Original Research

The Effect Application of the SPEOS Method (Stimulation, Endorphin, Oxytocin, Suggestive Massage) with Essential Oil Aromatherapy on Breast Milk Production in Postpartum Mothers

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<table>
<thead>
<tr>
<th>Article Info</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article history: 05 August 2023 Accepted: 29 October 2023</td>
<td>Introduction: Breast milk is the primary source of nutrition babies need, where complementary foods have not been recommended for exclusive breastfeeding babies, around 44% worldwide. The low provision of Exclusive Breastfeeding is influenced by a decrease in breast milk production in the first few days after giving birth, so non-pharmacological efforts are needed to increase breast milk production in postpartum mothers, such as the SPEOS method (Stimulation of Endorphin Massage, Oxytocin, and Suggestive) combined with the administration of lavender and fennel essential oil aromatherapy. The purpose of this study is to determine the effectiveness of applying the SPEOS method with lavender and fennel essential oil aromatherapy on increasing breast milk production in postpartum mothers.</td>
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</tbody>
</table>

Methods: This research is a quasi-experiment (Quasi Experiment design) with a two-group pre-posttest design. The study was conducted from July to September 2023 with 30 postpartum mothers who met the inclusion criteria with a purposive sampling technique, analysis with a paired t-test, and an independent t-test.

Results: There is no significant difference in breast milk production before intervention between the SPEOS group with lavender aromatherapy and the SPEOS group with fennel aromatherapy, with a p-value of 0.66. After intervention, there is no significant difference in breast milk production between the SPEOS group with lavender aromatherapy and the SPEOS group with fennel aromatherapy, with a p-value of 0.28.

Conclusion: The SPEOS method with both aromatherapy with lavender aromatherapy and fennel aromatherapy can increase breast milk production.

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INTRODUCTION

Breastfeeding babies is the best way to improve human resources quality from an early age. Breast milk is the perfect food for babies, providing high-value nutrients needed for growth and brain and nerve development, immunity substances against several diseases, and establishing an emotional bond between mother and baby [1]–[4]. Exclusive breastfeeding for newborns is one of the efforts to prevent malnutrition and death in infants and toddlers [5], [6]. The 2018 Riskesdas results show that the main reason children aged 0-23 months have not or have never been breastfed is that breast milk does not come out (65.7%), so 33.3% of babies under six months old have been given prelactal food with the most common type of food being formula milk (84.5%) [7].

According to Nugraheni & Heryati (2018) [8], the issue of breast milk output is influenced by the reduced stimulation of the oxytocin hormone, while physical and psychological changes can affect the lactation process. Theoretically, the way the oxytocin hormone works is influenced by psychological conditions. Therefore, postpartum mother’s preparation is an essential factor that can influence breastfeeding success. Excessive worry, stress, and unhappiness play a significant role in breastfeeding success. Various efforts can be made to increase breast milk production, including applying the SPEOS method (Stimulation, Endorphin Massage, Oxytocin, and Suggestive) as an effective non-pharmacological alternative to increase mother's breast milk production.

The SPEOS method is carried out with stimulation to stimulate the release of the oxytocin hormone, providing comfort and growing confidence in mothers to be able to breastfeed their babies exclusively. This is in line with research conducted by Risse Melyansari et al. [9], which shows an effect of the SPEOS method on postpartum mother's breast milk production (p-value = 0.00) after being carried out for three days. Research conducted by Pratami et al. [5] also shows that endorphin massage has a significant effect on increasing breast milk production in postpartum mothers. This action can affect three prolactin hormones that function as a stimulus for breast milk production in mothers during breastfeeding. It can also increase the comfort of the mother. In line with research by Purnamasari & Hindiarti [10], it is stated that several massage therapy methods, such as oxytocin massage, help accelerate the parasympathetic nerves to convey signals to the back of the brain to stimulate the work of the oxytocin hormone after giving birth in flowing breast milk to come out. According to Nurhanifah et al. [11], massage therapy can usually use lotion, soap, and talcum powder, but lotion use can be replaced with essential oil aromatherapy. Aromatherapy is an alternative healing technique from the ancient knowledge system of therapy using fragrances derived from plants, flowers, and trees that smell fresh and delicious and have calming properties [2], [11].

In increasing breast milk production, the aromatherapy often used is lavender essential aromatherapy. Lavender aromatherapy contains linalool that can stimulate the brain
area, the nucleus raphe, making a person more comfortable. According to research conducted by Koulivand et al. [12], when inhaling lavender aromatherapy, the aroma produced can provide a relaxing effect on the central nervous system. This plays a vital role in increasing breast milk production, and the relaxation effect produced by the central nervous system will help to increase oxytocin hormone production [1]. Fennel or anise aromatherapy can increase a mother's breast milk production when combined with massage therapy. Research conducted by Ekacahyaningtyas et al. [13] shows that oxytocin massage using fennel essential oil can accelerate the release of colostrum in postpartum cesarean section mothers. This aligns with research conducted by (Mikaningtyas et al., 2018) [3], which shows that fennel essential oil can increase prolactin hormone levels by 180.94%. This is because fennel contains flavonoids and essential oils. The flavonoid content in fennel fruit ranges from 8.58% to 15.06%, and the essential oil content ranges from 2% to 6%. Flavonoids are phenolic compounds that are potent antioxidants. In the human body, antioxidants work by inhibiting the activity of oxidizing compounds, including enzymes and metal-binding proteins, which help anticipate damage to blood vessels [8], [14], [15].

Of the several studies that have been carried out regarding the use of lavender and fennel aromatherapy, research has yet to be carried out comparing the effectiveness of the SPEOS Method with lavender aromatherapy and fennel aromatherapy. The benefit of this research is that it can be used as a reference in selecting the most effective aromatherapy used to increase breast milk production in postpartum mothers.

**METHODS**

**Study Design**

This research was a quantitative study with a quasi-experimental design. The research design used is a two-group pre-posttest design. This design is carried out on two different groups, wherein the assessment, an initial test (pre-test), is carried out first. After the intervention is given, a measurement (post-test) is carried out to determine the effect of the treatment so that the magnitude of the experiment's impact can be known. The sample in this study was postpartum mothers, with each sample size of 15 respondents (Group I) who were given the SPEOS application with fennel essential oil aromatherapy and 15 respondents (Group II) who applied the SPEOS method with lavender essential oil aromatherapy who met the inclusion criteria. The inclusion criteria in this study include primiparous mothers or those who have just given birth for the first time, have a history of normal childbirth, have a history of delivery in health service facilities located in Gianyar Regency, have problems with breast milk production, are willing to become respondents. The sampling technique used purposive sampling.

**Research Location and Time**

The research was conducted at health
facilities in Gianyar Regency from July to September 2023 because the number of breastfeeding problem cases is still high in this area.

**Research Instrument**

The instrument in this study used Standard Operating Procedure (SOP) of application SPEOS method and observation sheets. The SOP contained information on how to carry out the SPEOS method with lavender and fennel aromatherapy which was used as a guide for carrying out interventions on research samples. The observation sheet contained the respondent’s identity and place to record the amount of breast milk production after the intervention.

**Data Collection**

In this study, data was collected through direct intervention and observation of the research subjects. The intervention was carried out according to the Standard Operational Procedure (SOP). The SPEOS method was used to stimulate the release of breast milk by combining endorphin massage, oxytocin, and suggestive lavender and fennel essential oils with inhalation techniques using a diffuser. The number of essential oil drops is 3-5 drops added to 250ml of water. It is inhaled until the SPEOS application is completed, which is for 10-20 minutes. The SPEOS method is carried out once a day in the morning, starting from the first day postpartum until the 10th day. The duration of the massage begins at 10 minutes on the first and second days, then increases to 15 minutes on the third to fourth days, and evaluates. If breast milk production is low, the massage time is increased to 20 minutes and maintained until the 10th day. The amount of breast milk released by the mother from both breasts from the first day postpartum until the 10th day using a breast pump, then collected in a breast milk measuring cup that includes ml size. The assessment of breast milk production was carried out pre-test before intervention. After intervention until the 10th day, post-test assessment was carried out three times, including post-test I (3rd day postpartum), post-test II (7th day postpartum), and post-test III (10th day postpartum).

**Data Analysis**

This study used univariate analysis for respondent characteristics, bivariate analysis with a paired t-test to see the difference before and after intervention in the same group, and an independent t-test to determine the difference before and after intervention between groups. This approach allows for a comprehensive understanding of the impact of the interventions on breast milk production.

**Ethics**

This research has received ethical approval from the ethical commission of RSUD Sanjiwani Gianyar, with the number 68/PEPK/VII/2023.

**RESULTS**

Table 1 shows that out of 15 respondents in the SPEOS group with lavender
aromatherapy, 14 people (93.3%) were aged 20-35 years, 14 people (93.3%) had secondary education (High School/Vocational School), and seven people (46.7%) work as private employees. In the SPEOS group with fennel aromatherapy, out of 15 respondents, 12 people (80%) were aged 20-35 years, 11 people (73.3%) had higher education (Diploma/Bachelor’s degree), and seven people (46.7%) were housewives.

Based on Table 3 above, it was found that the SPEOS group with lavender aromatherapy, after the intervention, had a mean value of 132.33, a median of 135, a maximum value of 155, a minimum value of 100, and a standard deviation of 15.10. The SPEOS group with fennel aromatherapy, after the intervention, had a mean value of 141.66, a median of 140, a maximum value of 160, a minimum value of 120, and a standard deviation of 13.04. People (46.7%) were housewives.

Based on Table 2, it was found that the SPEOS group with lavender aromatherapy before the intervention had a mean value of 4.86, a median of 6, a maximum value of 8, a minimum value of 0, and a standard deviation of 2.69. The SPEOS group with fennel aromatherapy, before the intervention, had a mean value of 3.73, a median of 4, a maximum value of 7, a minimum value of 0, and a standard deviation of 2.28.

Based on Table 8, the difference in the mean value of breast milk production before and after the SPEOS intervention with lavender aromatherapy was 127.47, with a p-value of 0.00. This means there is a significant difference between the mean value of breast milk production before and after the SPEOS intervention with lavender aromatherapy. The difference in the mean value before and after the SPEOS intervention with fennel aromatherapy was 137.93 with a p-value of 0.00, indicating a significant difference between the mean value of breast milk production before and after the SPEOS intervention with fennel aromatherapy. Based on the independent t-test, the p-value before intervention was 0.66, meaning there is no significant difference in breast milk production between before intervention in the SPEOS group with lavender aromatherapy and the SPEOS group with fennel aromatherapy. After the intervention, the p-value was 0.28, indicating no significant difference in breast milk production between the SPEOS group with lavender aromatherapy and the SPEOS group with fennel aromatherapy.
**Fig. 1** Flow of the SPEOS Method (Endorphin, Oxytocin, Suggestive Massage Stimulation) with Essential Oil Aromatherapy on Breast Milk Production in Postpartum Mothers
**Table 1**

Respondent Characteristics

<table>
<thead>
<tr>
<th>No.</th>
<th>Characteristics</th>
<th>SPEOS Lavender</th>
<th>SPEOS Fennel</th>
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</thead>
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<tr>
<td></td>
<td></td>
<td>Frequency (f)</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;20 years old</td>
<td>1</td>
<td>6,7</td>
</tr>
<tr>
<td></td>
<td>20-35 years old</td>
<td>14</td>
<td>93,3</td>
</tr>
<tr>
<td></td>
<td>&gt;35 years old</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Primary education (elementary school/ junior high school)</td>
<td>1</td>
<td>6,7</td>
</tr>
<tr>
<td></td>
<td>Secondary education (high school/vocational high school)</td>
<td>14</td>
<td>93,3</td>
</tr>
<tr>
<td></td>
<td>Higher education (diploma/bachelor’s degree)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Occupation</td>
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</tr>
<tr>
<td></td>
<td>Private employee</td>
<td>7</td>
<td>46,7</td>
</tr>
<tr>
<td></td>
<td>Civil Servant</td>
<td>2</td>
<td>13,3</td>
</tr>
<tr>
<td></td>
<td>Self-employed</td>
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<td>6,7</td>
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<tr>
<td></td>
<td>Housewife</td>
<td>5</td>
<td>33,3</td>
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**Table 2**

Distribution of Mean, Median, Maximum, and Minimum Values Before Intervention

<table>
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<tr>
<th>No</th>
<th>Intervention</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum value</th>
<th>Minimum value</th>
<th>Std. Deviation</th>
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</thead>
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<tr>
<td>1</td>
<td>SPEOS with lavender aromatherapy</td>
<td>4,86</td>
<td>6</td>
<td>8</td>
<td>0</td>
<td>2,69</td>
</tr>
<tr>
<td>2</td>
<td>SPEOS with fennel aromatherapy</td>
<td>3,73</td>
<td>4</td>
<td>7</td>
<td>0</td>
<td>2,28</td>
</tr>
</tbody>
</table>

**Table 3**

Distribution of Mean, Median, Maximum, and Minimum Values After Intervention

<table>
<thead>
<tr>
<th>No</th>
<th>Intervention</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum value</th>
<th>Minimum value</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SPEOS with lavender aromatherapy</td>
<td>132,33</td>
<td>135</td>
<td>155</td>
<td>100</td>
<td>15,10</td>
</tr>
<tr>
<td>2</td>
<td>SPEOS with fennel aromatherapy</td>
<td>141,66</td>
<td>140</td>
<td>160</td>
<td>120</td>
<td>13,04</td>
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</table>
**Table 4**
Differences in mean values before and after intervention

<table>
<thead>
<tr>
<th>No</th>
<th>Intervention</th>
<th>Mean before the Intervention</th>
<th>Mean after the Intervention</th>
<th>The mean difference before and after the intervention</th>
<th>P value</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>SPEOS with lavender aromatherapy</td>
<td>4,86</td>
<td>132,33</td>
<td>127,47</td>
<td>0,00*</td>
</tr>
<tr>
<td>2</td>
<td>SPEOS with fennel aromatherapy</td>
<td>3,73</td>
<td>141,66</td>
<td>137,93</td>
<td>0,00*</td>
</tr>
<tr>
<td></td>
<td>P value</td>
<td>0,66**</td>
<td>0,28**</td>
<td></td>
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</tr>
</tbody>
</table>

--- ** Paired t-test
--- *** Independent t-test

**DISCUSSION**

Regarding age characteristics, most respondents were 20-35 years old because, in this study, they were postpartum mothers of reproductive age. Regarding educational aspects, most respondents had secondary education and occupation characteristics, with the majority being homemakers. This is a supporting factor for mothers being able to give breast milk directly to their babies.

The SPEOS method with aromatherapy can increase breast milk production. This is because of the application of the SPEOS method (Stimulation, Endorphin Massage, Oxytocin, and Suggestive) as an effective non-pharmacological alternative treatment in increasing mothers' breast milk production. The SPEOS method is carried out by stimulating or stimulating the release of the oxytocin hormone, providing comfort and growing confidence in mothers to breastfeed their babies exclusively.

The research conducted by Risse Melyansari [16] showed an effect of the SPEOS method on the production of breast milk in postpartum mothers (p-value = 0.000) after being carried out for three days. Research conducted by Elisa [17] also showed that SPEOS has a significant effect on increasing breast milk production in postpartum mothers at the Mardi Rahayu Semarang maternity home with a p-value of 0.000. This action can affect the prolactin hormone which functions as a stimulus for breast milk production during breastfeeding. Besides, it can relax and smooth the flow of nerves and breast milk channels in both mother's breasts [3]. In line with the research of Purnamasari & Hindiarti [10], it is stated that several massage therapy methods, such as oxytocin massage, are also helpful in accelerating the parasympathetic nerves to send signals to the back of the brain to stimulate the work of oxytocin hormone after giving birth in flowing breast milk to come out. For more effective massage therapy, it is combined with the administration of essential oil aromatherapy. In increasing breast milk production, the aromatherapy often used is lavender essential aromatherapy.
Lavender aromatherapy contains linalool that can stimulate the brain area, the nucleus raphe, making a person more comfortable [15]. According to research conducted by Koulivand [12], when inhaling lavender aromatherapy, the aroma produced can provide a relaxing effect on the central nervous system. This plays a vital role in increasing breast milk production, and the relaxation effect produced by the central nervous system will help to increase the production of oxytocin hormone [6], [7], [11], [14], [18].

Research conducted by Ekacahyaningtyas [13] showed that oxytocin massage using fennel essential oil can accelerate the release of colostrum in postpartum cesarean section mothers. This aligns with research conducted by Mikaningtyas [3], which showed that fennel essential oil can increase prolactin hormone levels by 180.94%. This is because fennel contains flavonoids and essential oils. The flavonoid content in fennel fruit ranges from 8.58% to 15.06%, and the essential oil content ranges from 2% to 6%. Flavonoids are vital antioxidant phenolic compounds. In the human body, antioxidants work by inhibiting the activity of oxidant compounds, including enzymes and metal-binding proteins. This is useful to anticipate damage to blood vessels [9] [4], [10], [15]. Research conducted by Ratna [11] also showed that oxytocin massage using fennel oil is more effective in increasing breast milk production compared to giving oxytocin massage without fennel oil.

CONCLUSIONS AND RECOMMENDATIONS

The characteristics of the SPEOS method with lavender aromatherapy and fennel aromatherapy can increase breast milk production. The SPEOS method can be used in combination with lavender aromatherapy or with fennel aromatherapy.

LIMITATION

The samples used were limited, and the references used were limited because there was limited research examining the combination of SPEOS and aromatherapy.

CONFLICT OF INTEREST

There is no conflict of interest.

REFERENCES


