
	Right Occiput Posterior	0	0.00%	0	0.00%	
Presenting part	Vertex presentation	30	100.00%	29	96.67%	$\chi 2=1.01$ p=0.31 (NS)
	Breech presentation	0	0.00%	1	3.33%	
	Face presentation	0	0.00%	0	0.00%	
Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	$\chi 2=0.80$ p=0.37 (NS)
	11-14 Hours	21	70.00%	24	80.00%	
	15-17 Hours	9	30.00%	6	20.00%	
	≥ 18 Hours	0	0.00%	0	0.00%	

The above table 2 depicts the frequency and percentage distribution of primigravid mothers during first stage of labour with their selected obstetrical variables, in intervention groups and control groups.

While discussing weeks of gestation, in intervention group, majority of the subjects, 19 (63.33 %) were had between 38-40 weeks, 11 (36.67 %) were had more than 40 weeks and none of them had less than 38 weeks, whereas in control group, majority of the subjects, 18 (60 %) were had between 38-40 weeks, 12 (40 %) were had more than 40 weeks and none of them hadless than 38 weeks

Based on the uterine contraction, in intervention group, majority of the subjects, 17 (56.67 %) were had moderate level of uterine contraction, 13 (43.33 %) was had severe level of uterine contraction and none of them had mild level of uterine contraction, whereas in control group, majority of the subjects, 20 (66.67 %) were had

moderate level of uterine contraction, 10 (33.33 %) was had severe level of uterine contraction and none of them had mild level of uterine contraction.

While considering the dilation of the cervix, in intervention group**,** majority of the subjects, 17 (56.67 %) were had between 4 - 6 cm, 13 (43.33 %) was had between 2-4 cm and none of them had between 6- 8 cm or 8 – 10 cm, whereas in the control group, majority of the subjects, 18 (60 %) were had between 2 - 4 cm, 12 (40 %) was had between 4-6 cm and none of them had between 6- 8 cm or 8 – 10 cm.

Related to maternal temperature, in intervention group, majority of the subjects, 30 (100 %) were had between 37.5^{o}c-38.4^{o}c and none of them had less than 36^{o}c and more than 38.5^{o}c, whereas in control group, majority of the subjects, 30 (100 %) were had between 37.5^{o}c - 38.4^{o}c and none of them had less than 36^{o}c and more than 38.5^{o}c.

Related to maternal pulse rate, in intervention group, majority of the subjects, 30 (100 %) were had between 80-100 bpmand none of them had less than 70 bpm or more than 110 bpm, whereas in control group, majority of the subjects, 30 (100 %) were had between 80-100 bpm and none of them had less than 70 bpm or more than 110 bpm.

Related to maternal respiration rate, in intervention group, majority of the subjects,24 (80 %) were had between 17-22 bpm, 6 (20 %) was had between 13- 16 bpm and none of them had less than 12 bpm or more than 23 bpm, whereas in control group, majority of the subjects, 23 (76.67 %) were had between 17-22 bpm, 7 (23.33 %) was had between 13-16 bpm and none of them had less than 12 bpm or more than 23 bpm.

Related to maternal blood pressure, in intervention group, majority of the subjects, 30 (100 %) were had between 100/70 − 130/90 mmHg and none of them had less than 90/60 mmHg or more than 140/100 mmHg, whereas in control group,

majority of the subjects, 30 (100 %) were had between 100/70 − 130/90 mmHg and none of them had more than 90/60 mmHg or less than 140/100 mmHg.

While discussing fetal heart rate, in intervention group, majority of the subjects, 18 (60 %) were had between 120 – 130 bpm, 12 (40 %) were had between 130 – 140 bpm and none of them had between 100 – 110 bpm or110 – 120 bpm, whereas in control group, majority of the subjects, 15 (50 %) were had between 130 – 140 bpm , 14 (46.67 %) were had between 120 – 130 bpm, 1 (3.35 %) was had between 110 -120 bpm and none of them had between 100 – 110 bpm.

While considering position of the fetal, in intervention group, majority of the subjects, 18 (60 %) were had right occiput anterior, 9 (30 %) were had left occiput anterior, 3 (10 %) were had left occiput posterior and none of them had right occiput posterior, whereas in control group, majority of the subjects, 12 (40 %) were had right occiput anterior, 12 (40%) were had left occiput anterior, 6 (20 %) were had left occiput posterior and none of them had right occiput posterior.

While considering presenting part, in intervention group, majority of the subjects, 30 (100 %) were had vertex presentation and none of them had breech presentation or face presentation, whereas in the control group, majority of the subjects, 29 (96.67 %) were had vertex presentation, 1 (3.33%) was had breech presentation and none of them had face presentation.

While considering duration of first stage of labour, in intervention group, majority of the subjects, 21 (70 %) were had in between 11- 14 hours, 9 (30 %) was had in between 15-17 hours and none of them had 10 hours and less than 10 hours or 18 hours and more than 18 hours, whereas in the control group, majority of the subject 24 (80 %) were had in between 11- 14 hours, 6 (20 %) was had in between 15-17 hours and none of them had 10 hours and less than 10 hours or 18 hours and more than 18 hours.

Section – II

Description of pre test level of pain and behavioural responses among primigravid mothers during first stage of labour in intervention group and control group

Table -3

Frequency and percentage distribution of pre test level of pain among primigravid mothers during first stage of labour in intervention group and control group.

n=60

Level of pain	Intervention group Pre test		Control group Pre test		$\chi 2$
	f	%	f	%	
No pain	0	0.00%	0	0.00%	$\chi 2=0.30$ p=0.58 (NS)
Mild	0	0.00%	0	0.00%	
Moderate	9	30.00%	11	36.67%	
Severe	21	70.00%	19	63.33%	
Worst pain	0	0.00%	0	0.00%	

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 3 states the distribution of level of pain among primigravid mothers during first stage of labour in intervention group and control group.

In intervention group, majority of the subjects, 21(70 %) were had severe pain,9 (30 %) was had moderate pain and none of them had no pain or mild pain or worst pain.

In control group, majority of the subjects, 19 (63.33 %) were had severe pain, 11 (36.67 %) was had moderate pain and none of them had no pain or mild pain or worst pain.

The chi square test revealed that, **($\chi 2= 0.30$), (p =0.58)**, there was no statistically significant difference between pre test level of pain in intervention group and control group.

Table -4

Comparison of mean score, standard deviation and mean score difference of pre test level of pain among primigravid mothers during first stage of labour in intervention group and control group

level of pain	Mean	SD	Mean difference	Student 's independence 't' test
Intervention group	7.00	1.39	0.33	t=1.03 p=0.30 (NS)
Control group	6.67	1.09		

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 4 depicts Comparison of mean score, standard deviation and mean score difference of pre test level of pain among primigravid mothers during first stage of labourin intervention group and control group

In intervention group, pre test mean score was 7.00 with standard deviation 1.39, whereas in control group pre test mean score was 6.67 with standard deviation 1.09 and the mean difference was 0.33. The student independent 't' test revealed that **(t=1.03), (p=0.30)**level.

The student independent 't' test revealed that, there was no statistically significant difference between the pre test level of pain among primigravid mothers during first stage of labour in intervention group and control group.

Table -5

Frequency and percentage distribution of pre test behavioural responses among primigravid mothers during first stage of labour in intervention group and control group.

n= 60

Behavioural responses	Intervention group Pre test		Control group Pre test		$\chi 2$
	f	%	f	%	
Poor	12	40.00%	10	33.33%	$\chi 2$=0.28
Moderate	18	60.00%	20	66.67%	p=0.59
Good	0	0.00%	0	0.00%	(NS)

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 5 states the distribution of behavioural responses among primigravid mothers during first stage of labour in intervention group and control group.

In intervention group, majority of subjects, 18 (60 %) were had moderate behavioural responses, 12 (40 %) was had poor behavioural responses and none of them had good behavioural responses.

In control group, majority of subjects, 20 (66.67 %) were had moderate behavioural responses, 10 (33.33 %) was had poor behavioural responses and none of them had good behavioural responses.

The chi square test revealed that, **($\chi 2$= 0.28), (p =0.59)**, there was no statistically significant difference between pre test behavioural responses in intervention group and control group.

Table - 6

Comparison of mean score, standard deviation and mean score difference of pre test behavioural response among primigravid mothers during first stage of labour in intervention group and control group

Behavioural responses	Mean	SD	Mean difference	Student 's independence 't' test
Intervention group	10.70	1.34	0.17	**t=0.40 p=0.001*** (S)**
Control group	10.87	1.81		

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 6 depicts Comparison of mean score, standard deviation and mean score difference of pre test behavioural responses among primigravid mothers during first stage of labour in intervention group and control group

In intervention group, pre test mean score was 10.70 with standard deviation1.34, whereas in control group pre test mean score was 10.87 with standard deviation 1.81 and the mean difference was 0.17. The student independent 't' test revealed that (**t=0.40), (p=0.001)** level.

The student independent 't' test revealed that, there was statistically significant difference between the pre test behavioural responses among primigravid during first stage of labour mothers in intervention group and control group.

Section – III

Effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) on level of pain and behavioural responses among primigravid mother during first stage of labour in intervention group and control group

Table -7

Frequency and percentage distribution of pre test and post test level of pain among primigravid mothers during first stage of labour in intervention group

n=30

S. no	Level of pain	Pre test		Post test		Extended McNemar's test
		f	%	f	%	
1.	**No pain**	0	0%	0	0%	**$\chi 2$= 22.63 p=0.001***(S)**
2.	**Mild**	0	0%	8	26.67%	
3.	**Moderate**	9	30%	22	73.33%	
4.	**Severe**	21	70%	0	0%	
5.	**Worst pain**	0	0%	0	0%	

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 7 states the distribution of pre test and post test of level of pain among primigravid mothers during first stage of labour in intervention group.

In intervention group, the pre test level of pain, majority of the subjects, 21(70 %) were had severe pain, 9 (30 %) was had moderate pain and none of them had no pain or mild pain or worst pain, whereas the post test level of pain, majority of the subjects, 22 (73.33%) were had moderate pain, 8 (26.67 %) was had mild pain and none of them had no pain or severe pain or worst pain.

Extended McNemar's test revealed that, **($\chi 2$= 22.63), (p=0.001)** there was statistically significant difference between the pre test level of pain among primigravid mothers during first stage of labour in intervention group.

Table - 8

Frequency and percentage distribution of pre test and post test level of pain among primigravid mothers during first stage of labour in control group

n=30

S. no	Level pain	Pre test		Post test		Extended McNemar's test
		f	%	f	%	
1.	**No pain**	0	0%	0	0%	$\chi 2$= 2.27 p=0.16 (NS)
2.	**Mild**	0	0%	0	0%	
3.	**Moderate**	11	36.67%	15	50%	
4.	**Severe**	19	63.33%	15	50%	
5.	**Worst pain**	0	0%	0	0%	

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 8 states the pre test and post test level of pain among primigravid mothers during first stage of labour in control group.

In control group, the pre test level of pain, majority of subjects, 19 (63.33 %) were had severe pain, 11 (36.67 %) was had moderate pain and none of them had no pain or mild pain or worst pain, whereas in the post test level of pain, majority of the subjects, 15 (50 %) were had severe pain, 15 (50 %) was had moderate pain and none of them had no pain or mild pain or worst pain.

Extended McNemar's test revealed that, **($\chi 2$=2.27), (p=0.16)** there was no statistically significant difference between the pre test level of pain among primigravid mothers during first stage of labour in control group.

Table – 9

Comparison of mean score, standard deviation and mean score difference of pre test and post test level of pain among primigravid mothers during first stage of labour in intervention group and control group

Level of pain	Pre test		Post test		Mean difference	Student paired t-test
	Mean score	SD	Mean score	SD		
Intervention group	7.00	1.39	4.30	0.99	2.70	**t=7.58, p=0.001*** (S)**
Control group	6.67	1.09	6.10	1.42	0.57	t=1.76, p=0.09 (NS)

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 9 depicts Comparison of mean score, standard deviation and mean score difference of pre test and post test level of pain among primigravid during first stage of labour mothers in intervention group and control group

In intervention group, pre test mean score was 7.00 with standard deviation 1.39, whereas post test mean score was 4.30 with standard deviation 0.99 and the mean difference was 2.70. The student paired 't' test revealed that (**t=5.58), (p=0.001)**level.

The student paired 't' test revealed that, there was statistically significant difference between the pre test and post test level of pain among primigravid mothers during first stage of labour in intervention group

In control group, pre test mean score was 6.67 with standard deviation 1.09, whereas post test mean score was 6.10 with standard deviation 1.42 and the mean difference was 0.57 . The student paired 't' test revealed that (**t=1.76), (p=0.09)** level.

The student paired 't' test revealed that, there was statistically no significant difference between the pre test and post test level of pain among primigravid mothers during first stage of labour in control group.

Table- 10

Frequency and percentage distribution of pre test and post test behavioural responses among primigravid mothers during first stage of labour in intervention group.

n=30

S. No	Behavioural responses	Pre test		Post test		Extended McNemar's test
		f	%	f	%	
1.	Poor	12	40%	0	0%	$\chi 2=25.42$ p=0.001*** (S)
2.	Moderate	18	60%	8	26.67%	
3.	Good	0	0%	22	73.33%	

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 10 states the distribution behavioural responses among primigravid mothers during first stage of labour in intervention group.

In intervention group, pre test behavioural responses, majority of the subjects, 18 (60 %) were had moderate behavioural responses, 12 (40 %) was had poor behavioural responses and none of them had good behavioural responses, whereas post test behavioural responses, majority of the subjects, 22 (73.33 %) were had goodbehavioural responses, 8 (26.67 %) was had moderatebehavioural responses and none of them had poorbehavioural responses.

Extended McNemar's test revealed that**, ($\chi 2=25.42$), (p=0.001)** there was statistically significant difference between the pre test and post test behavioural responses among primigravid mothers during first stage of labour in intervention group.

Table -11

Frequency and percentage distribution of pre test and post test behavioural responses among primigravid mothers during first stage of labour in control group.

n=30

S. no	Behavioural responses	Pre test		Post test		Extended McNemar's test
		f	%	f	%	
1.	**Poor**	10	33.33%	7	23.33%	$\chi 2$=2.25
2.	**Moderate**	20	66.67%	23	76.67%	P=0.13
3.	**Good**	0	0%	0	0%	(NS)

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 11 states the distribution of behavioural responses among primigravid mothers during first stage of labour in control group.

In control group, pre test behavioural responses, majority of the subjects, 20 (66.67%) were had moderate behavioural responses, 10 (33.33 %) was had poor behavioural responses and none of them had good behavioural responses, whereas post test behavioural responses, majority of the subjects, 23 (76.67 %) were had moderate behavioural responses, 7 (23.33 %) was had poor behavioural responses and none of them had good behavioural responses.

Extended McNemar's test revealed that, **($\chi 2$=2.25), (p= 0.13)** there was statistically significant difference between the pre test and post test behavioural responses among primigravid mothers during first stage of labour in control group.

Table – 12

Comparison of mean score, standard deviation and mean score difference of pre test and post test behavioural responses among primigravid mothers during first stage of labour in intervention group and control group

Level of pain	Pre test		Post test		Mean difference	Student paired t-test
	Mean score	SD	Mean score	SD		
Intervention group	10.70	1.34	15.70	1.90	5.00	**t=13.03 p=0.001***(S)**
Control group	10.87	1.81	11.53	2.29	0.67	t=1.62 p=0.12 (NS)

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 12 depicts Comparison of mean score, standard deviation and mean score difference of pre test and post test behavioural responses among primigravid during first stage of labour mothers in intervention group and control group.

In intervention group, pre test mean score was 10.70 with standard deviation 1.34, whereas post test mean score was 15.70 with standard deviation 1.90 and the mean difference was 5.00. The student paired 't' test revealed that (**t=13.03), (p=0.001)** level.

The student paired 't' test revealed that, there was statistically significant difference between the pre test and post test level of pain among primigravid mothers during first stage of labour in intervention group.

In control group ,pre test mean score was 10.87 with standard deviation 1.81, whereas post test mean score was 11.53 with standard deviation 2.29 and the mean difference was 0.67 . The student paired 't' test revealed that (**t=1.62), (p=0.12)** level.

The student paired 't' test revealed that, there was statistically no significant difference between the pre test and post test level of pain among primigravid mothers during first stage of labour in control group.

Table – 13

Effectiveness Transcutaneous Electrical Nerve Stimulation (TENS) on level of pain among primigravid mother during first stage of labour in intervention group and control group

n=60

Level of pain		Mean score	Mean Difference of changes with pain 95% Confidence interval	Percentage of changes with pain 95% Confidence interval
Experiment group	Pretest	7.00	2.70(1.97 – 3.42)	27.00% (19.70%–34.20%)
	Posttest	4.30		
Control group	Pretest	6.67	0.57(-0.10 – 2.24)	5.70% (-1.0% –12.40%)
	Posttest	6.17		

The above table 13 portrays effectiveness of transcutaneous electrical nerve stimulation (TENS) on the level of pain among primigravid mothers during first stage of labour in intervention group and control group.

On an average, the level of pain among primigravid mothers, during first stage of labour in intervention group 27 % of level of pain than control group. On the other hand on the average, in control group 5.70 %.

Difference between the intervention group and control group post test was analysed using proportion with 95% confidence interval and mean difference with 95% confidence interval.

This difference shows that the effect of transcutaneous electrical nerve stimulation (TENS) on the level of pain among primigravid mothers during first stage of labour.

Table-14

Effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) on behavioural responses among primigravid mother during first stage of labour in intervention group and control group

n=60

Behavioural responses		**Mean score**	**Mean Difference of changes with 95% Confidence interval**	**Percentage of changes with 95% Confidence interval**
Intervention Group	Pretest	10.70	5.00(4.21 – 5.78)	25.00% (21.05%–28.90%)
	Posttest	15.70		
Control group	Pretest	10.87	0.66(-0.17 – 1.50)	3.38% (-0.90% –7.50%)
	Posttest	11.53		

The above table 14 portrays effectiveness of transcutaneous electrical nerve stimulation (TENS) on behavioural responses among primigravid mothers during first stage of labour in intervention group and control group.

On an average, behavioural responses among primigravid mothers, during first stage of labour in intervention group 25 % of level of pain than control group. On the other hand on the average, in control group 3.38 %.

Difference between the intervention group and control group post test was analysed using proportion with 95% confidence interval and mean difference with 95% confidence interval.

This difference shows that the effect of transcutaneous electrical nerve stimulation (TENS) on behavioural responses among primigravid mothers during first stage of labour.

Table -15

Frequency and percentage distribution of post test level of pain among primigravid mothers during first stage of labour in intervention group and control group.

n=60

Level of pain	Intervention group Posttest		Control group Posttest		$\chi 2$
	f	%	f	%	
No pain	0	0.00%	0	0.00%	**$\chi 2$=22.94 p=0.001*** (S)**
Mild	8	26.67%	0	0.00%	
Moderate	22	73.33%	15	50.00%	
Severe	0	0.00%	15	50.00%	
Worst pain	0	0.00%	0	0.00%	

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 15 states the distribution of level of pain among primigravid mothers during first stage of labour in intervention group and control group.

In intervention group, majority of the subjects, 22(73.33 %) were had moderate pain, 8 (26.67 %) was had mild pain and none of them had no pain or severe pain or worst pain.

In control group, majority of the subjects, 15(50%) were had severe pain, 15(50%) was had moderate pain and none of them had no pain or mild pain or worst pain.

The chi square test revealed that, **($\chi 2$ = 22.94), (p =0.001)**, there was statistically significant difference between post test level of pain in intervention group and control group.

Table - 16

Comparison of mean score, standard deviation and mean score difference of post test level of pain among primigravid mothers during first stage of labour in intervention group and control group

level of pain	Mean	SD	Mean difference	Student 's independence 't' test
Intervention group	4.30	0.99	1.80	**t=5.69 p=0.001*** (S)**
Control group	6.10	1.42		

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 16 depicts Comparison of mean score, standard deviation and mean score difference of post test level of pain among primigravid during first stage of labour mothers in intervention group and control group

In intervention group, post test mean score was 4.30 with standard deviation 0.99, whereas in control group post test mean score was 6.10 with standard deviation 1.42 and the mean difference was 1.80. The student independent 't' test revealed that **(t=5.69), (p=0.001)** level.

The student independent 't' test revealed that, there was statistically significant difference between the post test level of pain among primigravid mothers during first stage of labour in intervention group and control group.

Table -17

Frequency and percentage distribution of post test behavioural responses among primigravid mothers during first stage of labour in intervention group and control group.

n= 60

Behavioural responses	Intervention group Posttest		Control group Posttest		$\chi 2$
	f	%	f	%	
Poor	0	00.00%	7	23.33%	**$\chi 2$=36.25**
Moderate	8	26.67%	23	76.67%	**p=0.001*** **
Good	22	73.33%	0	0.00%	**(S)**

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 17 states the distribution of behavioural responses among primigravid mothers during first stage of labour in intervention group and control group.

In intervention group, majority of subjects, 8 (26.67 %) were had moderate behavioural responses, 22 (73.33 %) was had poor behavioural responses and none of them had good behavioural responses.

In control group, majority of subjects, 23 (76.67 %) were had moderate behavioural responses, 7 (23.33 %) was had poor behavioural responses and none of them had good behavioural responses.

The chi square test revealed that, **($\chi 2$ = 36.25), (p =0.001)**, there was statistically significant difference between post test behavioural responses in intervention group and control group.

Table - 18

Comparison of mean score, standard deviation and mean score difference of post test behavioural responses among primigravid mothers during first stage of labour in intervention group and control group

Behavioural responses	Mean	SD	Mean difference	Student 's independence 't' test
Intervention group	15.70	1.90	4.17	**t=7.68 p=0.001*** (S)**
Control group	11.53	2.29		

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 18 depicts Comparison of mean score, standard deviation and mean score difference of post test behavioural responses among primigravid mothers during first stage of labour in intervention group and control group

In intervention group, post test mean score was 15.70 with standard deviation 1.90, whereas in control group, post test mean score was 11.53 with standard deviation 2.29 and the mean difference was 4.17. The student independent 't' test revealed that (**t=7.68), (p=0.001)** level.

The student independent 't' test revealed that, there was statistically significant difference between the post test behavioural responses among primigravid during first stage of labour mothers in intervention group and control group.

Section – IV

Description of association between the post test level of pain and behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables intervention group and control group.

Table - 19

Association between the post test level of pain among primigravid mothers during first stage of labour in intervention group with their selected socio demographic variables and obstetrical variables.

n=30

Socio demographic variables		Post test level of pain						n	χ2
		No pain		Mild		Moderate			
		f	%	f	%	f	%		
Age	< 18 years	0	0.00%	0	0.00%	0	0.00%	0	**χ2=5.56 p=0.02 *(S)**
	19 -23 years	2	11.11%	16	88.89%	0	0.00%	18	
	24 -28 years	6	50.00%	6	50.00%	0	0.00%	12	
	> 28 years	0	0.00%	0	0.00%	0	0.00%	0	
Religion	Christian	1	16.67%	5	83.33%	0	0.00%	6	χ2=0.38 p=0.53 **(NS)**
	Hindu	7	29.17%	17	70.83%	0	0.00%	24	
	Muslim	0	0.00%	0	0.00%	0	0.00%	0	
Types of family	Nuclear	5	31.25%	11	68.75%	0	0.00%	16	χ2=0.36 p=0.54 **(NS)**
	Joined	3	21.43%	11	78.57%	0	0.00%	14	
	Extended	0	0.00%	0	0.00%	0	0.00%	0	
Place of domicile	Rural	1	8.33%	11	91.67%	0	0.00%	12	**χ2=3.84 p=0.05* (S)**
	Urban	7	38.89%	11	61.11%	0	0.00%	18	
	Sub urban	0	0.00%	0	0.00%	0	0.00%	0	

Food habits	Vegetarian	4	50.00%	4	50.00%	0	0.00%	8	$\chi 2=3.03$ p=0.08 **(NS)**
	Non vegetarian	4	18.18%	18	81.82%	0	0.00%	22	
	Mixed	0	0.00%	0	0.00%	0	0.00%	0	
Education	Non formal education	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=6.75$ p=0.11 **(NS)**
	Primary education	1	7.69%	12	92.31%	0	0.00%	13	
	Higher Secondary education	6	46.15%	7	53.85%	0	0.00%	13	
	Graduate	1	25.00%	3	75.00%	0	0.00%	4	
Occupation	Homemaker	6	30.00%	14	70.00%	0	0.00%	20	$\chi 2=0.42$ p=0.80 **(NS)**
	Cooly	1	16.67%	5	83.33%	0	0.00%	6	
	Private employee	1	25.00%	3	75.00%	0	0.00%	4	
	Government employee	0	0.00%	0	0.00%	0	0.00%	0	
	Self employee	0	0.00%	0	0.00%	0	0.00%	0	
Monthly income	≤ Rs.5000	2	50.00%	2	50.00%	0	0.00%	4	$\chi 2=4.18$ p=0.24 **(NS)**
	Rs.5001-Rs.10000	5	35.71%	9	64.29%	0	0.00%	14	
	Rs.10001-Rs.15000	1	16.67%	5	83.33%	0	0.00%	6	
	≥ Rs.15001	0	0.00%	6	100.00%	0	0.00%	6	

Obstetrical variables		**Post test level of pain**						**n**	**$\chi 2$**
		No pain		**Mild**		**Moderate**			
		f	**%**	**f**	**%**	**f**	**%**		
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	0	0.00%	0	**$\chi 2=3.13$ p=0.07 **(S)**
	38-40 weeks	3	15.79%	16	84.21%	0	0.00%	19	
	> 40 weeks	5	45.45%	6	54.55%	0	0.00%	11	
Uterine contraction	Mild	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=1.49$ p=0.22 **(NS)**
	Moderate	6	35.29%	11	64.71%	0	0.00%	17	
	Severe	2	15.38%	11	84.62%	0	0.00%	13	

Dilatation of the cervix	2-4 cm	6	46.15%	7	53.85%	0	0.00%	13	**χ2=4.45 p=0.03 *(S)**
	4-6 cm	2	11.76%	15	88.24%	0	0.00%	17	
	6-8 cm	0	0.00%	0	0.00%	0	0.00%	0	
	8-10 cm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	0	0.00%	0	χ2=0.00 p=1.00 **(NS)**
	37.5•-38.4•	8	26.67%	22	73.33%	0	0.00%	30	
	≥ 38.5•	0	0.00%	0	0.00%	0	0.00%	0	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	0	0.00%	0	χ2=0.00 p=1.00 **(NS)**
	80-100 bpm	8	26.67%	22	73.33%	0	0.00%	30	
	≥ 110 bpm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	χ2=2.72 p=0.10 **(NS)**
	13-16 breath per minute	0	0.00%	6	100.00%	0	0.00%	6	
	17-22 breath per minute	8	33.33%	16	66.67%	0	0.00%	24	
	≥ 23 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	
Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	0	0.00%	0	χ2=0.00 p=1.00 **(NS)**
	100/70 − 130/90 mmHg	8	26.67%	22	73.33%	0	0.00%	30	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	0	0.00%	0	
Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	0	0.00%	0	χ2=2.30 p=0.12 **(NS)**
	110-120 bpm	0	0.00%	0	0.00%	0	0.00%	0	
	120-130 bpm	3	16.67%	15	83.33%	0	0.00%	18	
	130-140 bpm	5	41.67%	7	58.33%	0	0.00%	12	
Position of the fetal	Left Occiput Anterior	1	11.11%	8	88.89%	0	0.00%	9	χ2=3.58 p=0.16 **(NS)**
	Right Occiput Anterior	7	38.89%	11	61.11%	0	0.00%	18	
	Left Occiput Posterior	0	0.00%	3	100.00%	0	0.00%	3	
	Right Occiput Posterior	0	0.00%	0	0.00%	0	0.00%	0	
Presenting part	Vertex presentation	8	26.67%	22	73.33%	0	0.00%	30	χ2=0.00 p=1.00 **(NS)**
	Breech presentation	0	0.00%	0	0.00%	0	0.00%	0	
	Face presentation	0	0.00%	0	0.00%	0	0.00%	0	

Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.13 p=0.71 **(NS)**
	11-14 Hours	6	28.57%	15	71.43%	0	0.00%	21	
	15-17 Hours	2	22.22%	7	77.78%	0	0.00%	9	
	≥ 18 Hours	0	0.00%	0	0.00%	0	0.00%	0	

***Significant at p< 0.05, **Highly Significant at p < 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 19 despites that association between the post level of pain among primigravid mothers during first stage of labour in intervention group with their selected socio demographic variables and obstetrical variables.

In order to find out the association between the post level of pain among primigravid mothers during first stage of labour in intervention group with their selected socio demographic variables and obstetrical variables.

Chi square test revealed that, there was a statistically significant association between the level of pain and their age between 24-28 years **($\chi 2$ =5.56), (p=0.01)**.

There was a statistically significant association between the level of pain and their mothers hailed from urban area **($\chi 2$ =3.84), (p=0.05)**.

There was a statistically significant association between the level of pain and their gestation age >40 weeks **($\chi 2$ =3.13), (p=0.07)**.

There was a statistically significant association between the level of pain and their dilation of the cervix between 2-4 cm **($\chi 2$ =4.45), (p=0.03)**.

Other variables were not associated to the post test level of pain among primigravid mother during first stage of labour.

Association between the post test behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables in intervention group.

n= 30

Socio demographic variables		Post test level of behavioural responses						n	χ^2
		Poor		Moderate		Good			
		f	%	f	%	f	%		
Age	< 18 years	0	0.00%	0	0.00%	0	0.00%	0	**χ^2=4.07 p=0.04 *(S)**
	19 -23 years	0	0.00%	8	44.44%	10	55.56%	18	
	24 -28 years	0	0.00%	0	0.00%	12	100.00%	12	
	> 28 years	0	0.00%	0	0.00%	0	0.00%	0	
Religion	Christian	0	0.00%	2	33.33%	4	66.67%	6	χ^2=0.17 p=0.68 **(NS)**
	Hindu	0	0.00%	6	25.00%	18	75.00%	24	
	Muslim	0	0.00%	0	0.00%	0	0.00%	0	
Types of family	Nuclear	0	0.00%	3	18.75%	13	81.25%	16	χ^2=1.10 p=0.29 **(NS)**
	Joined	0	0.00%	5	35.71%	9	64.29%	14	
	Extended	0	0.00%	0	0.00%	0	0.00%	0	
Place of domicile	Rural	0	0.00%	6	50.00%	6	50.00%	12	**χ^2=5.56 p=0.02 *(S)**
	Urban	0	0.00%	2	11.11%	16	88.89%	18	
	Sub urban	0	0.00%	0	0.00%	0	0.00%	0	
Food habits	Vegetarian	0	0.00%	1	12.50%	7	87.50%	8	χ^2=1.12 p=0.29 **(NS)**
	Non vegetarian	0	0.00%	7	31.82%	15	68.18%	22	
	Mixed	0	0.00%	0	0.00%	0	0.00%	0	
Education	Non formal education	0	0.00%	0	0.00%	0	0.00%	0	χ^2=4.43 p=0.10 **(NS)**
	Primary education	0	0.00%	1	7.69%	12	92.31%	13	
	Higher Secondary education	0	0.00%	5	38.46%	8	61.54%	13	
	Graduate	0	0.00%	2	50.00%	2	50.00%	4	

Occupation	Homemaker	0	0.00%	7	35.00%	13	65.00%	20	$\chi 2$=2.47 p=0.29 **(NS)**
	Cooly	0	0.00%	1	16.67%	5	83.33%	6	
	Private employee	0	0.00%	0	0.00%	4	100.00%	4	
	Government employee	0	0.00%	0	0.00%	0	0.00%	0	
	Self employee	0	0.00%	0	0.00%	0	0.00%	0	
Monthly income	≤ Rs.5000	0	0.00%	3	75.00%	1	25.00%	4	$\chi 2$=6.31 p=0.10 **(NS)**
	Rs.5001-Rs.10000	0	0.00%	2	14.29%	12	85.71%	14	
	Rs.10001-Rs.15000	0	0.00%	2	33.33%	4	66.67%	6	
	≥ Rs.15001	0	0.00%	1	16.67%	5	83.33%	6	

Obstetrical variables		**Posttest level of behavioural responses**						**n**	**$\chi 2$**
		Poor		**Moderate**		**Good**			
		f	**%**	**f**	**%**	**f**	**%**		
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	0	0.00%	0	**$\chi 2$=6.90 p=0.01 **(S)**
	38-40 weeks	0	0.00%	2	10.52%	17	89.48%	19	
	> 40 weeks	0	0.00%	6	54.54%	5	45.46%	11	
Uterine contraction	Mild	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=1.49 p=0.22 **(NS)**
	Moderate	0	0.00%	6	75.00%	11	50.00%	17	
	Severe	0	0.00%	2	25.00%	11	50.00%	13	
Dilatation of the cervix	2-4 cm	0	0.00%	3	37.50%	10	45.45%	13	$\chi 2$=0.15 p=0.69 **(NS)**
	4-6 cm	0	0.00%	5	62.50%	12	54.55%	17	
	6-8 cm	0	0.00%	0	0.00%	0	0.00%	0	
	8-10 cm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.00 p=1.00 **(NS)**
	37.5•-38.4•	0	0.00%	8	100.00%	22	100.00%	30	
	≥ 38.5•	0	0.00%	0	0.00%	0	0.00%	0	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.00 p=1.00 **(NS)**
	80-100 bpm	0	0.00%	8	100.00%	22	100.00%	30	
	≥ 110 bpm	0	0.00%	0	0.00%	0	0.00%	0	

Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.38 p=0.53 **(NS)**
	13-16 breath per minute	0	0.00%	1	12.50%	5	22.73%	6	
	17-22 breath per minute	0	0.00%	7	87.50%	17	77.27%	24	
	≥ 23 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	
Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.00 p=1.00 **(NS)**
	100/70 − 130/90 mmHg	0	0.00%	8	100.00%	22	100.00%	30	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	0	0.00%	0	
Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=2.30 p=0.12 **(NS)**
	110-120 bpm	0	0.00%	0	0.00%	0	0.00%	0	
	120-130 bpm	0	0.00%	3	37.50%	15	68.18%	18	
	130-140 bpm	0	0.00%	5	62.50%	7	31.82%	12	
Position of the fetal	Left Occiput Anterior	0	0.00%	2	25.00%	7	31.82%	9	$\chi 2$=1.59 p=0.45 **(NS)**
	Right Occiput Anterior	0	0.00%	6	75.00%	12	54.55%	18	
	Left Occiput Posterior	0	0.00%	0	0.00%	3	13.64%	3	
	Right Occiput Posterior	0	0.00%	0	0.00%	0	0.00%	0	
Presenting part	Vertex presentation	0	0.00%	8	100.00%	22	100.00%	30	$\chi 2$=0.00 p=1.00 **(NS)**
	Breech presentation	0	0.00%	0	0.00%	0	0.00%	0	
	Face presentation	0	0.00%	0	0.00%	0	0.00%	0	
Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.29 p=0.580 **(NS)**
	11-14 Hours	0	0.00%	5	62.50%	16	72.73%	21	
	15-17 Hours	0	0.00%	3	37.50%	6	27.27%	9	
	≥ 18 Hours	0	0.00%	0	0.00%	0	0.00%	0	

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 20 despites that association between the post level of behavioural responses among primigravid mothers during first stage of labour in intervention group with their selected socio demographic variables and obstetrical variables.

In order to find out the association between the post of behavioural responses among primigravid mothers during first stage of labour in intervention group with their selected socio demographic variables and obstetrical variables.

Chi square test revealed that, there was a statistically significant association between the level of pain and their age between 19-23 years **($\chi 2 = 4.07$), ($p=0.04$)**.

There was a statistically significant association between the level of pain and their mothers hailed from rural area **($\chi 2 = 5.56$), ($p=0.02$)**.

There was a statistically significant association between the level of pain and their gestation age in weeks>40 weeks (**$\chi 2 = 6.900$), ($p=0.01$)**.

Other variables were not associated to the post test of pain behavioural responses among primigravid mother during first stage of labour.

Description of Association between the post test level of pain among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables.

Table - 21

Association between the post test level of pain among primigravid mothers during first stage of labour in control group with their selected socio demographic variables and obstetrical variables.

n=30

Socio demographic variables		Posttest level of Pain						n	χ2
		Mild		Moderate		Severe			
		f	%	f	%	f	%		
Age	< 18 years	0	0.00%	0	0.00%	0	0.00%	0	χ2=2.03 p=0.15 **(NS)**
	19 -23 years	0	0.00%	5	38.46%	8	61.54%	13	
	24 -28 years	0	0.00%	11	64.71%	6	35.29%	17	
	> 28 years	0	0.00%	0	0.00%	0	0.00%	0	
Religion	Christian	0	0.00%	3	50.00%	3	50.00%	6	χ2=0.03 p=0.85 **(NS)**
	Hindu	0	0.00%	13	54.17%	11	45.83%	24	
	Muslim	0	0.00%	0	0.00%	0	0.00%	0	
Types of family	Nuclear	0	0.00%	10	55.56%	8	44.44%	18	χ2=0.09 p=0.76 **(NS)**
	Joined	0	0.00%	6	50.00%	6	50.00%	12	
	Extended	0	0.00%	0	0.00%	0	0.00%	0	
Place of domicile	Rural	0	0.00%	5	45.45%	6	54.55%	11	χ2=0.43 p=0.53 **(NS)**
	Urban	0	0.00%	11	57.89%	8	42.11%	19	
	Sub urban	0	0.00%	0	0.00%	0	0.00%	0	
Food habits	Vegetarian	0	0.00%	7	87.50%	1	12.50%	8	χ2=3.41 p=0.06 **(NS)**
	Non vegetarian	0	0.00%	9	40.91%	13	59.09%	22	
	Mixed	0	0.00%	0	0.00%	0	0.00%	0	
Education	Non formal education	0	0.00%	0	0.00%	0	0.00%	0	χ2=3.28 p=0.19 **(NS)**
	Primary education	0	0.00%	11	68.75%	5	31.25%	16	
	Higher Secondary education	0	0.00%	4	36.36%	7	63.64%	11	
	Graduate	0	0.00%	1	33.33%	2	66.67%	3	

Occupation	Homemaker	0	0.00%	9	50.00%	9	50.00%	18	$\chi 2$=0.53 p=0.76 **(NS)**
	Cooly	0	0.00%	4	66.67%	2	33.33%	6	
	Private employee	0	0.00%	3	50.00%	3	50.00%	6	
	Government employee	0	0.00%	0	0.00%	0	0.00%	0	
	Self employee	0	0.00%	0	0.00%	0	0.00%	0	
Monthly income	≤ Rs.5000	0	0.00%	4	57.14%	3	42.86%	7	$\chi 2$=3.91 p=0.27 **(NS)**
	Rs.5001-Rs.10000	0	0.00%	11	61.11%	7	38.89%	18	
	Rs.10001-Rs.15000	0	0.00%	0	0.00%	3	100.00%	3	
	≥ Rs.15001	0	0.00%	1	50.00%	1	50.00%	2	

Obstetrical variables		**Posttest level of pain**						**n**	**$\chi 2$**
		Mild		**Moderate**		**Severe**			
		f	**%**	**f**	**%**	**f**	**%**		
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=1.42 p=0.23 **(NS)**
	38-40 weeks	0	0.00%	8	44.44%	10	55.56%	18	
	> 40 weeks	0	0.00%	8	66.67%	4	33.33%	12	
Uterine contraction	Mild	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=3.19 p=0.07 **(NS)**
	Moderate	0	0.00%	14	70.00%	6	30.00%	20	
	Severe	0	0.00%	2	20.00%	8	80.00%	10	
Dilatation of the cervix	2-4 cm	0	0.00%	10	55.56%	8	44.44%	18	$\chi 2$=0.09 p=0.76 **(NS)**
	4-6 cm	0	0.00%	6	50.00%	6	50.00%	12	
	6-8 cm	0	0.00%	0	0.00%	0	0.00%	0	
	8-10 cm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.00 p=1.00 **(NS)**
	37.5•-38.4•	0	0.00%	16	53.33%	14	46.67%	30	
	≥ 38.5•	0	0.00%	0	0.00%	0	0.00%	0	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.00 p=1.00 **(NS)**
	80-100 bpm	0	0.00%	16	53.33%	14	46.67%	30	
	≥ 110 bpm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.05 p=0.81 **(NS)**
	13-16 breath per minute	0	0.00%	4	57.14%	3	42.86%	7	
	17-22 breath per minute	0	0.00%	12	52.17%	11	47.83%	23	
	≥ 23 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	

Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.00 p=1.00 **(NS)**
	100/70 − 130/90 mmHg	0	0.00%	16	53.33%	14	46.67%	30	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	0	0.00%	0	
Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.93 p=0.62 **(NS)**
	110-120 bpm	0	0.00%	1	100.00%	0	0.00%	1	
	120-130 bpm	0	0.00%	7	50.00%	7	50.00%	14	
	130-140 bpm	0	0.00%	8	53.33%	7	46.67%	15	
Position of the fetal	Left Occiput Anterior	0	0.00%	6	50.00%	6	50.00%	12	$\chi 2$=0.53 p=0.76 **(NS)**
	Right Occiput Anterior	0	0.00%	6	50.00%	6	50.00%	12	
	Left Occiput Posterior	0	0.00%	4	66.67%	2	33.33%	6	
	Right Occiput Posterior	0	0.00%	0	0.00%	0	0.00%	0	
Presenting part	Vertex presentation	0	0.00%	15	51.72%	14	48.28%	29	$\chi 2$=0.90 p=0.34 **(NS)**
	Breech presentation	0	0.00%	1	100.00%	0	0.00%	1	
	Face presentation	0	0.00%	0	0.00%	0	0.00%	0	
Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2$=0.53 p=0.46 **(NS)**
	11-14 Hours	0	0.00%	12	50.00%	12	50.00%	24	
	15-17 Hours	0	0.00%	4	66.67%	2	33.33%	6	
	≥ 18 Hours	0	0.00%	0	0.00%	0	0.00%	0	

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 21 depicts that association between the post level of pain among primigravid mothers during first stage of labour in control group with their selected socio demographic variables and obstetrical variables.

In order to find out the association between the post test level of pain among primigravid mothers during first stage of labour in with their selected socio demographic variables and obstetrical variables in control group chi square analysis revealed that, there was no statistically significant association between the level of behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables.

Association between the post test of behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables in control group.

n=30

Socio demographic variables		Posttest level of behavioural responses						n	χ^2
		Poor		Moderate		Good			
		f	%	f	%	f	%		
Age	< 18 years	0	0.00%	0	0.00%	0	0.00%	0	$\chi2=0.45$ p=0.50 **(NS)**
	19 -23 years	6	46.15%	7	53.85%	0	0.00%	13	
	24 -28 years	1	5.88%	16	94.12%	0	0.00%	17	
	> 28 years	0	0.00%	0	0.00%	0	0.00%	0	
Religion	Christian	1	16.67%	5	83.33%	0	0.00%	6	$\chi2=0.17$ p=0.68 **(NS)**
	Hindu	6	25.00%	18	75.00%	0	0.00%	24	
	Muslim	0	0.00%	0	0.00%	0	0.00%	0	
Types of family	Nuclear	4	22.22%	14	77.78%	0	0.00%	18	$\chi2=1.10$ p=0.29 **(NS)**
	Joined	3	25.00%	9	75.00%	0	0.00%	12	
	Extended	0	0.00%	0	0.00%	0	0.00%	0	
Place of domicile	Rural	3	27.27%	8	72.73%	0	0.00%	11	$\chi2=0.03$ p=0.86 **(NS)**
	Urban	4	21.05%	15	78.95%	0	0.00%	19	
	Sub urban	0	0.00%	0	0.00%	0	0.00%	0	
Food habits	Vegetarian	0	0.00%	8	100.00%	0	0.00%	8	$\chi2=1.12$ p=0.29 **(NS)**
	Non vegetarian	7	31.82%	15	68.18%	0	0.00%	22	
	Mixed	0	0.00%	0	0.00%	0	0.00%	0	
Education	Non formal education	0	0.00%	0	0.00%	0	0.00%	0	$\chi2=4.43$ p=0.10 **(NS)**
	Primary education	3	18.75%	13	81.25%	0	0.00%	16	
	Higher Secondary education	1	9.09%	10	90.91%	0	0.00%	11	
	Graduate	3	100.00%	0	0.00%	0	0.00%	3	

Occupation	Homemaker	4	22.22%	14	77.78%	0	0.00%	18	$\chi 2=2.47$ p=0.29 **(NS)**
	Cooly	2	33.33%	4	66.67%	0	0.00%	6	
	Private employee	1	16.67%	5	83.33%	0	0.00%	6	
	Government employee	0	0.00%	0	0.00%	0	0.00%	0	
	Self employee	0	0.00%	0	0.00%	0	0.00%	0	
Monthly income	≤ Rs.5000	1	14.29%	6	85.71%	0	0.00%	7	$\chi 2=6.31$ p=0.10 **(NS)**
	Rs.5001-Rs.10000	1	5.56%	17	94.44%	0	0.00%	18	
	Rs.10001-Rs.15000	3	100.00%	0	0.00%	0	0.00%	3	
	≥ Rs.15001	2	100.00%	0	0.00%	0	0.00%	2	

Obstetrical variables		**Posttest level of behavioural responses**						**n**	**χ^2**
		Poor		**Moderate**		**Good**			
		f	**%**	**f**	**%**	**f**	**%**		
Gestation age in weeks	< 38 weeks	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.63$ p=0.42 **(NS)**
	38-40 weeks	5	27.77%	13	72.23%	0	0.00%	18	
	> 40 weeks	2	16.67%	10	83.33%	0	0.00%	12	
Uterine contraction	Mild	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=1.49$ p=0.22 **(NS)**
	Moderate	0	0.00%	20	86.96%	0	0.00%	20	
	Severe	7	100.00%	3	13.04%	0	0.00%	10	
Dilatation of the cervix	2-4 cm	4	57.14%	14	60.87%	0	0.00%	18	$\chi 2=0.03$ p=0.86 **(NS)**
	4-6 cm	3	42.86%	9	39.13%	0	0.00%	12	
	6-8 cm	0	0.00%	0	0.00%	0	0.00%	0	
	8-10 cm	0	0.00%	0	0.00%	0	0.00%	0	
Maternal Temperature	≤ 36•	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.00$ p=1.00 **(NS)**
	37.5•-38.4•	7	100.00%	23	100.00%	0	0.00%	30	
	≥ 38.5•	0	0.00%	0	0.00%	0	0.00%	0	
Maternal pulse rate	≤ 70 bpm	0	0.00%	0	0.00%	0	0.00%	0	$\chi 2=0.00$ p=1.00 **(NS)**
	80-100 bpm	7	100.00%	23	100.00%	0	0.00%	30	
	≥ 110 bpm	0	0.00%	0	0.00%	0	0.00%	0	

Maternal respiration rate	≤ 12 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	χ^2=0.41 p=0.51 **(NS)**
	13-16 breath per minute	1	14.29%	6	26.09%	0	0.00%	7	
	17-22 breath per minute	6	85.71%	17	73.91%	0	0.00%	23	
	≥ 23 breath per minute	0	0.00%	0	0.00%	0	0.00%	0	
Maternal blood pressure	≤ 90/60 mmHg	0	0.00%	0	0.00%	0	0.00%	0	χ^2=0.00 p=1.00 **(NS)**
	100/70 − 130/90 mmHg	7	100.00%	23	100.00%	0	0.00%	30	
	≤ 140/100 mmHg	0	0.00%	0	0.00%	0	0.00%	0	
Fetal heart rate	100-110 bpm	0	0.00%	0	0.00%	0	0.00%	0	χ^2=0.61 p=0.73 **(NS)**
	110-120 bpm	0	0.00%	1	4.35%	0	0.00%	1	
	120-130 bpm	4	57.14%	10	43.48%	0	0.00%	14	
	130-140 bpm	3	42.86%	12	52.17%	0	0.00%	15	
Position of the fetal	Left Occiput Anterior	3	42.86%	9	39.13%	0	0.00%	12	χ^2=0.65 p=0.72 **(NS)**
	Right Occiput Anterior	2	28.57%	10	43.48%	0	0.00%	12	
	Left Occiput Posterior	2	28.57%	4	17.39%	0	0.00%	6	
	Right Occiput Posterior	0	0.00%	0	0.00%	0	0.00%	0	
Presenting part	Vertex presentation	7	100.00%	22	95.65%	0	0.00%	29	χ^2=1.00 p=0.33 **(NS)**
	Breech presentation	0	0.00%	1	4.35%	0	0.00%	1	
	Face presentation	0	0.00%	0	0.00%	0	0.00%	0	
Duration of first stage of labour	≤ 10 Hours	0	0.00%	0	0.00%	0	0.00%	0	χ^2=0.41 p=0.50 **(NS)**
	11-14 Hours	5	71.43%	19	82.61%	0	0.00%	24	
	15-17 Hours	2	28.57%	4	17.39%	0	0.00%	6	
	≥ 18 Hours	0	0.00%	0	0.00%	0	0.00%	0	

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 22 depicts that association between the post of behavioural responses among primigravid mothers during first stage of labour in control group with their selected socio demographic variables and obstetrical variables.

In order to find out the association between the post test of behavioural responses among primigravid mothers during first stage of labour in with their selected socio demographic variables and obstetrical variables in control group chi square analysis revealed that, there was no statistically significant association between the level of behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables.

Section – V

Description correlation of between level of pain and behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables intervention group and control group.

Table - 23

Correlation between the level pain and behavioral responses in intervention group

n= 60

Correlation between	Pre test	Post test	Mean Difference	Karl pearson coefficient of correlation
	Mean ± SD	Mean ± SD	Mean ± SD	
Level of Pain	7.00±1.39	4.30±0.99	2.70±1.95	**r=0.46**
Behavioral responses	10.70±1.34	15.70±1.90	5.00±2.10	**p≤0.001** **(significant)**

***Significant at p< 0.05, **Highly Significant at p< 0.01, *** Very Highly Significant at p< 0.001, NS= Not Significant**

The above table 21state theCorrelation between the level pain and behavioral response in intervention group

In intervention group, in the pre test pain reduction mean score with standard deviation 7.00 ± 1.39 and in the post test pain reduction mean score with standard deviation 4.30 ± 0.99. The mean difference was 2.70 ± 1.95, whereas in the pre test behavioural responses gain mean score with standard deviation 10.70 ± 1.34 and in the post test behavioural responses gain score mean with standard deviation 15.70 ± 1.90. The mean difference was 5.00 ± 2.10. Karl pearson coefficient of correlation (**r =0.46), (p ≤0.001)** level of significance. In intervention group there is a significant, moderate positive correlation between pain and behavioral response.

Table - 24

Correlation between the level of pain and behavior responses in control group

n= 60

Correlation between	Pretest	Posttest	Mean Difference	Karl pearson coefficient of correlation
	Mean ± SD	Mean ± SD	Mean ± SD	
Level of Pain	6.67±1.09	6.17±1.46	0.50±1.78	r=0.16 p=0.34 (not significant)
Behavioral responses	10.87±1.81	11.53±2.29	0.67±2.25	

The above table no 22 state the Correlation between the level of pain and behavioral responses in control group

In control group, in the pre test pain reduction mean score with standard deviation 6.67 ± 1.09 and in the post test pain reduction mean score with standard deviation 6.17 ± 1.46. The mean difference was 0.50 ± 1.78, whereas in the pre test behavioural responses gain mean score with standard deviation 10.87 ± 1.81 and in the post test behavioural responses gain score mean with standard deviation 11.53 ± 2.29. The mean difference was 0.67 ± 2.25. Karl pearson coefficient of correlation (**r =0.16), (p = 0.34)**. In control group there is not a significant, poorpositive correlation between pain and behavioral responses.

DISCUSSION

CHAPTER – V

DISCUSSION

The study was conducted to evaluate the effectiveness of transcutaneous electrical nerve stimulation (TENS) on pain and behavioural responses among primigravid mothers during first stage of labour. The purpose of this study was to reduce the level of pain and behavioural responses among primigravid mothers during first stage of labour.

The study was conducted after obtaining a Formal permission was obtained from the ethical committee, Madurai Medical College, Madurai-20 and Obstetrics and Gynaecological Nursing Department Government Rajaji Hospital,Madurai-20. The Pilot study was conducted at the above department for a period of seven days from 25.02.2019 to 02.03.2019 in Labour ward at Government Rajaji Hospital, Madurai -20. Informed oral and written consent was obtained from the samples and the base line data was collected. 10 samples was taken and assign the samples into (5). Intervention group and (5) control group who met the inclusion criteria and pre test was conducted for both groups using the TENS application on pain and behavioural responses on first stage labour among primigravid mothers and the score was recorded. Inform the procedure to the patients Routine care with intervention was given to intervention group and routine care only was given to control group on the day by using TENS application with use of modified structured checklist for behavioural responses and numerical pain scale for first stage of labour.

The statistical analysis was done based on objectives of the study by using descriptive and inferential statistical methods. The findings of the study have been discussed in this chapter with reference to the objectives and hypothesis stated in introduction.

The objective of the study were

1. To assess the level of pain and behavioural responses among primigravid mothers during the first stage of labour, at labour ward, GRH, Madurai.
2. To evaluate the effectiveness of TENS on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, GRH, Madurai.
3. To associate the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, GRH, Madurai and their selected socio demographic variables and obstetrical variables.
4. To correlate the level of pain and behavioural responsesamong primigravid mothers during first stage of labour, at labour ward, GRH, Madurai and their selected socio demographic variables and obstetrical variables.

The following hypotheses were set for the study

All the hypotheses were test data 0.05 level of significance.

H_1: There is a statistically significant difference between pre test and post test level of pain and behavioural responses among primigravid mothers in intervention group during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.

H_2: There is a statistically significant difference between post test level of pain and behavioural responses among primigravid mothers in intervention group and control group during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.

H_3: There is a statistically significant association between the level of pain and behavioural responses among primigravid mothers during first stage of labour,

at labour ward, Government Rajaji Hospital, Madurai and their socio demographic and obstetrical variables.

H_4: There is a statistically significant correlation between the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai and their socio demographic and obstetrical variables.

The finding of the study were discussed under the following headings

Section I

Distribution of primigravid mothers during first stage of labour and their selected socio demographic and obstetrical variables, both in intervention group and control group.

Section – II

Description of pre test level of pain and behavioural responses among primigravid mothers during first stage of labour in intervention group and control group.

Section – III

Effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) on level of pain and behavioural responses among primigravid mother during first stage of labour in intervention group and control group.

Section– IV

Description of association between the post test level of pain and behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic and obstetrical variables in intervention group and control group.

Section– V

Description correlation of between level of pain and behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic and obstetrical variables in intervention group and control group.

5.1 Discussion based on the primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variable, both in intervention group and control group.

- In intervention group, 18 (60 %) were had age between 19 – 23 years, in control group, 17 (56.67 %) were had age between 24-28 years.
- Both in intervention group and control group, 24 (80%) were belongs to Hindu.
- In intervention group,16 (53.33 %) and control group 18 (60%) were nuclear family
- In intervention group and control group, 18 (60%), 19 (63.33 %) were hailed from urban area.
- In intervention group and control group, 22 (73.33%) were non-vegetarian.
- In intervention group, 13 (43.34 %) and in control group, 16 (53.33 %) were studied up to primary education.
- In intervention group, 20 (66.67 %) and in control group, 18 (60%) were homemaker.
- In intervention group and control group, 14 (46.67 %), 18 (60 %) were earned between Rs.5001-Rs.10000.
- In intervention group, 19 (63.33 %) and in control group, 18(60 %) were had between 38-40 weeks.
- In intervention group, 17 (56.67 %) and in control group, 20 (66.67 %) were had moderate level of uterine contraction.

- In intervention group**,** 17 (56.67 %) were had between 4 -6 cm, in control group, 18 (60 %) were had between 2 - 4 cm dilation of the cervix.
- Majority of the subject in intervention group and in control group 30 (100 %) were had maternal temperature between 37.5°C-38.4° C.
- Maternal pulse rate**,** in intervention group and in control group, 30 (100 %) were had between 80-100 bpm.
- In intervention group and in control group, 24 (80 %), 23 (76.67 %) were hadbetween 17-22 bpm maternal respiration rate.
- Majority in intervention group and in control group, 30 (100 %) were had blood pressure between 100/70 − 130/90 mmHg.
- Fetal heart rate,in intervention group, 18 (60 %) were had between 120 – 130 bpm, in control group, 15 (50 %) were had between 130 – 140 bpm.
- In intervention group, 18 (60 %) and in control group, 12 (40 %) were had right occiput anterior.
- In intervention group, 30 (100 %) and in control group, 29 (96.67 %) were had vertex presentation.
- Duration of first stage of labour, in intervention group, 21 (70 %) were had in between 11- 14 hours, in control group, 24 (80 %) were had in between 11- 14 hours.

5.2 Discussion of the study objectives

The first objectives to assess the level of pain and behavioural responses among primigravid mothers during the first stage of labour, at labour ward, GRH, Madurai.

The pre test level of pain in intervention group, 21 (70 %) were had severe pain, in control group, 19 (63.33 %) were had severe pain. The chi square test revealed

that, **(χ2= 0.30), (p =0.58)**, there was no statistically significant difference between pre test level of pain in intervention group and control group.

The mean pre test level of pain score, in intervention group, pre test mean score was 7.00 with standard deviation 1.39, whereas in control group pre test mean score was 6.67 with standard deviation 1.09 and the mean difference was 0.33. The student independent 't' test revealed that (**t=1.03), (p=0.30)** level. The student independent 't' test revealed that, there was no statistically significant difference between the pre test level of pain among primigravid mothers during first stage of labour in intervention group and control group.

The pre test level of behavioural responses in intervention group, 18 (60 %) were had moderate behavioural responses, in control group, 20 (66.67 %) were had moderate behavioural responses. The chi square test revealed that, **(χ2=0.28), (p=0.59)**, there was no statistically significant difference between pre test behavioural responses in intervention group and control group.

In intervention group, pre test mean score was 10.70 with standard deviation1.34, whereas in control group pre test mean score was 10.87 with standard deviation 1.81 and the mean difference was 0.17. The student independent 't' test revealed that (**t=0.40), (p=0.001)** level. The student independent 't' test revealed that, there was statistically significant difference between the pre test behavioural responses among primigravid during first stage of labour mothers in intervention group and control group.

Jasleen Kaur and Harbans Kaur, (2017), conducted a pre-experimental study to assess the effectiveness of massage therapy on severity of labour pains and anxiety among parturient mothers admitted in labour room during active phase of labour in Civil Hospital, Falandhar. A sample of 60 mothers were selected by non –

probability purposive sampling technique. The finding of the study revealed that the mean difference between pre intervention and post intervention severity of labour pain was 60.25 and anxiety was 15.05 which was statistically significant at $p<0.001$. It concluded that the message therapy was effective in decreasing the severity of labour pain and anxiety.

The second objectives was to evaluate the effectiveness of TENS on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward,GRH, Madurai.

In intervention group, the pre test level of pain, 21 (70 %) were had severe pain, in the post test, 22 (73.33 %) were had moderate pain. Extended Mc Nemar's test revealed that, **($\chi 2$= 22.63), (p=0.001)** there was statistically significant difference between the pre test level of pain among primigravid mothers during first stage of labour in intervention group.

In control group, the pre test level of pain, 19 (63.33 %) were had severe pain, in the post test, 15 (50 %) were had severe pain. Extended Mc Nemar's test revealed that, **($\chi 2$=2.27), (p=0.16)** there was no statistically significant difference between the pre test level of pain among primigravid mothers during first stage of labour in control group.

In intervention group, pre test mean score was 7.00 with standard deviation 1.39, whereas post test mean score was 4.30 with standard deviation 0.99 and the mean difference was 2.70. The student paired 't' test revealed that (**t=5.58), (p=0.001)** level. The student paired 't' test revealed that, there was statistically significant difference between the pre test and post test level of pain among primigravid mothers during first stage of labour in intervention group.

In control group , pre test mean score was 6.67 with standard deviation 1.09, whereas post test mean score was 6.10 with standard deviation 1.42 and the mean difference was 0.57 . The student paired 't' test revealed that (**t=1.76), (p=0.09)** level. The student paired 't' test revealed that, there was statistically no significant difference between the pre test and post test level of pain among primigravid mothers during first stage of labour in control group

In intervention group, pre test behavioural responses, 18 (60 %) were had moderate, in the post test, 22 (73.33 %) were had good behavioural responses. Extended Mc Nemar's test revealed that **,(χ2=25.42),(p=0.001)** there was statistically significant difference between the pre test and post test behavioural responses among primigravid mothers during first stage of labour in intervention group.

In control group, pre test behavioural responses, 20 (60 %) were had moderate, in the post test, 23 (76.67 %) were had moderate behavioural responses. Extended Mc Nemar's test revealed that, **(χ2=2.25), (p=0.13)** there was statistically significant difference between the pre test and post test behavioural responses among primigravid mothers during first stage of labour in control group.

In intervention group, pre test mean score was 10.70 with standard deviation 1.34, whereas post test mean score was 15.70 with standard deviation 1.90 and the mean difference was 5.00. The student paired 't' test revealed that (**t=13.03), (p=0.001)** level. The student paired 't' test revealed that, there was statistically significant difference between the pre test and post test level of pain among primigravid mothers during first stage of labour in intervention group.

In control group, pre test mean score was 10.87 with standard deviation 1.81, whereas post test mean score was 11.53 with standard deviation 2.29 and the mean difference was 0.67. The student paired 't' test revealed that (**t=1.62), (p=0.12)** level.

The student paired 't' test revealed that, there was statistically no significant difference between the pre test and post test level of pain among primigravid mothers during first stage of labour in control group.

On an average, the level of pain, in intervention group was reduced 27% than control group. In control group 5.70% of pain level.

On an average, behavioural responses, in intervention group was changes 25% than control group. In control group 3.38% of behavioural responses.

This difference showed that the effect of transcutaneous electrical nerve stimulation (TENS) on the level of pain and behavioural responses among primigravid mothers during first stage of labour.

Gulay Yildirim, et.al., (2000), conducted an experimental study to determine the effect of breathing and skin stimulation techniques on labour pain perception among pregnant mother in SSK Bakirkoy women and childrens Hospital, Turkey. A sample of 40 mothers were selected by non – random sampling. Among them 20 samples were allocated to experimental group and 20 sample to control group. The result of the study shows that the positive feelings about their deliveries in experimental group were 40% and 5 % in control group. The chi square value for difference in pain expression between the two groups was 6.827 and it was statistically significant ($p < 0.001$). It concluded breathing technique was effective on labour pain perception.

Hence H_1: There is a statistically significant difference between of pre test and post test level of pain and behavioural responses among primigravid mothers during first stage of labour in intervention group in labour, ward at GRH, Madurai was accepted and null hypothesis was rejected.

In intervention group, post test level of pain, 22 (73.33 %) were had moderate pain, in control group, post test level of pain, 15 (50 %) were had severe pain. The chi

square test revealed that, **(χ2 = 22.94), (p =0.001)**, there was statistically significant difference between post test level of pain in intervention group and control group.

In intervention group, post test mean score was 4.30 with standard deviation 0.99, whereas in control group post test mean score was 6.10 with standard deviation 1.42 and the mean difference was 1.80. The student independent 't' test revealed that (**t= 5.69), (p=0.001)** level. The student independent 't' test revealed that, there was statistically significant difference between the post test level of pain among primigravid mothers during first stage of labour in intervention group and control group.

In intervention group, post test behavioural responses, 22 (73.33 %) were had good, in control group, 23 (76.67 %) were had moderate behavioural responses. The chi square test revealed that, **(χ2 = 36.25), (p =0.001)**, there was statistically significant difference between post test behavioural responses in intervention group and control group.

In intervention group, post test mean score was 15.70 with standard deviation 1.90, whereas in control group, post test mean score was 11.53 with standard deviation 2.29 and the mean difference was 4.17. The student independent 't' test revealed that (**t=7.68), (p=0.001)** level. The student independent 't' test revealed that, there was statistically significant difference between the post test behavioural responses among primigravid during first stage of labour mothers in intervention group and control group.

Abby E. Garlock, et.al., (2014), conducted a quasi experimental study to assess the effect of comfort education on maternal comfort and labour pain were piedmont region hospital of western North Carolina among the pretest /posttest

comparison group design were the 80 participant was selected as sample. No significant difference was found in maternal comfort or pain between the intervention group that received comfort education and the control group. Comfort education did result in change for plans to maintain comfort during labor (p=0.00), an increased use of comfort measures during labor (p=.000), and an increased probability of continuation with original plans for pain control during labor. Providing education for maintaining comfort during labor can allow women to make informed choices during labour.

Hence H_2:There is a statistically significant difference between post test level of pain and behavioural responses among primigravid mothers during first stage of labour in intervention group and control group in labour ward at Government Rajaji Hospital, Madurai was accepted and null hypothesis was rejected.

The third objective of this study was to associate the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, GRH, Madurai and their selected socio demographic variables and obstetrical variables.

In order to find out the association between the post level of pain among primigravid mothers during first stage of labour in intervention group with their selected socio demographic variables and obstetrical variables. Chi square test revealed that, there was a statistically significant association between the level of pain and Age group**,** Place of domicile**,** Weeks of gestation, Dilation of the cervix. Other variables was not associated to the post test level of pain among primigravid mother during first stage of labour.

In control group, there was no statistically significant association between the level of behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables.

In order to find out the association between the post of behavioural responses among primigravid mothers during first stage of labour in intervention group with their selected socio demographic variables and obstetrical variables. Chi square test revealed that, there was a statistically significant association between the level of pain and Age group**,** Place of domicile**,**Weeks of gestation. Other variables was not associated to the post test of pain behavioural responses among primigravid mother during first stage of labour. Statistical significant was calculated by chi square test.

Whereas in control group, there was no statistically significant association between the level of behavioural responses among primigravid mothers during first stage of labour with their selected socio demographic variables and obstetrical variables.

Hence H_3: There is a statistically significant association between the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward Government Rajaji Hospital, Madurai, with their selected socio demographic variables and obstetrical variables was accepted and null hypothesis was rejected.

Nasser salsabili, et.al., (2011), conducted a prospective study to be evaluate the effectiveness of TENS on the pregnancy rate in women undergone assisted reproductive technique (ART) and embryo transfer at Tehran. 230 sample were selected, randomly. Clinical pregnancies were documented in 36 of 117 patient (38%) in the TENS group were as pregnancy rate in the control group was 19.8% (23 out of 116) pregnancy rate was highly significant in tens group ($p < 0.005$) MANOVA did not show any difference of demographic, sperm parameters and number of egg by good embryo quality between two group ($p > 0.04$).

The fourth objective of this study was to correlate the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai and their selected socio demographic variables and obstetrical variables.

In intervention groupthere is a significance, moderate positive correlation between pain and behavioral response, Karl pearson coefficient of correlation revealed that, (**r =0.46), (p ≤ 0.001)** level.

In control group there is not a significant, poor positive correlation between pain and behavioral responses. Karl pearson coefficient of correlation (**r =0.16), (p = 0.34)** level.

Hence H_4: There is a statistically significant correlation between the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai and their socio demographic and obstetrical variableswas accepted and null hypothesis was rejected.

Angela Baker, et.al., (2001), conducted a study on perception of labour pain by mothers and their attending midwives in the maternity unit of the Queen Elizabeth hospital, Adelaide at south Australia. A sample of 13 healthy pregnant mothers were selected by the sampling technique. Among them 5 were primipara women and 8 were multipara women. The study result showed that the mean visual analogue scale scores for the mothers during mild, moderate pain was 1.671 and severe pain was 2.157. The mean of mild moderate midwives were significantly ($p<0.05$) lower than severe pain .It concluded that both verbal and non verbal was perceived by the mother were used to assess pain levels.

SUMMARY

&

CONCLUSION

CHAPTER –VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study and conclusion drawn. It also clarifies the limitation of the study, the implications for different were as like nursing practice, education, administration, nursing research and recommendations.

6.1 Summary

The present study was done to evaluate the effectiveness of transcutaneous electrical nerve stimulation (TENS) on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.

The objective of the study were

1. To assess the level of pain and behavioural responses among primigravid mothers during the first stage of labour, at labour ward, GRH, Madurai.
2. To evaluate the effectiveness of TENS on pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, GRH, Madurai.
3. To associate the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, GRH, Madurai and their selected socio demographic variables and obstetrical variables.
4. To correlate the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, GRH, Madurai and their selected socio demographic variables and obstetrical variables.

The following hypotheses were set for the study

All the hypotheses were test data 0.05 level of significance.

H_1: There is a statistically significant difference between pre test and post test level of pain and behavioural responses among primigravid mothers in intervention group during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.

H_2: There is a statistically significant difference between post test level of pain and behavioural responses among primigravid mothers in intervention group and control group during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai.

H_3: There is a statistically significant association between the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai and their socio demographic and obstetrical variables.

H_4: There is a statistically significant correlation between the level of pain and behavioural responses among primigravid mothers during first stage of labour, at labour ward, Government Rajaji Hospital, Madurai and their socio demographic and obstetrical variables.

The study assumptions were,

- Primigravid mothers have varying level of pain perception.
- Primigravid mothers in labour express various behavioural responses.
- Transcutaneous Electrical Nerve Stimulation (TENS) is cost effective and it is easily followed by the primigravid mother in future.

The conceptual model in the study was based on modified Sr.Callista Roy's Adaptation Theory. True experimental design (pre test – post test control group) design. Probability sampling technique Simple random (Flip a coin) method. 60 primigravid mothers (30 intervention group and 30 control group) selected by probability sampling technique - Simple random (flip a coin) method. After testing the validity and reliability of the tool. Pilot study was conducted from 25.02.2019 to 02.03.2019 among 10 non study subjects (5 in intervention group and 5 in control group) at labour ward, Government Rajaji Hospital to find out the feasibility and practicability. The main study start from 18.03.2019 to 12.04.2019 data gathered was analysed by using both descriptive and inferential statistics

The data collection tool consisted of two section.

Section –I

Part-A Socio Demographic variables

Part-B Obstetrical variables

Section- II

(A) Modified Structured checklist on behavioural responses

(B) Numerical pain scale

6.2 Major finding of the study

The study findings are summarized as below,

The distribution of socio demographic and obstetrical variables of their study subjects showed that, in intervention group, 18 (60 %) were had between 19 – 23 years, 24 (80%) were belongs to Hindu, 16 (53.33 %) were from nuclear family, 18 (60%) were hailed from urban area, 22 (73.33%) were non-vegetarian, 13 (43.34 %) were studied up to primary education, 20 (66.67 %) were homemaker, 14 (46.67 %) were earned between Rs.5001-Rs.10000, 19 (63.33 %) were had between 38-40 weeks, 17 (56.67 %) were had moderate level of uterine contraction, 17 (56.67 %) were had between 4 -6 cm dilation of cervix, 30 (100 %) were had temperature between 37.5˚ C-38.4˚ C, 30 (100 %) were had maternal pulse rate between 80-100 bpm, 24 (80 %) were had maternal respiration between 17-22 bpm, 30 (100 %) were had maternal blood pressure between 100/70 − 130/90 mmHg, 18 (60 %) were had fetal heart rate between 120 – 130 bpm, 18 (60 %) were had right occiput anterior position, 30 (100 %) were had vertex presentation, 21 (70 %) were had duration of first stage of labour in between 11- 14 hours.

In control group , 17 (56.67 %) were had between 24-28 years, 24 (80%) were belongs to Hindu, 18 (60 %) were nuclear from family, 19 (63.33 %) were hailed from urban area, 22 (73.33%) were non-vegetarian, 16 (53.33 %) were studied up to primary education, 18 (60 %) were homemaker, 18 (60 %) were earned between Rs.5001-Rs.10000, 18(60 %) were had between 38-40 weeks of gestation, 20 (66.67 %) were had moderate level of uterine contraction, 18 (60 %) were had between 2 - 4 cm dilation of cervix, 30 (100 %) were had maternal temperature between 37.5˚ C-38.4˚ C, 30 (100 %) were had maternal pulse rate between 80-100 bpm, 23 (76.67 %) were had maternal respiration rate between 17-22 bpm, 30 (100 %) were had maternal blood pressure between 100/70 − 130/90 mmHg,

15 (50 %) were had fetal heart rate between 130 – 140 bpm, 12 (40 %) were had right occiput anterior position, 29 (96.67 %) were had vertex presentation, 24 (80 %) were had duration of first stage of labour in between 11- 14 hours.

In intervention group pre test, 21 (70%) were had severe level of pain, in post test 22 (73.33%) were had moderate pain and in control group, 19 (63.33%) were had severe pain in pre test, 15(50 %) were had severe pain in the post test.

In intervention group, pre test, 18(60%) were had moderate behavioural responses 22 (73.33%) were had good behavioural responses in the post test and in control group, pre test 20 (60%) were had moderate behavioural responses, 23 (76.6%) were had moderate behavioural responses in the post test.

There was statistically significant difference between pre test and post test level of pain and behavioural responses in intervention group and control group.

On an average 27% in intervention group 5.70%, in control group was reduced the level of pain.

On an average 25 % in intervention group 3.38%, in control group changes in behavioural responses.

Chi square revealed that, in intervention group, pain and Age between 24-28 years, Place of domicile, Gestation more than 40 weeks, 2-4 cm, Dilation of cervix was significantly associated and in behavioural responses and Age between 19-23 years, Place of domicile, Gestation more than 40 weeks was significantly associated. Other variables was not associated.

6.3 Conclusion

The study finding evidenced that Transcutaneous Electrical Nerve Stimulation (TENS) application is an effective intervention to enhanced the level pain and behavioural responses which comfort to primigravid mothers while on the process of delivery period. Further the study revealed that there was significant association

between the post test level of pain and behavioural responses with their socio demographic and obstetrical variables.

6.4 Implications of the study

The finding of the study have several implications on nursing practice, education, administration and nursing research that can be used in the following areas of profession.

Implication for nursing practice

- Midwives have many opportunities the primigravid mothers, by giving adequate information and motivation to choose proper pain relieving measures.
- The findings of the study support that TENS applications is very safe, cost effective method to reduce the level of pain and behavioural responses among primigravid mothers during first stage of labour
- The study findings helps the nursing personnel to have knowledge on uses of TENS application and its physiology and include it as the part of nursing intervention in the management of pain and behavioural responses.
- Nurses can uses the TENS application in various forms in various types of non invasive Procedure.

Implication for nursing education

- Nursing students to have adequate knowledge on about TENS and its benefits and it is encouraged by Nurse educator.
- Nursing students can apply TENS for various pain reduction purpose
- This knowledge and learning experience of students will helps to adopting various comfort measures during care for the patients.

Implication in nursing research

- The researcher can encourage to use TENS along with pharmacological therapy.

- This study can be baseline for further studies to build upon and motivate other investigators to conduct further studies

Implications for nursing administration

- Continuing nursing education and in-service education can be planned by nurse administrators also aid in formulating protocols to practicing TENS.
- Appropriate and feasible organizational intervention like health education, domiciliary care services and health promotion activities will plan for TENS application by nursing administrators.
- The nurse administrator should organize activities to explain and train the nurses about their role in decreasing the level of pain and its complications among primigravid mothers with the help of complementary therapy.

6.5 Recommendations

- A similar study could be conducted on larger samples which may yield more reliable results.
- A similar study could be conducted on multiparous women to know differences of pain intensity.
- A comparative study could be conducted to evaluate the effectiveness of TENS with other non pharmacological measures in labour.
- A prospective experimental study could be conducted to determine the effectiveness of TENS in common discomforts of pregnancy and primary dysmenorrhoea.
- A descriptive study could be conducted to determine the knowledge and attitude of healthcare professionals towards alternative and complementary therapies in labour.

REFERENCES

REFERENCES

Book References

1. Adelle Pillitery. (2006). *Maternal and child health nursing.* (2nd Ed). New Delhi: Lippincott and Williams Publishers.
2. Ann Marrianer Tomy & Mart Rouile Alligood. (1998). *Nursing theories and their work.* Philadelphia: Mosby publications.
3. Annamma Jacob (2015), "A comprehensive Textbook of Midwifery & Gynaecological Nursing", IV edition, Jaypee Publications, New Delhi.
4. Basavanthapa, B.T. (2006). *Textbook of Midwifery and reproductive health.* New Delhi: Jaypee Brothers Publishers.
5. Berek, S.Jonathan. (2007). *Gynaecology*. (14th Ed). New Delhi: Wolters Kluwers Publishers private limited.
6. Bhargavara, VL. (2009). *Textbook of Gynaecology.* (2nd Ed). New Delhi: Ane books pvt. limited.
7. Bobak Jensen. (2009). *Maternity and Gynaecologic care*. (5th Ed). New Delhi: Mosby publications.
8. Brown, K.Linda, Bennet Ruth, V. (2010). *Myles textbook for midwives*. (12th Ed). New York: Churchill living stone publishers.
9. Catherine Williams. (2008). *Textbook of Obstetrics.* (23nd Ed). London: Mc Graw Hill Companies.
10. Danfortis. (2010). *Obstetrics & Gynecology.* (9th Ed). Calcutta: Lippincott and Williams Publishers.
11. Dannel, E. Shaon, Wong and Perry, (1998). *Maternal and child care. C.V.* Philadelphia: Mosby publications.

12. Denise, F. Polit & Chery Tatano BECK. (2004). *Nursing Research.* (7th Ed). New Delhi: Lippincott and Williams Publishers.
13. Dorothy. Marlow & Barbara C. Redding. R. (1998). *Textbook of pediatric Nursing*, (6th Ed). Philadelphia: Saunders Company.
14. Dutta. D.C. (2004). *Textbook of Gynecology including perinatology and contraception*. (6th Ed). Kolkatta: New central book agency (p) Ltd.
15. Dutta. D.C. (1998). *Textbook of obstetrics.* (5th Ed). Calcutta: New central book agency (p) Ltd.
16. Fawcett Jacquiline. (1989). *Analysis and evaluation of conceptual Model of Nursing.* Philadelphia: F.A.Davis Publishers.
17. Jill Mantle, Jannet Haslam, Sue Barton. (2009). *Physiotherapy in Obstetrics and Gynecology*. (2nd Ed). London: Elsevier Publications Pvt Ltd.
18. John. O. Schorge, Joseph. I.Schaffers, Lisa Halvorson. (2008). *Textbook of Gynecology*. (2nd Ed). China: Mc Graw Hill Companies.
19. John Shidd. (2005). *Progress in Obstetric Gynecology*. (2nd Ed). London: Elsevier sciences ltd.
20. Julia B.George. (1996). *Nursing theories.* (3rd Ed). New Jersey: Prentice Hall Company.
21. Krishna Menon, MK. Palaniappan. (2003). *Clinical obstetrics*. (5th Ed). Chennai: Orient Longman private ltd.
22. Lakshmi Seshadri. (2011). *Essential of Gynecology*. New Delhi: Wolters Kluwer Publishers Pvt Ltd.
23. Lowdermilk Diettra Leonard. & Perry E Shannon. (2007). *Maternity and Women Health.* (9th Ed). Missouri: Mosby Publications.

24. Lynner Y. Littleton. Et al., *Maternal neonatal and woman health Nursing*. (1st Ed). Canada: Delmar Company.
25. Mahajan,B.K. (1999). *Methods in biostatistics.* (6th Ed). New Delhi: Jaypee Brothers publications.
26. Nancy Burns & Susan K.Grove. (2007). *Understanding Nursing Research.* (4th Ed). St.Louis: Soundars Publications.
27. Nima Baskar. (2015) *Midwifery and Obstetrical Nursing*. (2nd Ed). Bangalore: EMMESS Medical publishers
28. Rao. (2004). *Methods of biostatistics.* (2nd Ed). Hyderabad: Paras medical Publications.
29. Reeder, Martin. (2014). *Maternity nursing*. (19th Ed). New Delhi: Wolters Kluwers Publishers private limited.
30. Ruth Bennet. V (2005). (14th Ed). *Myles Text Book for Midwives.* Calcutta: English Language Book Society.
31. Sharon Smith Murray. et.al. (2006). *Foundation of maternal and newborn nursing*. (4th Ed).Philadelphia: Saunders Company.
32. Shashank. V. (2000). *Handbook of practical Gynaecology and obstetrics*. Mumbai: Vora medical publishers.
33. Sudha salhan. (2007). *Textbook of Obstetrics*. (1st Ed). NewDelhi: Jaypee Medical Publishers.

Journal References

1. Anderson, F.W.J, Johnson, C.T. (2005). Complementary and alternative medicine in obstetrics. *International Journal of Gynaecology and Obstetrics,* 91, 116-124.
2. Bergstrom, M, Kieler, H, Waldenstrom, U. (2009). Effects of natural childbirth preparation versus standard antenatal education on epidural rates, experience of childbirth and parental stress in mothers and fathers: a randomised controlled multicentre trial. *British Journal of Obstetrics and Gynaecology,* 116 (9), 1167-1176.
3. Bundsen P. & Ericson K. (1982) Pain relief in labor by transcutaneous electrical nerve stimulation. Safety aspects. *Acta Obstetricia at Gynecologica Scandinavica* 61 (1), 1–5.
4. Chartered Society of Physiotherapy (CSP) (2002) *Rules of Professional Conduct*, 2nd edn. Chartered Society of Physiotherapy, London.
5. Dowswell T., Bedwell C., Lavender T. & Neilson J. P. (2009) Transcutaneous electrical nerve stimulation (TENS) for pain relief in labour. *Cochrane Database of Systematic Reviews*, Issue 2. Art. No.: CD007214. DOI:10.1002/14651858.CD007214.pub2.
6. Dunn P. A., Rogers D. & Halford K. (1989) Transcutaneous electrical nerve stimulation at acupuncture points in the induction of uterine contractions. *Obstetrics and Gynecology* **73** (2), 286–290.
7. Elden H., Ladfors L., Olsen M. F., Ostgaard H.-C. & Hagberg H. (2005) Effects of acupuncture and stabilizing exercises as adjunct to standard treatment in pregnant women with pelvic girdle pain: randomised single blind controlled trial. *BMJ* **330** (7494), 761.

8. Enzelsberger H., Skodler W. D. & Kubista E. (1991) [Improvement of Doppler ultrasonography findings following transcutaneous electro stimulation in women with placental insufficiency.] *Zeitschrift für Geburtshilfe und Perinatologie* **195** (4), 172–175. [In German.]
9. Grant A. & Ma B.-Y. (2003) The safe use of difficult and dangerous acupuncture points. *Journal of Chinese Medicine* **72** (June), 11–15. Peng T., Li X.-T., Zhou S.-F., *et al.* (2010) Transcutaneous electrical nerve stimulation on acupoints relieves labor pain: a non-randomized controlled study. *Chinese Journal of Integrative Medicine* **16** (3), 234–238.
10. Resnik R. (2002) Intrauterine growth restriction. *Obstetrics and Gynecology* **99** (3), 490–496. Say L., Gülmezoglu A. M. & Hofmeyr G. J. (1996) Transcutaneous electrostimulation for suspected placental insufficiency (diagnosed by Doppler studies).
11. *Cochrane Database of Systematic Reviews*, Issue 1. Art. No.: CD000079. DOI: 10.1002/14651858.CD000079.
12. Smith C. A. & Crowther C. A. (2004) Acupuncture for induction of labour. *Cochrane Database of Systematic Reviews*, Issue 1. Art. No.: CD002962. DOI: 10.1002/14651858.CD002962.pub2.
13. Ternov N. K., Grennert L., Åberg A., Algotsson L. & Åkeson J. (2001) Acupuncture for lower back and pelvic pain in late pregnancy: a retrospective report on 167 consecutive cases. *Pain Medicine* **2** (3), 204–207. Walsh D. M. (1997) *TENS: Clinical Applications and Related Theory.* Churchill Livingstone, Edinburgh.
14. West Z. (2000) *Acupuncture in Pregnancy and childbirth* .Churchchill Livingstone, Edinburgh.

Net References

1. http://WWW.thecochranelibrary.com
2. http://WWW.tgga.org
3. http://WWW.ncbi.nlm.gov/pmc
4. http://WWW.ijwhr.net
5. http://WWW.diabetesresearchclinicalpractice.com
6. http://WWW.ijmedicine.com
7. http://WWW.onlinelibbrary.wiley.com
8. http://WWW.imsear.hellis.com
9. http://WWW.biomedcentral.com
10. http://WWW.dx.doi.org
11. http://WWW.allresearchjournal.com
12. http://WWW.almedicine.about.comS
13. http://WWW.sciencedirect.com
14. http://WWW.nursingtimes.net
15. http://WWW.medscape.org
16. http://WWW.researchgate.net

APPENDICES

APPENDIX I

Ethical committee approval letter

MADURAI MEDICAL COLLEGE
MADURAI, TAMILNADU, INDIA -625 020
(Affiliated to The Tamilnadu Dr.MGR Medical University, Chennai, Tamil Nadu)

ETHICS COMMITTEE CERTIFICATE

Name of the Candidate	:	Velvizhi .S.
Course	:	PG in M.Sc., Nursing Obstetrics and Gynecology Nursing
Course of Study	:	2017-2019
College	:	MADURAI MEDICAL COLLEGE
Research Topic	:	A study to determine the effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) on pain and behavioural responses of primigravid women during first stage of labour in labour ward at Govt. Rajaji Hospital, Madurai
Ethical Committee as on	:	07.12.2018

The Ethics Committee, Madurai Medical College has decided to inform that your Research proposal is accepted.

Member Secretary Chairman Dean / Convenor

Prof Dr V Nagaraajan
M.D., MNAMS, D.M., Dsc.,(Neuro), Dsc (Hon)
CHAIRMAN
IEC - Madurai Medical College
Madurai

DEAN
Madurai Medical Colleg
Madurai-20

10 DEC 2018

APPENDIX – II

Letter seeking and granting permission to conduct pilot study and main study at GRH, Madurai

LETTER SEEKING AND GRANTING PERMISSION TO CONDUCT STUDY IN LABOUR WARD, GOVERNMENT RAJAJI HOSPITAL, MADURAI.

From

Velvizhi.S,
II year M.Sc (Nursing),
College of Nursing,
Madurai Medical College,
Madurai – 20.

To

The Professor and Head of the department,
Department of Obstetrics and Gynaecology,
Government Rajaji Hospital,
Madurai -20.

Through the proper channel,

Respected Madam,

Sub: CON/MMC/MDU -II year M. Sc [N] Obstetrics and Gynaecology Nursing- Requesting Permission to conducting study – Regarding.

As per the curriculum recommended by Indian Nursing Council and The Tamil Nadu Dr. M.G.R. Medical University, M. Sc [N] candidates are required to conduct a dissertation study for the partial fulfilment of the course in their respective departments.

I wish to conduct a study topic on **"A study to determine the effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) on pain and behavioural responses of primigravid women during first stage of labour in labour ward at Government Rajaji Hospital , Madurai"** for my dissertation.

Hence I kindly request you to consider my requisition and permit me to conduct the study in Labour Ward, Madurai.

Thanking you,

Place: Madurai
Date :15.11.2018

Yours sincerely,

(Velvizhi.S)

Forwarded
15/11/18

Forwarded
S. Rajamani
15/11/18

Principal
COLLEGE OF NURSING
Madurai Medical College
Madurai-20

Permitted. Conduct pilot study.
15/11/18

PROF. & HOD
DEPT. OF O&G
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MADURAI

APPENDIX – III

Content validity certificates

CERTIFICATE FOR VALIDATION

This is to certify that the tool

SECTION A: Socio Demographic Tool

SECTION B: Obstertical Variables

SECTION C: Modified Structured Observation Checklist And Numerical Rating Pain Scale

Prepared for data collection by VELVIZHI . S II Year M.Sc (N) student, College of Nursing, Madurai Medical College, Maudurai- 20, who has undertaken the study field on thesis entitled **" EFFECTIVENESS OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) ON PAIN AND BEHAVIOURAL RESPONSES AMONG PRIMIGRAVID MOTHER DURING FIRST STAGE OF LABOUR, AT LABOUR WARD , GOVERNMENT RAJAJI HOSPITAL , MADURAI"** has been validated by me.

Signature of the Expert:

Name:

Designation:

Name of the college:

PROF. & HOD
DEPT. OF O &G
MADURAI MEDICAL COLLEGE
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Signature of the Expert: P. Priyadharshini

Name: Dr. Priyadharshini . P

Designation: Senior Resident / Assistant Professor

Name of the college: Govt. Rajaji Hospital

ASSISTANT PROFESSOR
DEPARTMENT OF OBSTETRICS & GYNAECOLOGY
GRH, MADURAI

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Signature of the Expert: Mrs. S. SELVA PRIYA, M.Sc.(N),
HOD OBG NURSING
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MADURAI-625 009

Name: S. SELVA PRIYA

Designation: Vice principal

Name of the college: Chithirai College of Nursing, Madurai.

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Signature of the Expert:

Name: MRS. P.L. MURUGALAKSHMI

Designation: PROFESSOR

Name of the college: SACRED HEART NURSING COLLEGE

CERTIFICATE FOR VALIDATION

This is to certify that the tool

SECTION A: Socio Demographic Tool

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Signature of the Expert: Sudha k.N.

Name: MS. SUDHA. K.N., M.Sc.(N)OBG

Designation: PROFESSOR, HOD OF OBG DEPARTMENT,

Name of the college: RASS ACADEMY COLLEGE OF NURSING

RASS ACADEMY COLLEGE OF NURSING POOVANTHI 630 611.

APPENDIX – IV

Informed consent form

NAME: DATE:

Hence I am acknowledge that information regarding the project study topic was explain to me and the positive reason pointed out. I am voluntarily willing to participate in this study. At any time I am free to exclude from the study and promised all my personal information should be kept confidential.

Signature of Participate

ஒப்புதல் அறிக்கை

பெயர் : தேதி:

எனக்கு இந்த ஆய்வை பற்றிய முழு விவரம் விளக்கமாக எடுத்துரைக்கப்பட்டது. இந்த ஆய்வில் பங்கு பெறுவதில் உள்ள நன்மைகள் மற்றும் தீமைகள் பற்றி நான் புரிந்துகொண்டேன். இந்த ஆய்வில் தானாகவே முன் வந்து பங்கு பெறுகின்றேன். மேலும் எனக்கு இந்த ஆய்வில் இருந்து எந்த நேரமும் விலகிக்கொள்ள முழு அனுமதி வழங்கப்பட்டுள்ளது. என்னுடைய சிகிச்சை ஆவணங்களை பார்வையிட்டு அதில் உள்ள விவரங்களை ஆய்வில் பயன்படுத்திக் கொள்ள அனுமதி அளிக்கின்றேன். என்னுடைய பெயர் மற்றும் அடையாளங்கள் ரகசியமாக வைத்ததுக்கொள்ளப்படும் என்றும் எனக்கு உறுதியளிக்கப்பட்டுள்ளது.

இப்படிக்கு

APPENDIX – V

Socio demographic variables and obstetrical variables – English

PART- I

SOCIO DEMOGRAPHIC VARIABLE

1. Age in years

a. ≤ 18 years

b.19 - 23 years

c.24 - 28 years

d. ≥ 28 years

2. Religion

a. Christian

b. Hindu

c. Muslim

3. Types of family

a. Nuclear

b. Joined

c. Extended

4. Place of domicile

a. Rural

b. Urban

c. Sub urban

5. Food habits

a. Vegetarian

b. Non vegetaian

c. Mixed

6. Education

a. Non formal education

b. Primary education

c. Higher Secondary education

d. Graduate

7. Occupation

a. Homemaker

b. Cooly

c. Private employee

d. Government employee

e. Self employee

8. Monthly Income

a. ≤ Rs.5000

b. Rs.5001-Rs.10000

c. Rs.10001-Rs.15000

d. ≥ Rs.15001

Part - II

Obstetrical Variables

1. Gestation age in weeks ☐

a. < 38 weeks

b. 38-40 weeks

c. > 40 weeks

2. Uterine contraction ☐

a. Mild

b. Moderate

c. Severe

3. Dilatation of the cervix ☐

a.2-4 cm

b. 4-6 cm

c. 6-8 cm

d. 8-10 cm

4. Maternal Temperature ☐

a. ≤ 36˚C

b. 37.5˚ C - 38.4˚ C

c. ≥ 38.5˚ C

5. Maternal pulse rate ☐

a. ≤ 70 beats per minute

b. 80-100 beats per minute

c. ≥ 110 beats per minute bpm

6. Maternal respiration rate ☐

a. ≤ 12 breath per minute

b. 13-16 breath per minute

c. 17-22 breath per minute

d. ≥ 23 breath per minute

7. Maternal blood pressure

a. ≤ 90/60 mmHg

b. 100/70 − 130/90 mmHg

c. ≤ 140/100 mmHg

8. Fetal heart rate.

a. 100-110 beats per minute bpm

b.110-120 beats per minute bpm

c. 120-130 beats per minute bpm

d. 130-140 beats per minute bpm

9. Position of the fetal

a. Left Occiput Anterior

b. Right Occiput Anterior

c. Left Occiput Posterior

d. Right Occiput Posterior

10. Presenting part

a. Vertex presentation

b. Breech presentation

c. Face presentation

11. Duration of first stage of labour

a. ≤ 10 Hours

b. 11-14 Hours

c. 15-17 Hours

d. ≥ 18 Hours

APPENDIX – VI

Research tool – English

Modified Structured Observational Responses Checklist

Instructions to the Observer: The investigator observes the behavioural responses five times with 45 minutes of interval and places a tick mark in the appropriate column as indicated by 'Y' if yes, and 'N' if no.

For positive behavioural responses, if response is 'Yes' then score of '1' and if 'No' then '0' score will be given. On the other hand, for negative behavioural responses if 'yes' it will be scored '0' and if 'No' the score of '1' will be given.

Maximum possible score 20 and minimum Zero.

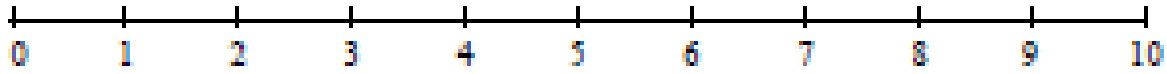
S.No	Content	YES	NO
A)	**Behavioural responses during uterine contraction.**		
1.	Express pain verbally		
2.	Takes deep breath		
3.	Request to see family member		
4.	Ask water to drink		
5.	Hold bed or IV stand tight		
6.	Wriggling her feet		
7.	Cries loudly		
8.	Clenching the fist		
9.	Getting up from the bed restlessly		
10.	Ask for operation to finish off delivery		
B)	**Behavioural responses in between contraction**		
11.	Looks tired		

12.	Rolls heads from side to side		
13.	Scream / shouts		
14.	Continues cry		
15.	Anxious look		
C)	**Manifestation of participation**		
16.	Listens and follow care provider instruction		
17.	Lies on her left side		
18.	Relaxes in between the contraction		
19.	Verbally express her needs		
20.	Allow to assess vital sign and FSH		

NUMERICAL PAIN SCALE

➔ Henry K.Beeher categories.it consisted of a 10 cm scale divided into five parts

➔ The pain assessment scale four times with an hour of intervals.



Key:

0 – No pain

1 - 3 – Mild pain

4 - 6 – Moderate pain

7 - 9 – Severe pain

≥10 – worst pain possible

APPENDIX – VII

Socio demographic variables and obstetrical variables – Tamil

பகுதி-1

சமூககுடியியல் தகவல்

1. வயது

அ) 18வயது மற்றும் 18 வயதிற்கும் கீழ்

ஆ) 19-23 வயது வரை

இ) 24- 28 வயது வரை

ஈ) 28 வயது மற்றும் 28 வயதிற்குமேல்

2. மதம்

அ) இந்து

ஆ) கிறிஸ்தவம்

இ)முஸ்லீம்

3. குடும்ப வகை

அ) தனிக்குடும்பம்

ஆ) கூட்டுக்குடும்பம்

இ) நீக்கப்பட்டுள்ளது

4. இருப்பிடம்

அ) கிராமப்புறம்

ஆ)நகர்ப்புறம்

இ) துணை நகர்ப்புறம்

5. உணவுபழக்கம்

அ) சைவம்

ஆ)அசைவம்

இ) கலப்பு

6. கல்வி தகுதி

அ) அல்லாத முறையான கல்வி

ஆ) ஆரம்ப கல்வி

இ) உயர்நிலை கல்வி

ஈ) பட்டதாரி

7. வேலை

அ) இல்லத்தரசி

ஆ) கூலிதொழிலாளர்

இ)தனியார் ஊழியர்

ஈ)அரசாங்க ஊழியர்

உ)சுயஊழியர்

8. மாத வருமானம்

அ) ≤5000 ரூபாய்

ஆ) ரூ.5001 - ரூ.10001

இ) ரூ.10001- ரூ.15000

ஈ) ரூ.≥15001க்கு மேல்

பகுதி - II

மகப்பேறு குறிப்பு

1. கர்ப்ப வயதின் வாரங்கள்

அ) <38 வாரம்

ஆ) 38-40 வாரம்

இ) >40 வாரம்

2. கருப்பை சுருக்கம்

அ)லேசாக

ஆ) மிதமாக

இ) கடுமையாக

3. கருப்பையின் விரிவாக்க நிலை

அ) 2-4 செ.மீ

ஆ) 4-6 செ.மீ

இ) 6-8 செ.மீ

ஈ) 8-10 செ.மீ

4. தாயின் வெப்பநிலை

அ) $\leq 36^{\circ}$

ஆ) $37.5^{\circ} - 38.4^{\circ}$

இ) $\geq 38.5^{\circ}$

5. தாயின் இதயதுடிப்பு ஒரு நிமிடத்திற்குள்

அ) ≤ 70 வினாடி ஒரு நிமிடம்

ஆ) 80-100 வினாடி ஒரு நிமிடம்

இ) ≥ 100 வினாடி ஒரு நிமிடம்

6. தாயின் சுவாச விகிதம் நிமிடத்திற்கு

அ) ≤ 12 சுவாசம் ஒரு நிமிடம்

ஆ) 13-16 சுவாசம ஒரு நிமிடம்

இ) 17-22 சுவாசம் ஒரு நிமிடம்

ஈ) ≥ 23 சுவாசம் ஒரு நிமிடம்

7. தாயின் இரத்த அழுத்தம்

அ) ≤ 90/100 mm Hg

ஆ) 100/70 – 130/90mm Hg

இ) ≥ 140/100mm Hg

8. கருவின் இதயதுடிப்பு நிமிடத்திற்கு

அ) 100-110 வினாடி ஒரு நிமிடம்

ஆ) 110-120 வினாடி ஒரு நிமிடம்

இ) 120-130 வினாடி ஒரு நிமிடம்

ஈ) 130-140 வினாடி ஒரு நிமிடம்

9. கருவின் நிலை

அ) இடது தலையின் பின்பகுதிக்கு முன்புறம்

ஆ)வலது தலையின் பின்பகுதிக்கு முன்புறம்

இ)இடது தலையின் பின்பகுதிக்கும் பின்பக்கம்

ஈ)வலது தலையின் பின்பகுதிக்கு பின்பக்கம்

10. பங்களிப்பு பகுதி

அ) உச்சி வழங்கல்

ஆ) ப.ரீச் வழங்கல்

இ)முகம் வழங்கல்

11. முதல் கட்டத்தின் காலம் பிள்ளைபெற்ற வலி

அ) ≤ 10 மணிநேரம்

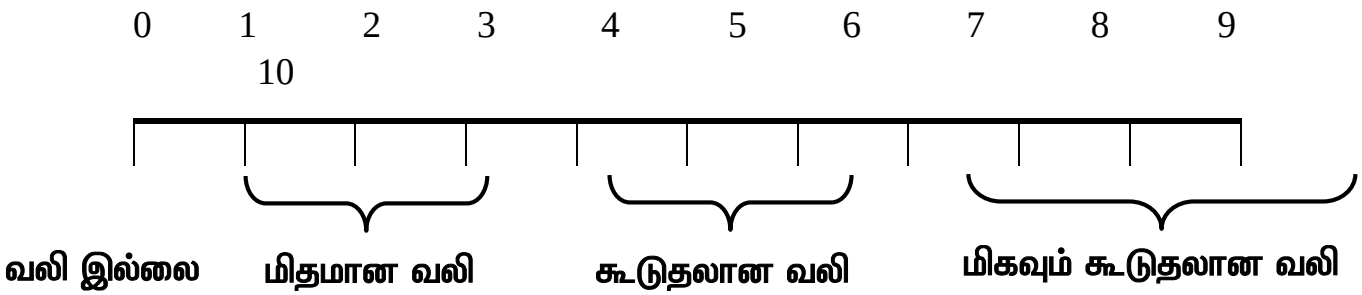
ஆ) 11-14 மணிநேரம்

இ) 15-17 மணிநேரம்

ஈ) ≥ 18 மணிநேரம்

பகுதி III

வலியின் அளவைக்குறிக்கும் திட்ட அளவுகோல்



வரையறை	அளவுகோல்
வலி இல்லை	0
மிதமான வலி	1-3
கூடுதலான வலி	4-6
மிகவும் கூடுதலான வலி	7-10

APPENDIX – VIII

Research tool – Tamil

கட்டமைப்பியல் கண்காணிப்பு மாற்ற பட்டியல்

வரிசை எண்	உள்ளடக்கம்	ஆம்	இல்லை
அ)	**கருப்பை சுருக்கத்தின் போது பதில் நடத்தை**		
1.	வாய்மொழியாக வலியை வெளிப்படுத்துதல்		
2.	ஆழமாக மூச்சு விடுதல்		
3.	குடும்ப உறவுகள் (அ) உறுப்பினரை பார்க்க கோரிக்கை வைத்தல்		
4.	தண்ணீர் குடிக்க கேட்டல்		
5.	வுலியை தாங்க முடியாமல் கட்டிலை பிடித்தல் (அ) ஐஏ ளுவயனெ பிடித்தல்		
6.	துறுதுறுப்பான கால்கள்		
7.	சத்தமாக அழுதல்		
8.	கையை இறுக்கமாக மூடுதல்		
9.	வலியை தாங்கமுடியாமல் கட்டிலில் இருந்து எழுதல்		
10.	வலியை தாங்கமுடியாமல் எனக்கு அறுவை சிகிச்சை பண்ணிடுங்க என்று அழுதல்		
ஆ)	கருப்பை சுருக்கத்தின் இடையில் பதில் நடத்தை		
11.	சோர்வான தோற்றம்		
12.	தலையை இடபக்கம், வலப்பக்கம் திருப்புதல்		
13.	அலறுதல் / கத்துதல்		
14.	விடாது அழுதுகொண்டு இருத்தல்		
15.	ஏக்கத்துடன் பார்த்தல்		
இ)	வெளிப்படையான பங்கு		

16.	பாதுகாப்பு வழங்கியவர் சொல்லும் வழிமுறையை கேட்டு நடந்து கொள்ளுதல்		
17.	இடது பக்கம் சாய்ந்து படுத்தல்		
18.	சுருங்கும் நிலையில் தளர்ந்து இருத்தல்		
19.	தேவையை கேட்டல் (ல) தளர்ந்து இருத்தல்		
20.	முக்கிய அறிகுறி மற்றும் கருவில் உள்ள குழந்தையின் இருதய ஒலியை மதிப்பிட அனுமதித்தல்		

APPENDIX – IX

English editing certificate

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the dissertation **"A STUDY TO EVALUATE THE EFFECTIVENESS OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) ON PAIN AND BEHAVIOURAL RESPONSES AMONG PRIMIGRAVID MOTHER DURING FIRST STAGE OF LABOUR, AT LABOUR WARD , GOVERNMENT RAJAJI HOSPITAL , MADURAI" ,** done by Velvizhi.S M.Sc Nursing II year student (2017- 2019) college of nursing, Madurai medical college, Madurai- 20 has been edited for Tamil language appropriateness.

6/4/19

Name of the Expert:

Name: B. KANNAN

Designation: PG ASST - ENGLISH

Date: 06-04-2019

B. KANNAN
PG Asst. in English
Karapettai Nadar Hr. Sec. School
Thoothukudi - 628 001.

APPENDIX – X

Tamil editing certificate

TO WHOM SO EVER IT MAY CONCERN

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APPENDIX – XI

CERTIFICATE IN TENS PHYSIO THERAPY SKILLS

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CERTIFICATE IN TENS PHYSIO THERAPY SKILLS

This is to certify that **VELVIZHI. S** II year M.Sc. Nursing, has underwent the orientation class. This orientation class was about TENS, it was held in Ameer Physio Care Clinic for her dissertation study.

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