

Article

***The Impact of Combination Therapy Utilizing Citrus limon Aromatherapy and Mozart Classical Music Distraction Therapy to Reduce The Pain Intensity in Post-Sectio Caesarea Mothers***

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A B S T R A C T

*Background: The pain intensity in sectio caesarea postpartum women remains the most difficult physical and emotional obstacle and also it has a direct impact in slower recovery rate. Different physical and non-physical therapies were implemented to reduce the pain and to speed up the recovery. The objective of this study is to assess the direct impact to the mothers after applying a combination therapy using lemon aromatherapy and Mozart classical music distraction therapy.*

*Method: A total of thirty women aged between 18 and 37 years were included in this study with two sets of treatments. Fifteen correspondents received the treatments of lemon aromatherapy combined with Mozart classical music and the other fifteen obtained only deep breathing relaxation therapy (as control group). All treatments were applied for 15 minutes in one day. The level of pain intensity was measured before and after treatments.*

*Result: After two sets of different treatments were applied to thirty of the correspondence women, the pain intensity was measured and analyzed. A Wilcoxon signed-ranked test indicated that the combination of lemon aromatherapy and Mozart classical music was efficient to reduce the pain in the subjects of this study ( $p < 0.05$ ). Additionally, based on the final scoring, the deep breathing exercise was less effective in lowering the pain compared to the combination of lemon aromatherapy and Mozart classical music albeit it differed significantly based on Mann-Whitney U non-parametric analysis ( $p < 0.05$ ).*

*Conclusion: A significant positive deviations in pain intensity was observed in section-caesarea postpartum women after receiving the combination treatments of lemon aromatherapy and Mozart classical music. Further studies that include prolonged follow-ups observation should be conducted to achieve an improved result*

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## I. INTRODUCTION

Over the years, the practice of caesarean section (CS) delivery method has been increased rapidly in the developed and developing countries and entitled as the most ideal procedure of childbirth [1-4]. The Caesarean section or C-section defined as a surgical technique, where child delivery performed through the abdominal and uterine incision [3]. In Indonesia, 23.6% Caesarean delivery cases observed in 2012 preferably done in private hospital or clinics (45.5%) compared to government hospital (27.6%) [4]. The major reason women preferred to undergo the Caesarean section is due to the fact that C-section is significantly reduced the mortality rate of mothers and children during childbirth [5]. However, in some countries the C-section is strictly allowed only when vaginal delivery is regarded as life-threatening situation for both mother and baby and dystocia was detected before labour.

The rapid increase of Caesarean-section delivery in recent years also affected the prevalence of persistent chronic post-surgical pain (CPSP) mostly associated with dysfunctional daily life activities and deterioration of health-related quality of life [6]. The persistent pain is also correlated with occurrence of post-partum depression and sleep deprivation that negatively impacted the mother's daily life [7]. The duration of post-Caesarean pain varied in women and it could last for months without being properly treated. Despite the common practice of Caesarean-section delivery method, the studies related persistent chronic post-surgical pain has been limited.

Relieving chronic post-Caesarean pain is a major need for mothers since it could delay the full recovery and affected the direct

interaction between mothers and the newborns. To date, the new approach to manage the chronic pain is using the non-pharmacological methods such as herbal medicines and aromatherapies [8]. Aromatherapy is typically used in essential oils form has been proven to recuperate agitation and aggression commonly detected in depression, dementia, anxiety and chronic pain [9]. The lemon (*Citrus lemon*) contains Hesperidin and Naringenin (the major flavonoids) with analgesic and anti-inflammatory properties; therefore lemon aromatherapy is suitable for chronic pain treatment in post-Caesarean mothers [10-11].

Another approach to relieve the chronic post-Caesarean pain is by using the non-clinical interventions such as music. Several studies investigated the positive impact of music on pre- and post-operative pain and anxiety in post-Caesarean mothers [12-13]. Ebneshahidi et al discovered that patient-chosen music post-Caesarean surgery enhances the pain relief and decreases analgesic requirements [14]. The soothing effect of classical music is the major therapy used in this study, Mozart collections were chosen to represent the classical music.

Breathing exercise has been used for long time as a non-pharmacological therapy to reduce the pain level in post-Caesarean mothers. The non-pharmacological approach is suitable due to the simplicity, cost-efficient, and relatively easy to conduct in obstetric nursing care department. A study by Basyouni and Gohar in Egypt reported that performing breathing exercise was successfully reduced the pain level among postpartum women [15]. In the present study, the breathing exercise was used as a control group and assessed in the same manner as the experimental group receiving the combination lemon

aromatherapy and Mozart classical music distraction therapy.

## II. METHODS

A total of thirty women experienced chronic post-Caesarean surgery pain were included in this study and they were divided into two experimental and control groups (each group consisted of fifteen individuals). The inclusion criteria of the subjects were all subjects recruited a day after post-Caesarean section, aged from 18-37 years old, fully-alerted, did not have previous history of allergic to aromatherapy, could communicate actively, and signed the informed consent prior to participating in this research.

A quasi-experimental approach was used in the recent study to assess the effect of combination lemon aromatherapy and Mozart classical music distraction therapy (independent variable) on the pain level reduction among post-Caesarean mothers (dependent variable). This study was established in Anna Medika Madura Hospital in Bangkalan, Madura – Indonesia on March 2019. The pre-test and post-test groups were assessed during the study.

## III. RESULT

The pain levels recorded before and after given treatment in the experimental group (combination Citrus aromatherapy and Mozart classical music) and control group (deep breathing exercise) using Wilcoxon Signed Ranked Test (between each group experimental group and control group, independently) and Mann-Whitney test (comparing experimental and control groups).

Pain intensity	Experimental Group				Control Group			
	Min	Max	Mean	SD	Min	Max	Mean	SD
Pre-test	5	9	6.80	1.15	5	9	6.80	0.94
Post-test	3	7	4.40	1.35	4	8	6.00	1.13
p-value Wilcoxon	0.000				0.006			
p-value Mann-Whitney	0.002							

The pain intensity was self-measured by the research participants at two different time points, pre- and post-treatment. The average score for the pain intensity measured pre-treatment was 6.80 and it went down to the score of 4.40 post-treatment in the experimental group. The drastic measurement showed that some subjects experienced low pain intensity (score 3) post-treatment as the lowest score and it was 5 before treatment. The reduction of pain intensity also observed in the control group as the mean of pain level reduced from 6.80 to 6.00, although the reduction is rather minimal in comparison of pre- and post-treatment scores. Homogeneity test revealed p-value > 0.005 for experimental and control groups (data not shown) suggested that there was no significant difference of the characteristics data between experimental and control groups.

Based on the statistical analysis done with Wilcoxon Signed ranked test the p-value of 0.000 and 0.006 ( $p < 0.05$ ) shown for the experimental and control group, respectively. This p-value < 0.05 signified that there was significant difference in the pain intensity measured before and after treatments. Additionally, Mann-Whitney test revealed the p-value of 0.002 ( $p < 0.05$ ) indicated there was statistically significant difference between the experimental and control group when compared together

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## IV. DISCUSSION

The aim of this study was to investigate the effect of lemon (Citrus limon) aromatherapy

in combination with Mozart classical music distraction therapy on pain intensity levels among post-caesarean mothers. The findings in this study revealed that the combination therapy indeed significantly reduced the level of pain intensity experienced by the post-caesarean mothers ( $p < 0.05$ ). In comparison to control group with deep breathing exercise treatment, the combination therapies had a greater significant reduction in pain level ( $p < 0.05$ ).

Chronic post-surgical pain (CPSP) was outlined by International Association for the Study of Pain (IASP) as enduring constantly or intermittently for more than 3 months after surgery proceeded [16]. Some mothers experienced CPSP post-Caesarean surgery and the pain intensity was more severe compared to vaginal delivery making them taking analgesic medication daily to relieve the pain. The chronic pain post-Caesarean surgeries prevalence had not been studied exclusively but the rates counted for less than 18% in several studies [6, 17]. Psychological factors have been linked with the increased occurrence of chronic pain post-Caesarean surgery like depression and anxiety [18].

The results of the current study goes in line with the previous studies reported that there was a significant decrease in pain intensity and anxiety level after inhaling the citrus aromatherapy in post-caesarean mothers [19]. Aromatherapy has been used in Indonesia as non-pharmacological approach to relieve pain and anxiety post-operative procedures, especially in post-Caesarean section mothers [20]. Citrus oil extracts in particular contained many flavonoid agents proven to have analgesic effect. Naringenin belongs to flavanone subclass of flavonoids and contained therapeutic effect in different models of inflammatory pain [21-23]. Another active flavanone agent in lemon is

Hesperidin that also proven to have analgesic and anti-inflammatory properties [10].

The practice of music in surgery was firstly reported by Evan Kane in 1914 and it was successfully benefit the patients during operation [24]. Music has been implemented as a non-clinical therapeutic intervention and exhibited direct effect on neurophysiology and emotions [25]. Another study suggested that classical music therapy could be used before, during and after post-caesarean section to reduce the level of pain and anxiety, therefore enhancing life satisfaction in mothers [12,13, 26].

Deep breathing exercise is a modest, efficient and non-invasive practice of particularly slow and controlled breathing in interval period of time. This exercise increased oxygenation, granted pain-relief, reduced stress level and improved relaxation and wellbeing [27]. Basyouni et al reported that postpartum women practiced deep breathing exercise experienced less afterpains compared to women without such practices [15].

It was concluded from the statistical analysis that the combination of lemon aromatherapy and Mozart classical music distraction therapy was effective in the reduction on the pain intensity scores among post-Caesarean surgery women. Data analysis revealed that there was a significant difference between the experimental group and control group with deep breathing exercise treatment. Additionally, a bigger cohorts needed to improve the study in the future..

## V. CONCLUSION.

A significant positive deviations in pain intensity was observed in section-caesarea postpartum women after receiving the combination treatments of lemon aromatherapy and Mozart classical music. Further studies that

include prolonged follow-ups observation should be conducted to achieve an improved result.

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