CHAPTER V

DISCUSSION

"We can be anything we want to do if we stick to it long enough”

– Helen Keller

The present study intended to find out the Effectiveness of aromatherapy and biofeedback therapy on reduction of pain and duration of labour among primigravida mothers at selected hospital in Kanyakumari District, Tamilnadu. The findings of the present study are discussed with reference to the objectives, hypothesis stated and with the findings of other similar studies.

The following objectives were fulfilled by the present study

1) To assess the effectiveness of aromatherapy in reduction of labour pain among primigravidas.
2) To find out the effectiveness of aromatherapy in reduction of duration of labour among primigravidas
3) To evaluate the effectiveness of biofeedback in reduction of labour pain among primigravidas.
4) To find out the effectiveness of biofeedback in reduction of duration of labour among primigravidas.
5) To compare the effectiveness of aromatherapy& biofeedback in reduction of labour pain among primigravidas.
6) To compare the effectiveness of aromatherapy& biofeedback in reduction of duration of labour among primigravidas.
7) To associate the findings with selected demographic and Obstetric variables

Hypothesis

The present study attempted to examine the following hypothesis, which was tested at 5% level of significance.
- H1-Primigravidas who receive aromatherapy during labour will experience less pain perception than who do not receive aromatherapy.
- H1- Primigravidas who receive aromatherapy during labour will have less duration of labour than who do not receive aromatherapy.
- H1-Primigravidas who receive biofeedback therapy during labour will experience less pain perception than who do not receive biofeedback therapy.
- H1- Primigravidas who receive biofeedback therapy during labour will have less duration of labour than who do not receive biofeedback therapy.
- H1-Primigravidas who receive aromatherapy during labour will experience less pain perception than who receive biofeedback therapy.
- H1- Primigravidas who receive aromatherapy during labour will have less duration of labour than who receive biofeedback therapy.

Findings of the study

The findings of sample characteristics are described as follows

Demographic variables

- Majority of women (45%) in this study were between the age group of 21-25 yrs. Very few (2.5%) were above 35 years of age in all three groups.
- Majority of women (37%) had higher secondary education, and a very few had (9%) primary education in all three groups. But no woman was found to be illiterate.
- When considering the occupation most of the women, aromatherapy (50.5%), biofeedback group (53%) and in control group (53%) were housewife.
- Most of the women were (57.5% in aromatherapy, 63% in biofeedback and 69% in control group) were from nuclear family.
✓ Majority of women (32.5%) in aromatherapy group and control group (34%) were with a monthly income of Rs.10,000-15,000. But in biofeedback majority were having monthly income between Rs15,000-20,000
✓ When considering the religion majority were Christians (52.5%, 48%, 50.5%) in all three groups

Obstetric variable

✓ In all three groups majority (80.5%) of women attained menarche at the age between 18-20 yrs.
✓ Most of the women in aromatherapy (58.5) were married at the age between 20-25 yrs, in biofeedback group (60.5%) and control group (56%) also majority were married at the age between 20-25 yrs.
✓ Majority of women in all groups had <1 yr of duration after marriage.
✓ When considering the type of marriage majority (75.8%) had nonconsanguineos marriage in all three groups
✓ Gestational age for women childbirth was between 38-40 weeks for majority of women in all three groups
✓ Spontaneous labor pain has started for majority of women; nearly 38% had induced labor.

1. Effectiveness of aromatherapy on reduction of labour pain among experimental and control group

Labour pain is the most severe pain experienced by the mother that she never experience previously. Traditionally it was believed that natural childbirth never can be a pleasant experience for the mother as it is associated with a variety of pain which is staring from the fundus of uterus, and it radiates towards the sacrum. Naturally majority of women were dream for a perfect childbirth. The
pain during childbirth may cause anxiety to the mother further it may leads to prolonged duration of labour. This is another consequence during childbirth; unintentionally it may affect the mother and fetus. Even it may leads to operative interference like cesarean section, or forceps deliveries.

Majority of women does not aware about the pain relief methods to reduce the perception of pain during labour. They were depended on pharmacological pain relief methods by putting injections or other invasive methods. The hospitals were also not taking much initiative to introduce these methods apart from their busy schedule in the hospitals. Modern medicines has been introduced many noninvasive methods to relieve pain during childbirth.

In day to day clinical practice, health care professionals especially midwives come across pregnancy and laboring women from different cultures. The mothers may have fear about their pain during childbirth and they are more concern about painless birth as it is becoming a trend. Safety of mother and baby is the ultimate concern of health care professionals. Invasive methods of pain relief may cause complications to the unborn baby. So it is better to deal the pain with alternative and complementary methods for pain relief during childbirth. As a non-pharmacological intervention, it is easy to administer, cost effective, harmless, do not require much training, and appealing to the mother. This intervention may be used by health care practitioners (medical and nursing staff, student nurses) as part of their routine when providing care with women during the labor process.

The undertaken study helped to examine the efficiency of aromatherapy and biofeedback in reduction of pain and duration of labour. Previously very few studies have been undertaken in the region of Kanyakumari (Tamil Nadu) as a alternative method of pain relief during childbirth.

The present study created awareness among pregnant women about the non pharmacological and non invasive pain relief methods. So the trend of painless labour has become popular in the region of Kanyakumari.
The finding of the study reported that aroma therapy and biofeedback helped in reducing the duration of labour. Prolonged duration may cause complication to the mother and unborn baby. So these therapies helped the mother in promotion of labour outcomes and it gives positive childbirth experience. Pain during labour may produce fear and anxiety about childbirth that force the mother to opt for cesarean section. So this study helped to create awareness about painless childbirth as a result the rate of cesarean section can be reduced.

Among this aromatherapy is a most popular complementary therapy during childbirth, it is the use of essential oils and used for massage over the abdomen and back (Alien, 2009). The effect of aromatherapy can relieve stress, provides relaxation, improves metabolism, and gives the mother a sense of well being. (Tracey, 2011). When aroma massage is applied over the skin and it is entering into the bloodstream through the skin pores and it provides a sense of well being and it reduces the need for invasive methods of pain relief. (Burns E et al., 2000)

Abbaspoor Z (2012) reported that lavender massage helps to decrease pain during first stage of labour. It is inexpensive and safe treatment when compared with other invasive pain relief methods. Shellie Enteen (2005) also stated that, the most famous essential oil for pain relief and relaxation is lavender oil. It can be applied over the skin or through inhalation to promote physical and psychological well being of the mother.

The present study also dealt with the aromatherapy application in reducing pain and duration of labour. It clearly stated that in aromatherapy the pain score is less, when comparing with other two groups. Cavanagh et al., (2002) reported that the essential oils used for aromatherapy is derived from various medicinal plants. The smell of these oils stimulating olfactory nerve to send electro chemical messages to the limbic center in the brain ant it stimulates the release
of neuro transmitters from the hypothalamus. Further it acts as an analgesic effect.

When the labour is getting progress, simultaneously the labour pain also increases. But the discomfort during labour can be reduced by complementary therapies like aromatherapy. It was proved by the present study. It clearly stated that the mean score of pain is reduced in aromatherapy group when compared with the control group. In latent phase the mean pain score of aromatherapy is 6.2 and in control group mean pain score is 8.6. The mean difference in pain score between aromatherapy and control group showed aromatherapy was effective in reducing labour pain

This present study was done to assess the effects of aromatherapy on labor pain intensity level and a few intrapartum outcomes. Randomization was successful, and the baseline characteristics were similar between the two groups. No maternal adverse effects associated with lavender aromatherapy application were reported, and there were no related neonatal ill effects. The study achieved its main objective in demonstrating that lavender aromatherapy massage is effective in reliving labor pain, although, in routine intervention group there was not a reduction in pain intensity. Data analyses analysis showed that aroma massage is effective in the first stage of labor pain. In confirmation of this, Chang et al. (2002) in their study also showed that the Aromatherapy is effective on pain and fear during labor. The results also showed that mean pain intensity reduced for the group used lavender oil massage. In confirmation of this study, Burns et al. (2000) also stated that the aromatherapy is used for relief pain, nausea and vomiting and to strengthen uterine contractions in labor.

(Tiran and Mack, 2000) reported that lavender oil promotes relaxation, it can be used by adding a few drops to a warm bath or lavender oil can be used for back massage. It may give soothe effect to the skin and stimulate the nerve endings when applying like a massage. The present author also acknowledges that the lavender oil was used for back massage, especially over the sacrum. It
was given a comfortable feeling to the mother, when the massage was done with the aromatherapy.

The mean pain intensity after massage in the first stage of labor was compared in three groups. Overall increasing labor pain intensity was identified when the labour was progressed. But the drop of pain intensity in aromatherapy group was more dramatic than massage only group. This was probably due to the sedating effects of linalool acetate in lavender as a narcotic. In a study on 635 patients who complained of perineal pain after childbirth, six drops of pure Lavandula in comparison to lavender synthetic oil as daily bathroom for 10 days resulted in most patients expressing a satisfaction with lavender essence. Aromatherapy reduces the need for more invasive forms of pain management and has a positive effect on client satisfaction, stated by Pollard (2007)

Hereby the investigator achieved the first main objective by stating that aromatherapy is effective in reducing labour pain.

2. Effectiveness of aromatherapy on reduction of duration of labour among experimental and control group

The normal duration of labour for primigravida mother is about 14-16 hrs. (Dutta DC, 2004) It is calculated from the onset of labour pain till the complete expulsion of placenta and membrane. If duration of labour takes for a longer time it may cause serious effect on mother and fetus (Cunningham et al., 2009). Duration of labour can become shorter with the prompt decision and management during childbirth by the health care professionals attending labour. Alternative and complementary therapies are also available in the modern medicine not only to reduce the labour pain but also it is effective in reducing the duration of labour.

In our country more attention was given to women’s health mainly in the areas of motherly health and family welfare. Maternal mortality rate is the critical indicator that reflects the need for strengthening the maternal health status of a
community and country. The highest maternal mortality rates were reported in our country when compared with the world health reports. The maternal health challenges faced by India are more voluminous, more diverse, and more formidable than that of any other country in the world.

About 70% of babies born by caesarean section, largely due to women’s fear about the pain of childbirth and the worry about natural birth. The fear about pain could be eased by non pharmacological pain relief methods. Traditionally women were taken care by other women, family, and close associates during the time of childbirth. Earlier all birth took in home only. When the childbirth motivated from home to the clinic, the delivery was conducted by doctors and the skilled midwives in a restrictive, hygienic location that does not encompass carrying of other ones. Slowly childbirth became a medical event.

The maternal health dispute faced by India is huger, more diverse, and more formidable than that of any other country in the world. The safety of mother and baby was a most important concern of intranatal care. There are two common methods used to reduce the pain that occur during labour. They are pharmacologic, with the use of medications and non pharmacologic methods like alternative therapies. Pharmacologic methods are implemented to eliminate the sensation and perception of pain, whereas non pharmacologic methods are basically aimed for reduction of pain and discomfort. These discomfort produces perceived menace to the mind and body; susceptibility and failure of power; distress; inadequate possessions for managing with the upsetting situation; fear of death of the mother and even baby. (Lowe, 2002)

In the present study the investigator has taken the effort to assess the effect of aromatherapy in reducing the duration of labour. It reflects that the mean duration of labour in aromatherapy group is 11 hrs and 55 minutes, but in control group the duration of first stage of labour is about 14 hrs. It indicated a great difference between two groups in first stage of labour. The duration of labour in second stage is about 1 hour and 50 mts for aromatherapy group and 1 hr 58 mts
in control group. It shows not much difference between the groups. In aromatherapy group the duration of third stage of labour is about 28 mts but in control group it is about 30 mts. A 2 mts difference is not a major difference.

(Davidson MR, 2012) reported that prolonged labour is caused by a variety of factors including the condition of cervix, uterus, fetus and maternal pelvis. The power of contraction is depends on physical, physiological and psychological status of mother. When the labour is progressing, the pain also becomes severe and the maternal body should be adopting those changes for a successful childbirth. It can be improved with variety of non pharmacological methods like aromatherapy.

According to another study, (Simkin PP, 2002) the women taking a 30-minute sitting bath with the aromatherapy during the first stage of labor had a better labor progress and their need for analgesic medication was significantly reduced. The present study also revealed that pain medications used by the aromatherapy group was less when comparing with other two groups.

The essential oil used for this study was lavender oil. Lavender oil consists of linalyl acetate and linalool. (Link VM et al., 2009) reported that linalool is having the sedative and local anesthetic effect reduce the perception of labour pain. It also increase the secretion of epinephrine, may result in reduction of number, frequency and the strength of uterine contractions.

Most recently a study was conducted by Abbaspoor Z and Leila, (2013) with 60 primiparous women. The findings suggested that lavender aroma massage is a cost effective non pharmacological intervention that helps in reducing pain and also the duration of first and second stage of labour. Another study was conducted by Chang et al. (2002) in their study also revealed that aromatherapy is a valuable treatment during labour to reduce the duration of first stage of labour. The present study also stated that aromatherapy is most effective in reducing pain when comparing with the regular treatment.
This present study was supported by another one recently conducted study by Katayon. V. (2013) it showed that lavender oil can be used to reduce the length of labour and it may provides positive childbirth experience to the mother. So the present study also sustaining this study by comparing aroma massage group with regular treatment group. Table shows that there is a significant difference between two groups in duration of labour.

So the investigator achieved and proved the next objective by stating that aromatherapy is effective in reducing the length of labour.

3. Effectiveness of Biofeedback on reduction pain and duration of labour among experimental and control group

Biofeedback is a therapy to improve the health status by controlling certain body process that is normally happen. In the present study the investigator used the machine cardiotocography to produce fetal heart sound and variations in uterine contractions. The mother was asked to listen the sound which was produced from her own body. The fetal heart sound varies when the mother is getting uterine contraction, which is the ultimate cause for pain. Biofeedback therapy does not do anything with the physical or physiological changes. But it may affect the psychological status of mother, when she heard the fetal heart sound internally the mother felt that her baby is healthy and she is having good progress her labour. This intention makes her to improve the wellbeing and gives strengthen to the mother.

During the time of pain or discomfort when the mother hearing something which is more fascinated to her may helps to reduce the discomfort which was occur due to any causes. Here the Biofeed back was mainly focused on the fetal heart rate of the baby, when the mother is hearing the heart beat of her own baby that too not yet seen by her may definitely improve her wellbeing, and will have influence over her psychological status. The another one factor is the uterine contraction, which produces a sound like waves and the mother can hear this
sound, which improves her wellbeing, that she had a feeling of goodness and integrity.

Only limited studies were available to assess the effectiveness of biofeedback over childbirth. This is the most common technique used by the midwives in the hospital, but they were unaware about the technique as biofeedback. Biofeedback is a valuable tool in reducing labour pain which facilitates psychological interventions that aid developing greater skills for coping and improved functioning on measures of pain intensity, adaptive beliefs about pain and the level of depression. (Newton TR et al, 1995) Moreover when used as an adjunct to other therapeutic regular and routine interventions it shown as an most effective treatment for reducing or eliminating symptoms of several pain-related conditions, including low back pain. (Nielson WR. 2001)

Biofeedback has been paying attention on the achievement of domination over some physiological answers with the help of electrical devices apparatus, permitting individuals to regulate some personal processes (such as agony) which are not usually under attentive command. The function of this behavioral approach for the management of agony throughout labour, as a supplement to the usual prenatal care, has been never assessed systematically. (Barragán. L et al. 2011)

Table shows that in biofeedback group the mean pain score during 4cm dilatation was about 7.8 (0.15), at 6 cm dilatation 8.2 (0.19), at 8 cm dilatation 8.6(0.23) and at full dilatation of cervix the mean pain score was about 9.2(0.01). When it was compared with the control group the mean pain score during 4cm dilatation was about 8.6 (0.5), at 6 cm dilatation 9 (0.34), at 8 cm dilatation 9.4(0.05) and at full dilatation of cervix the mean pain score was about 9.6(0.21). It showed that the biofeedback group in having reduction in pain score when comparing with the routine treatment group.
Duchene, 1999 described that women in the biofeedback assembly had statistically significantly smaller agony grades according to the McGill agony Questionnaire scale. Agony in work was measured utilizing the Visual Analogue Scale (VAS). It furthermore described that women in the biofeedback group had considerably smaller in VAS pain rankings at admission, delivery and after consignment. This pilot study also revealed that by using the biofeedback can effectively reduced the pain during labour.

In 1992 Bernat et al. used a fingertip thermometer. When the patient relaxes vasodilatation occurs and the finger temperature increases. These study findings stated that biofeedback therapy is helps in making physiological variations as a result of physical relaxation.

In the present study when biofeedback therapy was compared with the regular interventions in control group. The t test demonstrated that, there is a significant association between two groups. So the investigator concluded that biofeedback is helps in reducing the labour pain and it is more effective in promoting the maternal and fetal wellbeing than the routine care. It also provide childbirth satisfaction for the mother.

4. Effectiveness of aromatherapy and biofeedback on reduction pain and duration of labour among experimental groups

The purpose of this study was to identify the effect of aromatherapy and biofeedback in promotion of labour outcome during childbirth. Both the therapies are effective when compared with the regular and routine interventions given by the midwives in the hospital. Randomization was successful, and the baseline characteristics were similar between two groups. No adverse effects were reported from the mother, and there were no related neonatal ill effects in both groups. The study achieved its main objective in demonstrating that lavender aromatherapy massage is effective in relieving labor pain, although, in
biofeedback group there was a slight reduction in pain intensity. Data analysis showed that Aromatherapy is effective in reducing labor pain.

Aromatherapy was an effective treatment which was associated with the massage over back and abdomen. The essential oil which was used for the treatment was lavender oil. When it was applied over the skin it improves the blood circulation and also it provides a sense of wellbeing when it is inhaled through the nose. The mechanism of action was happened in both the ways. It induces painless childbirth. **Masoomeh K, et al., (2013)** reported that aromatherapy inhalation improves the maternal and fetal wellbeing. It does not cause any side effect and it minimizes the use of pain killers during childbirth.

The use of pain relievers in the form of pharmacological methods may suppress the respiratory center of the fetus and the fetus may go for fetal distress, *(Lee SJ et al., 2005)*. So it was advised by the health care practitioners to avoid pain medications. So it was an important to introduce such non pharmacological pain relief methods during childbirth.

The mean pain intensity in aroma massage during labor was compared in two group. Overall increasing labor pain intensity in two groups after intervention was decreased. This drop of pain intensity in aromatherapy group was more dramatic than Biofeedback group. This was probably due to the sedating effects of linalool acetate in lavender as a narcotic.

The researcher achieved here the ultimate aim by stating that aromatherapy is best in relieving pain and reducing duration of labour than biofeedback therapy. But when comparing with the regular treatment Biofeedback therapy is effective in reducing pain and duration of labour.

5. **Individual review of primigravida women in labour**

After the treatment the investigator personally felt to have the review about the treatment with selected variables. When it was compared between aromatherapy and biofeedback there was a significant reduction in pain and greater satisfaction with pain relief and childbirth satisfaction was observed. More women in the control group had assisted vaginal births. No women in either
group had a postpartum haemorrhage. Although there was no evidence of a significant difference between groups in caesarean section, Adverse effect for women, adverse effect for infant, ARGAR score<7 at first 5 minutes.

The biofeedback group was compared with the control group. It revealed that reduction in pain and greater satisfaction with pain relief and childbirth satisfaction was observed. More women in the control group had assisted vaginal births. No women in either group had a postpartum haemorrhage. Although there was no evidence of a significant difference between groups in caesarean section, Adverse effect for women, adverse effect for infant, ARGAR score<7 at first 5 minutes.

Table shows that a reduction in pain and greater satisfaction with pain relief and childbirth satisfaction was observed in aromatherapy and biofeedback group. More women in the control group had assisted vaginal births. No women in either group had the problem of postpartum haemorrhage. There were no evidence of any complications or Adverse effect for women, adverse effect for infant, ARGAR score<7 at first 5 minutes in both the groups. Both the groups, most of the mothers were fully satisfied with the treatments given during labour. No mothers were reported that it was not useful during childbirth.

6. Association of findings with selected demographic and obstetrical variables

The findings of present study was associated with selected and obstetric variables. The data table showed that pain and selected variables like age in yrs, occupation and type of family were found to be not significant in all three groups at 5% level of significance. This was supported by a study conducted by Chang MY et al., 2002. It also revealed that maternal age, weight and body mass index is not associated with labour pain.
The present study stated that history of dysmenorrhea was having association with perception of labour pain. (Fridh, G, 1998) reported that few gynecological problems especially painful menstruation was having associated with intensity of labour pain. It was due to severe spasmodic contraction of uterus during labour. But it was same like but less severe during menstruation.

The birth weight of the newborn was positively related to the duration of labor. Allen VM et al., 2009 also reported that increased birth weight may increase the duration of labour. Because increased in size of the baby may cause difficulty in passage through the birth canal that results in prolonged duration of labour.

The selected obstetric variables like age at marriage, duration of marriage, type of marriage, gestational age in weeks and nature of onset of labour were found to be not significant with the pain intensity during labour in all the three groups.

The pain perception was having association with history of dysmenorrhea, that is due to the physiological and anatomical changes that takes place in the reproductive system. But it was reported in most of the mothers. Age was also having significant association with labor pain, because the advanced age may have increased pain tolerance than youngers.

7. **APGAR Score of newborns**

In aromatherapy group the mean Apgar score of newborn At birth was 7.5, after 5mts 7.5, after 10 mts 8 and after 15 mts it was about 10 mts. But in control group at birth was 7.5, after 5mts8.5, after 10 mts 9.5 and after 15 mts it was about 10 mts. The data showed that in aromatherapy group the Apgar score is better than the control group.

Hill et al, 2003 reported that drug administration during labour depressed the hypothalamus. So the fetal heart rate reduces and ultimately it may lessen the
Apgar score after birth. So the present study suggested that aromatherapy or Biofeedback helps to reduce the use of analgesics, so that the unborn baby get active and the Apgar score also becomes good after the birth.

**Burns, E, 2007** also stated that aromatherapy was effective, not only to improve the maternal outcomes but also it was valuable to improve the neonatal outcome. It helps to maximize the maternal cooperation, ultimately results in innate coping mechanism during labour and birth.

**Summary**

The present study was supported by a series of other studies, which confirmed that aromatherapy and biofeedback is effective in reducing pain and duration of labour during childbirth among primigravidae. It also provides comfort, relaxation and soothing effect to the mother. It also helps to increase the coping ability of the women during childbirth.