Original Research

Midwifery Complementary Treatment with The Application of Oxytocin Massage Using Lavender Aromatherapy Oil on Breast Milk Production in Postpartum Mothers

Ni Made Rai Widiastuti1*, Ketut Novia Arini2, & Maria Gabriela Yuniati1

1Politeknik Kesehatan Kartini Bali, Denpasar, Indonesia
2Stikes Buleleng, Buleleng, Indonesia

Abstract

Introduction: One of the non-pharmacological methods used to increase breast milk production is known as complementary care, one of which is by giving oxytocin massage using lavender aromatherapy oil. The purpose of this study was to determine the effect of oxytocin massage using lavender aromatherapy oil on postpartum mother’s milk production.

Methods: This study used a quasi-experimental with pre-test and post-test with a control group. The sample in this study were postpartum mothers with a sample size of 15 respondents in the treatment group and 15 respondents in the control group who met the criteria. The intervention group received oxytocin massage services with lavender aromatherapy oil starting on the 2nd day postpartum, while the control group received breastfeeding assistance, then on the 6th day both groups measured milk production using a Brust Pump. The instrument used is the observation sheet. Hypothesis testing was carried out using the Mann-Whitney test.

Results: Based on the calculation of the Mann-Whitney test, the sig value (p value) is 0.000, where p value <0.05, which means that oxytocin massage using lavender aromatherapy oil has a significant effect on maternal milk production in normal postpartum.

Conclusion: Combination complementary therapy between oxytocin massage and lavender aromatherapy can increase breast milk production in postpartum mothers in Denpasar City.

*Corresponding Author:
e-mail: raiwidiastuti@gmail.com

This work is licensed under a Creative Commons Attribution 4.0 International License.
INTRODUCTION

WHO recommends that infants be exclusively breastfed for 6 months. Mother’s milk is a natural baby nutrition with the most complete nutritional content to support optimal growth and development. Babies who are breastfed will reduce the risk of developing asthma, obesity, diabetes, lower respiratory tract infections, acute otitis media, sudden infant death syndrome and gastrointestinal infections [1]. The results of the study also show the opposite between exclusive breastfeeding and infant mortality in developing countries [2].

Data obtained from Riskesdas in 2018 [3], reports that exclusive breastfeeding in Indonesia is still in low coverage, namely 37.3%, partial breastfeeding 9.3 and predominant breastfeeding 3.3%. Non-exclusive breastfeeding which is mostly given to infants before the age of 6 months is formula milk (79.8%). Thus, it can be seen that the coverage of exclusive breastfeeding in Indonesia is still low. This can have an impact on the quality of life of the nation’s next generation and also on the national economy. This is of course in line with the goals of the SDGs, namely eradicating poverty, economic growth, and reducing inequality within and between countries.

Phenomena that often occur in postnatal mothers are experiencing breastfeeding problems with inability to release breast milk, sore nipples and less milk production, so they decide to stop breastfeeding [4]. Mothers who experience stress, physical and emotional exhaustion can interfere with the reflex to express breast milk and the hormone oxytocin. Mothers who experience stress stimulate the hypothalamus to produce the hormone cortisol. The increase in the hormone cortisol will inhibit the production of breast milk [5]. Various efforts have been made to increase milk production with several methods, one of which is complementary therapy, which is a combination of massage and aromatherapy.

One of the massage techniques, namely oxytocin massage, influences breast milk production and the aromatherapy used is lavender which can increase the mother’s comfort. Statistically there is a difference in the average milk production before and after oxytocin massage [6]. Oxytocin massage given to postpartum mothers has a positive effect on increasing milk production since the first massage was given [7]. Lavender aromatherapy can have a positive impact with a relaxing effect on the central nervous system or hypothalamus which helps increase the production of the hormone oxytocin and has an impact on increasing breast milk production. Lavender aromatherapy contains linalool and linalyl acetate, which have antidepressant and anxiolytic effects [8].

Lavender aromatherapy is ideal for postpartum maternal relaxation by achieving a significant improvement in sleep quality. Respondents who inhaled lavender aromatherapy had a relaxing effect on the central nervous system, helping to increase the hormone oxytocin, which had an effect on increasing breast milk production [9]. In addition, lavender aromatherapy which has a relaxing effect causes the release of the hormone oxytocin by modifying the homeostasis of the D3 subtype dopamine.
receptor and its proliferation [10]. Based on the description of the background above, the researchers are interested in researching how the management of complementary therapy with oxytocin massage using lavender aromatherapy oil on breast milk production in postpartum mothers in Denpasar City.

METHODS

This study uses a quasi-experimental method with the approach used is a pre-test and post-test design with a control group. The location of this study is in the Work Area of East Denpasar Health Center I from May to August 2022. In this study, included in the intervention group were respondents who received a combination treatment of oxytocin massage with lavender aromatherapy oil, while the control group did not receive massage and only provided breastfeeding assistance. The sample in this study was postpartum mothers with a sample size of 15 respondents in the treatment group and 15 respondents in the control group who met the criteria, namely postpartum mothers with a history of normal delivery, postpartum mothers who breastfeeding their babies and do not have breast abnormalities.

The procedure of this study was the intervention group received oxytocin massage service with lavender aromatherapy oil starting on the 2nd postpartum day, where the massage was carried out for 4 days, and then on the 6th postpartum day, milk production was measured using a pump or Brust Pump. As for the control group, breastfeeding assistance was provided and on the 6th postpartum day, milk production was measured using a pump or Brust Pump. The research instrument used is the observation sheet. Data analysis in this study used univariate analysis to describe descriptively about the frequency distribution and the proportion of each variable studied, and continued with bivariate analysis with the statistical test used was the Mann-Whitney Test.

Ethical Consideration

The researcher has applied for a research permit to the Denpasar City Health Office and a copy of the research permit to the Inpatient Health Centre in Denpasar City, and has taken care of Ethical Clearance from the Ethics Commission of the Faculty of Medicine, Udaya University with the number: 2599/UN14.2.2.VII.14/LT/2022.

RESULTS

The result of this study shows that the majority of the respondents (66.7%) was educated with higher education. Based on the age, the majority (86.7%) was in the age of 20-35 years. Based on working status, half of which is 56.7% of the respondents are working. Based on parity status most of respondent (63.3%) are multiparous and 60% of respondents have income more than equal to the family minimum wage.

In control group in category of breastfeeding, there are 10 respondents (66.7%) with the exclusive breastfeeding category, while in the intervention group there are almost entirely 14 respondents (93.3%) with the exclusive breastfeeding.
Based on the milk production before oxytocin massage with aromatherapy was carried out, it was informed that the milk production in the control group was higher than the treatment group, which was 11.7 ml. The production of breast milk after oxytocin massage with aromatherapy, it shows that the milk production on day 6 in the treatment group was higher than the control group, which was 115 ml.

The effect of oxytocin massage using lavender aromatherapy oil on normal postpartum mother's milk production, could increase the breast milk production on day 6 in the treatment group from 11.2 mm to 115 ml with a sig value of 0.001 <0.05, which means that there was a difference in milk production on day 6. Data on the difference in milk production produced by the two groups were analyzed using the Mann-Whitney test, the difference in milk production in the two groups is shown in Table 4 as follows.

Based on the calculation of the Mann-Whitney test, the sig value (p value) is 0.000. Furthermore, testing the hypothesis with a value of = 0.05. Thus the value of sig 0.000 <0.05 so that it can be seen that Ho is rejected and Ha is accepted, which means that oxytocin massage using lavender aromatherapy oil has a significant effect on maternal milk production in normal postpartum.

### Table 1

Frequency Distribution of Respondent Characteristics

| Respondent Characteristics | Frequency (n) | Percentage (%) |
|----------------------------|---------------|----------------|
| **Age**                    |               |                |
| 20-35 years old            | 26            | 86.7           |
| >35 years old              | 4             | 13.3           |
| **Education**              |               |                |
| Primary                    | 10            | 23.3           |
| High                       | 20            | 66.7           |
| **Working Status**         |               |                |
| No                         | 17            | 56.7           |
| Yes, working               | 13            | 43.3           |
| **Parity**                 |               |                |
| Primipara                  | 11            | 36.7           |
| Multipara                  | 19            | 63.3           |
| **Family Income**          |               |                |
| <Family minimum wage       | 12            | 40             |
| ≥Family minimum wage       | 18            | 60             |
**Table 2**
Breastfeeding Category

| Breastfeeding Category | Not Exclusive Frequency | %  | Exclusive Breastfeeding Frequency | %  | Total Frequency | %  |
|------------------------|-------------------------|----|-----------------------------------|----|----------------|----|
| Control                | 5                       | 33.3 | 10                                | 66.7 | 15             | 100 |
| Intervention           | 1                       | 6.7  | 14                                | 93.3 | 15             | 100 |

**Table 3**
Normal Breast Milk Production in Postpartum in Treatment Groups and Control Groups

| Statistic                  | Intervention Pre | Post | Control Pre | Post |
|----------------------------|------------------|------|-------------|------|
| Mean/Average               | 11,2             | 115  | 11,7        | 81,6 |
| Sig                        | 0,001            |      | 0,001       |      |

**Table 4**
Effect of Oxytocin Massage using Lavender Aromatherapy Oil on Breast Milk Production in Postpartum

| Group         | Mean | P value |
|---------------|------|---------|
| Intervention  | 103.8|         |
| Control       | 69.9 | 0.00    |

**DISCUSSION**

Based on the results of data analysis, it can be seen that the milk production of mothers who were given oxytocin massage treatment using lavender aromatherapy produced milk with a higher amount than the control group. The milk production that can be produced by the treatment group during the observation period is an average difference of 103.8 ml, while the control group only produces breast milk with an average difference of 69.9 ml. Then, after analyzing the data using statistical tests, the sig value (p value) was 0.000. Furthermore, testing the hypothesis with a value of $= 0.05$. Thus the value of sig 0.000 < 0.05 so that it can be seen that Ho is rejected and Ha is accepted, which means that oxytocin massage using lavender aromatherapy oil has a significant effect on breast milk production for normal postpartum mothers in Denpasar City. There are other study results that are in line, that postpartum mothers who do oxytocin massage produce more breast milk when compared to mothers who do not do oxytocin massage [11].

Giving oxytocin massage using lavender aromatherapy oil, is one of the non-pharmacological methods used to increase breast milk production is known as
complementary care. Oxytocin massage can have a physiological effect on the breast that it will expel milk from the mammary glands. Oxytocin massage causes stimulation in the spinal cord which functions as a nerve link between the brain and the peripheral nervous system. During pregnancy, the levels of the hormones estrogen and progesterone increase and after delivery the levels of both hormones decrease. The hormones estrogen and progesterone are then replaced by oxytocin and prolactin which affect the amount of milk production. Oxytocin will be released from the hypothalamus after being stimulated by the baby's massage and sucking. Furthermore, the hormone oxytocin will trigger the smooth muscles around the cells that make milk to secrete milk [12]. The hormones prolactin and oxytocin are closely related to antidepressants. The results of several studies show that breastfeeding can provide protection for psychological health because it can weaken the stress hormone (cortisol). So that the more mothers breastfeed, the more prolactin and oxytocin hormones are released and the more the mother's milk production.

The result of this study shows that the amount of milk production in mothers who were given oxytocin massage using lavender aromatherapy oil was more than the group who were not given oxytocin massage where they were only given breastfeeding assistance. With breastfeeding assistance, it still has the effect of increasing milk production, coupled with giving oxytocin massage with lavender aromatherapy will have a double effect and increase the mother's milk production [13]. Regular oxytocin massage on postpartum mothers who are assisted by their husbands will initiated the mother's milk production. The oxytocin massage by the husband can increase the production of breast milk in postpartum mothers as seen by the baby's weight, the frequency of the baby's defecation, the frequency of the baby's urination and the mother's sleep rest [14].

The use of lavender essential oil can help mothers relax and feel comfortable so that milk production is expected to increase. Some research results state that the use of aromatherapy can help to reduce complaints [15]. Lavender aromatherapy is ideal for postpartum maternal relaxation by achieving a significant improvement in sleep quality. Inhaling lavender aromatherapy has a relaxing effect on the central nervous system, helping to increase the developmental hormone oxytocin, which has an effect on increasing breast milk production [9]. In addition, lavender aromatherapy can also cause the release of oxytocin by modifying the D3 subtype dopamine receptor homeostasis and its proliferation [16]. The results of other studies showed that there was a difference between oxytocin massage and no oxytocin massage on breast milk production in postpartum mothers in the working area of Ambarawa Health Center. Breast milk production in mothers who received oxytocin massage was more than mothers who did not receive oxytocin massage [11].

**CONCLUSION**

Based on the results and discussion of this study, the researchers concluded that
oxytocin massage using lavender aromatherapy oil can increase milk production in postpartum mothers. The results of this study can be used as input for postpartum mothers and health care providers to provide education so that they can apply the oxytocin massage technique with lavender aromatherapy as a complementary therapy to increase breast milk production in postpartum mothers.

REFERENCES

[1] WHO, “Breastfeeding Overview, World Health Organization (WHO),” 2020. https://www.who.int/health-topics/breastfeeding#tab=tab_2.

[2] R. Azuine, “Exclusive Breastfeeding and Under-Five Mortality, 2006-2014: A Cross-National Analysis of 57 Low- and Middle Income Countries,” Int. J. MCH AIDS, vol. 4, no. 1, pp. 13–21, 2015, doi: 10.21106/jima.52.

[3] Kementrian Kesehatan Republik Indonesia, “Laporan Nasional RKD2018_FINAL.pdf,” Badan Penelitian dan Pengembangan Kesehatan. p. 674, 2018, [Online]. Available: http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan_Nasional_RKD2018_FINAL.pdf.

[4] N. Masruroh, L. K. Rizki, and N. A. Ashari, “Analisis Perilaku Ibu Menyusui dalam Memberikan ASI Eksklusif di Masa Pandemi Covid 19 di Surabaya ( Mix Method ),” vol. 3, no. 1, pp. 1–10, 2022, doi: 10.24853/myjm.3.1.1-10.

[5] Jamilah, A. Suwondo, S. Wahyuni, and Suhartono, “Efektifitas Kombinasi Pijat Oksitosin Tehnik Effleurance Dan Aromaterapi Rose Terhadap Kadar Prolaktin Post Partum Normal Di Puskesmas Dawe Kudus Tahun 2013,” J. Ilm. Bidan, vol. 5, no. 1, pp. 97–110, 2014, [Online]. Available: http://ojs.stikesbhamadaslawi.ac.id/index.php/jik/article/view/92.

[6] R. Khanifah, “Penerapan Pijat Oksitosin Menggunakan Minyak Lavender Untuk meningkatkan Kelancaran ASI Pada Ibu Post Partum Di BPM Yustin Tresnowati Ayah, Kebumen,” 2017.

[7] N. M. R. Widiastuti and N. N. A. Widiani, “Improved breastfeeding with back massage among postnatal mothers,” Int. J. Res. Med. Sci., vol. 8, no. 2, p. 580, 2020, doi: 10.18203/2320-6012.ijrms20200239.

[8] F. Ohorella, M. Kamaruddin, N. Kandari, and N. Triananinis, “Efektifitas Aromatherapy Uap Lavender Dan Pijat Oksitosin Terhadap Produksi Asi Pada Ibu Nifas,” J. Kebidanan Malahayati, vol. 7, no. 2, pp. 155–160, 2021, doi: 10.33024/jkm.v7i2.3628.

[9] M. R. Ramadhan and O. Z. Zettira, “Aromaterapi Bunga Lavender (Lavandula angustifolia ) dalam Menurunkan Risiko Insomnia,” Fak. Kedokt. Univ. Lampung, vol. 6, pp. 60–63, 2017.

[10] P. H. Koulivand, M. Khaleghi Ghadiri, and A. Gorji, “Lavender and the nervous system,” Evidence-based Complement. Altern. Med., vol. 2013, 2013, doi: 10.1155/2013/681304.

[11] H. Setyowati and A. Andayani, “Perbedaan produksi ASI pada ibu post...
partum setelah pemberian pijat oksitosin,” *J. Keperawatan Soedirman*, vol. 10, no. 3, pp. 188–195, 2016.

[12] L. Dixon, J. Skinner, and M. Foureur, “The Emotional and Hormonal Pathways of Labour and Birth: Integrating Mind, Body and Behaviour,” *New Zeal. Coll. Midwives J.*, vol. 48, pp. 15–23, 2013, doi: 10.12784/nzcomjnl48.2013.3.15-23.

[13] B. Figueiredo, C. C. Dias, S. Brandão, C. Canário, and R. Nunes-Costa, “Breastfeeding and postpartum depression: State of the art review,” *J. Pediatr. (Rio. J)*, vol. 89, no. 4, pp. 332–338, 2013, doi: 10.1016/j.jped.2012.12.002.

[14] T. M. Doko, K. Aristiati, and S. Hadisaputro, “Pengaruh Pijat Oksitosin oleh Suami terhadap Peningkatan Produksi Asi pada Ibu Nifas,” *J. Keperawatan Silampari*, vol. 2, no. 2, pp. 66–86, 2019, doi: 10.31539/jks.v2i2.529.

[15] K. N. Arini and N. M. R. Widiastuti, “Perceptions of Pregnant Women About the Application of Complementary Therapies to Overcome Emesis Gravidarum,” *Babali Nurs. Res.*, vol. 3, no. 2, pp. 47–55, 2022, doi: 10.37363/bnr.2022.3284.

[16] N. Asiyah and A. Wigati, “Minyak Aromaterapi Lavender sebagai Media Peningkatan Produksi ASI,” *Jikk*, vol. 6, no. 2, 2015.