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Effect of Aromatherapy Using Bergamot and Lavender Oils on Postpartum Blues

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Abstract

Postpartum adaptation failure can cause a mild psychological disorder in the type of postpartum blues. Various aromatherapy has been tested to treat postpartum blues. This study aimed to compare the effectiveness of aromatherapy using bergamot with lavender oils in postpartum blues. This non-randomized quasi-experimental controlled trial study with a pretest and posttest design was performed on 40 women after cesarean section (C-section) using consecutive sampling. The Edinburgh Postnatal Depression Scale (EPDS) questionnaire was used for the diagnosis of postpartum blues. The participants were given seven drops of aromatherapy oils via a handkerchief inhaled with ten deep breaths for 14 days and the placed next to a pillow. The EPDS scores were measured twice (at the baseline and after 7 days). The data were analyzed using SPSS software (version 21) and the Mann-Whitney and Wilcoxon tests. The mean EPDS scores before the intervention were 11.4 ± 0.9 and 11.1 ± 1.2 in the bergamot and lavender groups, respectively. The mean EPDS scores on the 7th day of the intervention were 8.8 ± 3.1 and 5.3 ± 2.2 in the bergamot and lavender groups, respectively ($P=0.003$). Aromatherapy is recommended within the 3rd to 5th day following C-section.

Keywords: Aromatherapy, Bergamot, Lavender, Oils, Postpartum blues

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Introduction

Pregnancy and childbirth seem to be the most active phases in a woman's life span. Women need to adapt to their new role as a parent immediately after childbirth. These conditions contribute to improvements in the relationship between a husband and wife (1). The critical time that would be very important is a month after giving birth that is associated with a triple increased incidence of depression (2). Postpartum blues is a symptom of minor psychological disorders during puerperium. Postpartum blues or baby blues is the emotional instability phase following childbirth. Postpartum blues is characterized by frequent crying, irritability, confusion, and anxiety (3). These symptoms can be observed within a few days of childbirth. Postpartum blues is usually associated with a lack of support for both the family and mother-child attachment.

Postpartum blues was also correlated with both changes in hormone levels and postnatal stress. Postpartum blues lasting for more than 2 weeks leads to the possibility of experiencing severe mood disorders by mothers (4). The prevalence of postpartum blues is approximately reported as 40-85%, beginning within the 2nd to 3rd day of postpartum and lasting for approximately 10 days (4, 5). In Indonesia, the incidence rate of postpartum blues tends to vary. Sarli (6) observed postpartum blues at the HC Lubuk Buaya Padang City, Indonesia, to be 46.7%; however, Pumamaningrum et al. (7) reported postpartum blues to be 44.1% in Wonosari General Hospital, Gunungkidul Regency, Indonesia.

Although postpartum blues does not show real symptoms, it will continue to become a more severe psychological disorder and hinder maternal achievement. Various efforts have been made to prevent and overcome postpartum blues by aromatherapy (3, 8). Aromatherapy is the process of using certain parts of a plant as a treatment in the version of a concentrated substance extracted by distillation. Aromatherapy is an inexpensive and non-invasive form of complementary alternative medicine to improve health and psychological well-being. In aromatherapy, essential oils are used on the skin (body massage or aromatherapy rub) and through smell (inhaled aromatherapy) (9, 10).

Two of the aromatherapy oils used for relaxation, anti-depression, and sedation were lavender and bergamot (11, 12). Several studies reported the relaxing effects of lavender under different conditions. 20 et al. demonstrated that lavender can reduce stress and improve sleep quality in adult patients admitted to intensive care unit (11). A mixture of lavender and bergamot has been beneficial in decreasing pain, depression, anxiety, and stress in adults in the community (12). Kianpour et al (3) also observed that lavender inhalation could prevent postpartum stress, anxiety, and depression. The efficacy of a combination of bergamot, lavender, geranium, and chamomile was also reported to relieve depression (13).

Navarra et al. (14) suggested the use of bergamot for the reduction of anxiety and stress. The use of bergamot essential oil in the waiting room of mental health treatment centers demonstrated that aromatherapy using bergamot essential oil has been effective in the improvement of both mental health and individual well-being (15). With this background in mind, the researchers were interested in investigating differences between the effectiveness of aromatherapy using bergamot and lavender oils in postpartum blues in Pematangsiantar, Indonesia. Therefore, the current study aimed to compare the efficacy of aromatherapy using bergamot with lavender oils in postpartum blues.

Methods

This non-randomized quasi-experimental controlled trial study with a pretest and posttest design was carried out on women after cesarean section (C-section) at two hospitals in Pematangsiantar, Indonesia, within July and October 2019. The study participants were all women following C-section fulfilling inclusion and exclusion criteria. The inclusion criteria were 3rd to 5th day after C-section, age range of 15-49 years, parity of 1 normally born neonate based on Apgar scores (7-10), term pregnancy, no history of asthma, no history of allergy or dermatitis to flowers/plants, competent mother in reading and writing Indonesian, Edinburgh Postnatal Depression Scale (EPDS) score of 10-12, and maternal willingness to be present in Pematangsiantar during data collection. The exclusion criteria were maternal complications (e.g., anemia, preeclampsia/eclampsia, uterine atony, and heart and lung diseases) based on the medical records, history of mental disorders based on medical records, fetal distress during childbirth, use of anti-depressants, and history of allergy to lavender and bergamot essential oils.

The sampling method in this study was consecutive sampling. Consecutive sampling is a sampling

4 technique in which participants meeting the inclusion criteria are selected until achieving the required sample size. The sample size was determined using the calculation formula of the two independent populations (16). The standard deviation of both groups was 4.80 based on a study by Kianpour (3). In addition, the desired clinical difference (determined by the researcher), Z_{α} , and Z_{β} were 4.5, 1.96, and 0.842, respectively. In anticipation of the participants who were dropped out, the sample size was considered plus 10%; accordingly, each group consisted of 20 women. Therefore, the total sample size was 40 subjects divided into two groups of bergamot (n=20) and lavender (n=20).

The participants of Vita Insani Hospital and Tentara TK IV 01.07.01 Hospital were in the lavender and bergamot groups, respectively. The group division was based on the ease of researchers in conducting the study. Before starting data collection, the researcher explained the study objectives to the participants. Furthermore, the researcher 6 gave the EPDS questionnaire which was translated into Indonesian to the prospective participants. The validity and reliability of the Indonesian version of the EPDS questionnaire have been studied by Hutaeruk (17) using construct validity with a correlation coefficient of 0.51 ($\text{los} < 0.01$) and reliability with a coefficient of 0.652.

The researchers chose an EPDS score of 10-12 as a sample based on the inclusion criteria. The subjects with the EPDS scores of 10-12 were selected as the study participants because these scores refer to postpartum blues. Subsequently, informed consent was obtained from the participants. To confirm that there were no other allergies and the sense of smell of the participants was normal, the researchers asked the participants to inhale the aroma of the oils. Afterward, the researchers put 1-2 drops of the essential oil on the back of the participants' hands and rubbed it; then, the participants inhaled the aroma. If there were no allergic reactions and the sense of smell of the participants was normal, the researcher explained how to undergo aromatherapy.

The researchers gave cotton handkerchiefs that were dripped with seven drops of lavender/bergamot essential oil to the women in each group. Subsequently, the researchers asked the participants to breathe deeply ten times while inhaling the aroma (8). The study subjects did it every night before going to bed. Furthermore, the participants put the handkerchief next to the pillow until tomorrow morning. The women changed handkerchiefs every day. The participants did it every day at the same time for a week. The researchers contacted the women every day to ensure that they intervened.

On the 7th day of the study, the researchers visited the women for the assessment of mood swings using the EPDS questionnaire. Physiologically, postpartum blues disappeared within the first 10 days of postpartum. Therefore, a decrease in the EPDS scores on the 7th day of intervention was an indication of success in overcoming postpartum blues. Measurements on the 7th day of the intervention were intended to assess this condition. The researcher used bergamot and lavender essential oils from Darjeeling Perfumery & Oils, India.

The initial sample size was 53 subjects; th 26 13 cases were excluded (dropped out) due to withdrawal, and 40 participants were analyzed. The data were analyzed in SPSS software (version 21) using statistical indexes and tables (for the description of results), Shapiro-Wilk test (for the evaluation of data normality), Mann-Whitney U test (for the assessment of differences 8 in variables between the groups), and Wilcoxon test (for the assessment of the variables in the group). Furthermore, a p-value of less than 0.05 was considered statistically significant.

Results

9 An initial screening of 115 women following C-section was carried out using the EPDS questionnaire. Based on the findings of the screening, 63 participants (54.78%) were observed to experience postpartum blues. In addition, 10 women refused 18 take part in the study due to allergy, no enough time, and no permission from their husbands. Table 1 tabulates the characteristics of the study subjects.

Table 1 shows that there is no difference between the age 27 group of the study participants. The mean age values of the women were 29.5 ± 6.6 and 27.9 ± 5.9 years in the bergamot and lavender groups, respectively. In terms of 29 ity, the participants were more multiparous than primiparous (50% and 60% rates of multiparity in the bergamot and lavender groups, respectively). In this study, 90% and 85% of the participants graduated from high school and college/university in the bergamot and lavender groups, respectively. Furthermore, 65% and 80% of the subjects in the bergamot and lavender groups were housewives, respectively. The baseline EPDS scores before the intervention were reported as 11.4 ± 0.9 and 11.1 ± 1.2 in the bergamot and lavender groups, respectively, which did

not significantly differ between the two groups (P=0.146). Table 2 tabulates the comparison of the mean EPDS scores in each group before and after the intervention. The mean EPDS scores on the 7th day were reported as 5.3±2.2 and 8.0±3.1 in the lavender and bergamot groups, respectively. According to Table 2, there is a difference in the mean EPDS scores between the two groups on the 7th day (P=0.003). Based on the results of the Wilcoxon test in each group, there is a mean difference in EPDS scores before the intervention and on the 7th day of the intervention (P<0.001).

Table 1. Characteristics of participants in both study groups

Variable	Mean±SD		P-value
	Bergamot group (n=20)	Lavender group (n=20)	
	Mean±SD Median (min-max)	Mean±SD Median (min-max)	
Age (year)	29.5±6.6 30.0 (19-42)	27.9±5.9 28.5 (19-41)	0.42
EPDS score (baseline)	11.4±0.9 12.0 (10-12)	11.10±1.2 11.00 (10-12)	0.14
	N(%)	N(%)	
Educational level			
Low (Primary/Secondary school)	2 (10.0)	3 (15.0)	0.63
High (High school-College/University)	18 (90.0)	17 (85.0)	
Occupational status			
Housewife	13 (65.0)	16 (80.0)	0.28
Working	7 (35.0)	4 (20.0)	
Parity			
Primiparity	10 (50.0)	8 (40.0)	0.52
Multiparity	10 (50.0)	12 (60.0)	

EPDS: Edinburgh Postnatal Depression Scale
 *T-Test; **Chi-square, ***Fisher's Exact test;****Mann-Whitney U test

Table 2. Comparison of mean Edinburgh Postnatal Depression Scale scores in each group and between groups before intervention and on the 7th day of intervention

Time	Mean±SD		Mann-Whitney U test p-value
	Lavender group (n=20)	Bergamot group (n=20)	
Before intervention	11.1±1.2	11.4±0.9	0.14
On the 7 th day	5.3±2.9	8.0±3.1	0.003
Wilcoxon test p-value	<0.001	<0.001	

Implications for Practice

There were some limitations in the present study. Firstly, there was no control group in this study. Furthermore, the sample size was small and the data may not be able to describe the general population. The participants' satisfaction after using aromatherapy was also not evaluated. In addition, hormonal tests (cortisol and serotonin) were not performed to assess the extent to which the sedative properties of bergamot and lavender affect neurotransmitters. However, the results of the current study indicated that lavender and bergamot aromatherapy was effective in the reduction of EPDS scores in postpartum blues. It is suggested to use aromatherapy for women following C-section within the 3rd to 5th day to overcome postpartum blues.

Acknowledgments

The protocol of this study received ethical approval from the Health Research Ethics Committee of

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Medan Health Polytechnic of Ministry of Health (No.: 259/KEPK/POLTEKKES KEMKES MEDAN/2019). The authors would like to express their gratitude and highest appreciation to Medan Health Polytechnic of Ministry of Health (Politeknik Kesehatan Kementerian Kesehatan Medan), Indonesia, for funding this research project.

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Conflicts of Interest

The authors declare that there is no conflict of interest.

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