The Effectiveness of Aromatherapy in the Management of Postpartum Pain Among Patients Who Underwent Spontaneous Vaginal Delivery at a Tertiary Hospital*

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ABSTRACT

Background: Oral administration of Nonsteroidal Anti-Inflammatory Drugs has been the mainstay for postpartum pain control in patients undergoing spontaneous vaginal delivery. Aromatherapy is a form of alternative medicine that uses volatile plant materials, known as essential oils, and other aromatic compounds for the purpose of altering the mood, cognitive function or health as well as in reducing sympathetic stimulation.

Objectives: To determine the effectivity of aromatherapy in the management of postpartum pain who delivered vaginally.

Methods: The study is a randomized controlled trial on 64 postpartum patients. Thirty two patients in the aromatherapy group received 2% lavender oil via face mask and another thirty two patients in the control group received unscented oil via face mask.

Results: The demographic profile of the participants demonstrated that the age, gravidity and parity of the two groups were not strong determinants in influencing pain scores while undergoing this study. The findings demonstrated with the influence of aromatherapy, a significant decrease of pain scores was observed. Aromatherapy is able to bring positive effect in the reduction of pain among postpartum patients.

Conclusion: Based on findings, aromatherapy has significant impact in the decrease of pain scores of patients especially at a longer period of exposure. Even there are various intervening factors associated to pain, aromatherapy can be a conclusive non-pharmacologic approach in helping mothers after birth.

Keywords: Aromatherapy, Lavender oil, Postpartum

INTRODUCTION

NSAIDS are administered with the intent to control acute inflammation and relieve pain. A complimentary analgesic technique, such as aromatherapy may decrease requirement for traditional analgesics, thus reducing the incidence of side-effects.

Clinical trials on aromatherapy have documented that it alleviates fear, anxiety and pain, reduce nausea or vomiting and to enhance women's sense of well-being.

In the context of obstetric practice, pain is an inevitable concept that is being experienced by pregnant women before, during and after childbirth. Pain is a subjective sensation, which includes physical stimulus, as well as motivational and effective components. It is perceived in the context of cultural factors, previous experiences, anxiety and depression.

The analgesic effect of essential oils like the lavender are thought to be a several factors including a complex mixture of chemicals affecting the memory and behavior site of the brain. Hence, essential oils can be beneficial among mothers while in the process of recuperation after childbirth. This study is intented because of this reason. It is designed to evaluate the effectiveness of lavender aromatherapy in postpartum pain, thus, reducing non-steroidal anti-inflammatory drug requirements after vaginal birth.

REVIEW OF RELATED LITERATURE

Effective and satisfactory pain management needs to be individualized for each woman. This can be influenced by two mechanisms: working with pain or pain relief. The working with pain paradigm includes the belief for long term benefits to promoting normal birth and pain plays an important role in the process. This approach offers support and encouragement to women and self help techniques to cope with normal labor pain. The pain relief paradigm, on the other note, is characterized by the use of pharmacological intervention in order for women not to suffer pain. (Smith, Collins and Crowther, 2011)

Complementary medicine is defined as practices

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and ideas which are outside the domain of conventional medicine; it is commonly used as a promotive, preventive and curative method in attaining health and wellbeing. (Smith, Collins and Crowther, 2011)

The use of complementary therapies and medicines has gained its popularity among consumers across the world. Studies suggests that between 36% to 62% of adults from industrialized nations adopted some forms of these alternative methods to prevent or treat health problems. (Barnes, 2004) Complementary therapies are commonly used among women of reproductive age. It is also possible that a significant proportion of women use these during pregnancy. One of the complementary approaches mentioned includes aromatherapy. (Smith, Collins and Crowther, 2011)

The use of complimentary non-pharmacological adjuvant therapies are advocated as part of multimodal approach to reducing pain, anxiety, and emetic symptoms in postpartum period. The Acute Pain Management Guideline Panel of the American Society of Anesthesiologists Task Force on acute pain management in the postpartum setting: an updated report by the American Society of Anesthesiologists Task Force on Acute Pain Management. Anesthesiology 2004; 100: 1573-81 specifically states that non-pharmacological therapies should be considered for any patient with an interest or acceptance of these techniques as a pain management strategy.

Use of essential oils is one of the fastest growing complimentary therapies. (Buckle, 2001) Numerous reports showed the usefulness of essential oils in various clinical settings. (Ching, 1999) There have been no studies or published anecdotal evidence that demonstrate harm from essential oils to mother and fetus, (Tillett, 2010; Burns, 2000) Essential oils are concentrated substances and can cause skin irritation. (Tillett, 2010)

Essential oils stimulate the release of brain neurotransmitters which reduce pain by producing euphoric sensation and pleasant feelings. Adrenaline levels, anxiety and fear are reduced which resulted to natural oxytoxin production and to a normal physiological labor process. (Burns et. al., 1999)

A ground breaking evaluative study of the use of aromatherapy in intrapartum midwifery was conducted. With a sample size of 8058 mothers between the spectrum of 1990 to 1998, it was identified that aromatherapy has the capacity to alleviate anxiety and fear and appeared to reduce the need for additional pain relief resulting to decrease in the need of epidural medication. (Burns et. al, 1999; Nottingham University Hospital, 2012)

The use of essential oils has been one of the fastest growing trend in natural health care. The molecules of the essential oils interact with the body to promote wellness through receptor sites that accept plant molecules and use them to fire responses to the brain, just as the body would use its own molecules for healing process. (Raybern, 2010)

According to International Federation of Professional Aromatherapists, essential oils are currently under worldwide medical research and being used in hundreds of hospitals in America. Essential oils are safe for consumption for pregnant patients since they have developed a thicker layer of fat underneath the skin which acts as a safety area between the baby and essential oil. The oil dissolves in fat and more likely rest in the fatty layers giving a slow-release treatment. Essential oils by their very nature, being organic substances, will cross the placental barrier and have the potential to affect the fetus. However, the amount of essential oil that actually accesses the mother's skin is very tiny and therefore the amount that reaches the placenta is miniscule if proper dilutions are being used.

Aromatherapy is "the science of using highly concentrated essential oils or essences distilled from plants in order to utilize their therapeutic properties." Aromatherapy is a modality that uses essential oils, which are as potent as pharmacological drugs. (Simkin and bolding, 2004)

Aromatherapy is one of the potential methods of reducing postpartum pain and improving patients' satisfaction. Lavender oil aromatherapy, in particular, has been credited with mood-enhancing and analgesic properties by aromatherapists, in a study done by Stevensen C. Nonpharmacologic aspects of acute pain management. Compl Ther Nurs 1995; 1: 77-85.

Aromatherapy involves the use of essential oils which are volatile, fragrant organic compounds obtained from distilation for plant material. The mechanism of action for aromatherapy is still unclear yet studies revealed no significant changes on physiological parameters such as blood pressure or heart rate. On a significant note, aromatherapy produces psychological improvement in mood and anxiety levels. (Stevensen, 1995)

In the study entitled as "Treatment with lavender aromatherapy in the post anesthesia care unit reduces opioids requirements of morbidly obese patients undergoing laparoscpic adjustable gastric banding", patients in the study group were treated with lavender oil, which was applied to the oxygen face mask, the control group patients received non-scented baby oil. Post-operative pain was treated with morphine. Numerical rating scores (0-10) were used to measure the level of pain at 5, 30 and 60 minutes. This study showed a reduction in opioid consumption after post-operative lavender aromatherapy. The effectiveness of the aromatherapy treatment in reducing postoperative perception of pain without evidence of adverse effects, supports the interest for potential use of aromatherapy in perioperative care. (Kim et. al., 2007)

Meticulous records were kept regarding the oils used, the mode and timing of administration, and rea-

sons for use. Mothers and midwives reported on the effectiveness of the oils in accomplishing the purpose for which it was given. Sixty-one percent of the women received aromatherapy (lavender, rose, or frankincense) to relieve anxiety and fear. Fifty percent of both mothers and midwives found it helpful, and 13% found it unhelpful. Rose oil was rated helpful by most (71%), followed by lavender (50%). Lavender and frankincense were used for pain by 537 women, of whom 54% found lavender helpful and 64% found frankincense helpful. (Simkin and bolding, 2004)

Aromatherapy is inexpensive and popular with laboring women and midwives.

On the basis of these findings, and its increasing popularity, this modality merits further scientific study to establish its rightful place in maternity care. (Simkin and bolding, 2004)

OBJECTIVES

General Objectives

1. To determine the effectivity of aromatherapy in the management of postpartum pain who delivered vaginally.

Specific Objectives

1. To reduce the demand of Non-steroidal anti-inflammatory drugs in treating postpartum pain.

2. To know the limitations of aromatherapy as alternative agent in pain management among patients who underwent spontaneous vaginal delivery.

3. To successfully reduce the perineal pain after vaginal delivery

Definition of terms:

1. Aromatherapy - is a form of alternative medicine that uses volatile plant materials, known as essential oils, and other aromatic compounds for the purpose of altering a person's mind, mood, cognitive function or health.

2. Postpartum - A period of confinement during and after birth until the six subsequent weeks.

METHODS

A. Patients

INCLUSION CRITERIA:

1. Primigravid
2. Multigravid
3. Parturients of any age

EXCLUSION CRITERIA:

1. Parturients with comorbidities such as hypertension, diabetes mellitus, bronchial asthma, thyroid problems and gravidocardiacs.
2. Fourth degree lacerations

B. Methodology

Study Design: Randomized Controlled Trial

1. Aromatherapy Procedure:

Patients who consented to the study were randomized into two groups, according to a predetermined random sequence. They were treated with lavender oil patch to rule out sensitivity to lavender. Two drops of lavender oil were applied to the inside of a patient's wrist. Six hours post vaginal delivery has completed, the patients in the aromatherapy group will receive oxygen with a facemask coated with lavender oil. Two drops of 2% lavender oil were applied with a cotton swab to the inside of an oxygen facemask.

2. Control Arm

Patients in the control group will receive oxygen coated with non- scented baby oil six hours post vaginal delivery at the San Ramon Ward.

3. Randomization Procedure

All patients will receive a unique Identification code. An independent personnel will prepare 32 envelopes coded as A (control arm) and 32 envelopes coded as B (lavender group). A simple concealed random allocation shall be performed as follows once the patient qualifies the inclusion criteria. She will be asked to pick from the set of envelopes bearing the coded assignment.

4. Assessment of Outcome:

All Numerical Rating Scale will be measured by the patient as NRS score from 0 (No pain), 1-3 (mild pain), 4-6 (moderate), 7-10 (severe pain) after the lavender oil is given on the first 5mins, 10mins, 15mins six hours after vaginal delivery.

When the pain is reported to have NRS of more >3 the patient is immediately given with Mefenamic Acid 500mg/capsule and she will be eliminated from this study.

After the patient has successfully reached the first 15minutes of the experiment with NRS of <3, the aromatherapy is being stopped.

5. Sample Size:

It is hypothetically assumed in this study that aromatherapy is more superior than no aromathepy (non-scented oil) yielding a difference of at least 2 points in the NRS for pain, a standard deviation of 1 point.

The minimum number of patients required to achieve significant difference is computed as follows. Final sample size is 32/arm (total: 64)

$$n = \frac{2\triangle 2}{d2} \; X \; \alpha \; \beta$$

n is the sample size
△ is the minimum difference in the NRS
d is the standard deviation
α is 0.05
β is 0.10

Statistical Analysis:

All analyses were done using MEDCALC version 12.3 (with lincense) as biostatistical software. All continuous numerical variables were summarized using means and standard deviations while categorical data in percentages. Comparison of continuous variables and discrete data were done using independent T-test and Chi-Square test respectively. Comparison of pain scores at 5, 10 and 15 minutes between the two groups was done using repeated measures analysis of variance (repeated ANOVA) where within and between groups comparison were done. All p-values <.05 were considered statistically significant.

RESULTS AND DISCUSSION

A total of 64 pregnancies were randomized and group to aromatherapy (n=32) or control (n=32). The mean age of the participants in this study for aromatherapy group was 30.4 while 30.1 for the control group. Upon subjecting to statistical treatment, the two groups were not significantly different in terms of the mean age (p = 0.87).

CHARACTERISTICS	AROMATHERAPY *n=32*	CONTROL *n=32*	p-value*
Mean age (SD)	30.4 (6.3)	30.1 (7.1)	.87
Gravidity			
Primigravida	14 (43.7)	11 (32.4)	.34
Multigravida	18 (56.3)	23 (67.6)	
Parity			
Primipara	13 (40.6)	11 (32.4)	.42
Multipara	18 (56.3)	12 (67.6)	

**No significant difference, p-value is >.05, by Independent T-test, & Chi-Square Test*

In aromatherapy group, 43.7% belonged to primigravida and 56.3% to multigravida. On one hand, in control group, 32.4% was noted as primigravida and 67.6% was from multigravida. In terms of parity among aromatherapy group, 40.6% was primipara and the remaining 59.4% was multipara. In control group, 32.4% was noted as primipara while 67.6% was multipara. The distribution of women according to gravidity and parity between the two groups were not also statistically different. (p = 0.34, p =0.42)

Given this demographic profile of the participants, findings demonstrated that the age, gravidity and parity of the two groups were not a strong determinant in influencing the pain scores while undergoing this study.

Age and parity can be factors associated with labor pain and in the delivery outcome. In the study entitled as "Relationship between factors of labor pain and delivery outcomes", the authors concluded that young age and primigravid women experienced severe labor pain . (Ye, Jiang and Ruan, 2011)

PAIN ASSESSED AT	AROMATHERAPY *n=32*	CONTROL *n=32z*	p-value* (between groups)
5 Mins.	6.6 ± 0.98	6.4 ± 0.91	0.008
10 Mins.	4.7 ± 1.1	5.1 ± 0.92	
15 Mins.	2.4 ± 1.4	4.2 ± 1.4	
p-value (within groups)	.001	.001	

**Within Aromatherapy group and Control*

Post-partum pain scores were significantly decreasing within each group (p-value = 0.001) from five, ten and fifteen minutes of observation.

Based on the results, a descending trend of the pain scores was noted on both groups – aromatherapy and control.

The findings demonstrated that, with the influence of aromatherapy, a significant decrease of pain scores was observed. Having a p-value of 0.001 at the significant level of 0.05, null hypothesis was rejected while the alternate one was accepted. Meaning, aromatherapy is able to bring positive effect in the reduction of pain after giving birth. In the study entitled "Efficacy of Lavender Aromatherapy to the Level of Pain and Blood Pressure Among Post-Partum Women: A Pilot Study", it was also concluded that lavender aromatherapy appeared to be effective in decreasing level of pain among postpartum women. (Tan et. Al, 2012)

In the study entitled "The Effect of Inhalation of Aromatherapy Blend containing Lavender Essential Oil on Cesarean Postoperative Pain", the inhaled Lavender essence was considered as part of multidisciplinary treatment of pain after cesarean section.

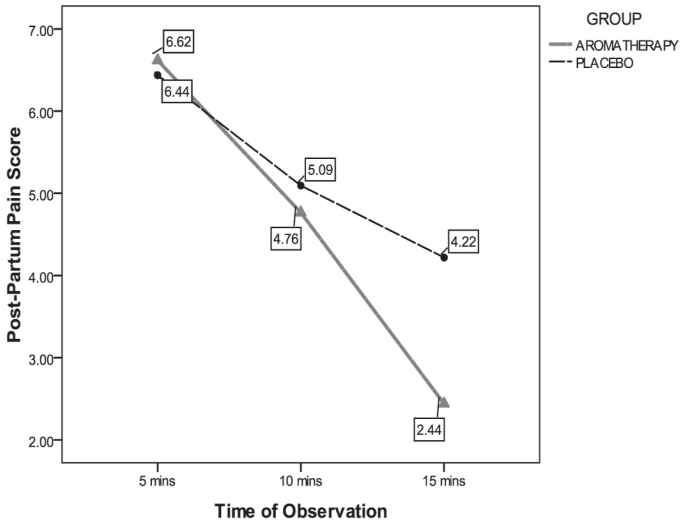
Both studies noted similar impact among their study participants. Lavandula, a flowering plant from Lamiaceae

family used in Lavender exact, has lipophilic monoterpenes property which react to the cell membranes and cause changes in the activities of ion channels, carriers and nerve receptors. This property explained the soothing effect of the Lavender oil and so, relief in pain was also observed in this study

On the other note, what was demonstrated in the result of the control group may indicate other claims. As explained by Jangsten et. al (2005) pain induced by birthing is extremely variable. This may be influenced by previous experience of patients, anxiety, cultural standards and education. (Jangsten et. al, 2005; Jones et. al, 2009) In this study, decreasing result of pain scores can also be attributed to patients' childbirth experience since 67.2% was multipara. Pain, being multifaceted, has psychological component. Jones et. al. also attested this claim and added that coping mechanism of women as a significant variable of pain during childbirth.

Tension, anxiety and fear are also factors that contribute towards women's perception to pain. The neuromatrix theory of pain understands the influence of many factors including past experience and memory. (Smith, Collins and Crowther, 2011) The theory of pain also included the past experiences, cultural factors, emotional state, cognitive input, stress regulation and immune system possessed by an individual as factors that may contribute to pain perception among mothers. (Trout, 2004; (Smith, Collins and Crowther, 2011) Therefore, responses of pregnant women can be highly relative depending on their previous experiences and perception.

*Comparison between Aromatherapy and Control



Comparing between groups, pain scores were significantly lower in aromatherapy starting at the ten-minute mark (mean = 4.7 versus 5.1, p=0.008) and continued to be low up to the fifteen-minute mark (mean = 2.4 versus 4.2, p=0.008) Therefore, a rejection of null hypothesis is concluded. Such that, there was a significant difference between the use of aromatherapy and control in terms of pain scores at the 10-minute and 15-minute period.

Aromatherapy works by stimulating the release of brain neurotransmitters that reduce pain through production of euphoric sensation. Essential oils are thought to increase the production of body's own sedative, stimulant and relaxing neurotransmitters named as paracrine and endocrine. (Jones et. al, 2009) Since the essential oils of the aromatherapy also have the capacity to increase the large afferent nerve fiber activity that leads to the closure of the "pain gate", pain perception is expected to reduce. (Nottingham University Hospital, 2012). This explained why participants who subjected in aromatherapy had observed to have decreasing pain scores.

To date, essential oils, used as topical application, medication and aromatherapy, are noted safe to use during childbirth. Hence, essential oils are widely used by midwives, birthcenters and labor rooms in the hospitals for it promotes calmness and analgesic effect. (Raybern, 2010) Few of which are New Ulm Medical Centre in Minnesota, USA, Craig Hospital in Colorado, Nottingham University Hospital in England and St. Mary Hospital in Taiwan.

SUMMARY

There were 64 participants subjected in this study. The mean age of the participants in this study for aromatherapy group was 30.4 while 30.1 for the control group. The two groups were not significantly different in terms of the mean age, gravity and parity with p-value of 0.87, 0.34, and 0.42 respectively.

Under a statistical treatment of ANOVA, it was found out that post-partum pain scores were significantly decreasing within each group (p-value = 0.001) from five, ten and fifteen minutes of observation. There was a significant difference between the pain scores of treatment group (Aromatherapy) and control group at the 10-minute and 15-minute period of observation. Meaning, aromatherapy is an effective method in the management of postpartum pain.

CONCLUSION

Based on findings, aromatherapy has significant impact in the decrease of pain scores of patients especially at a longer period of exposure. Even there are various intervening factors associated to pain, aromatherapy can be a conclusive non-pharmacologic approach in helping mothers after birth.

RECOMMENDATION

Upon the acceptance of the alternate hypothesis, this indicates that the therapy is an effective method in helping mothers postpartum and allowing them to experience a satisfying motherhood in such initial phase.

With this, I would like to recommend the following:

a) For the medical service division and its healthcare personnel, aromatherapy can be included in caring mothers after giving birth. With approval, guidelines can be made in terms of preparation of the aromatherapy and proper training shall be introduced and conducted among healthcare professionals.

b) For the nursing service division, such non-pharmacologic intervention can also be an independent nursing function as long as proper knowledge and skills on the use of lavender oil.

c) For the future researchers, this study can be used as a basis for further research activities on aromatherapy.

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