



THE EFFECTIVENESS OF RED SPINACH CONSUMPTION, LAVENDER AROMATHERAPY, AND OXYTOCIN MASSAGE ON INCREASING BREAST MILK PRODUCTION AMONG BREASTFEEDING MOTHERS AT PMB ULVA ALIAH SAHIDAH IN 2025

Abela Mayunita¹, Lina Isika²

^{1,2}Sekolah Tinggi Ilmu Kesehatan Program Studi Sarjana Kebidanan Abdi Nusantara
linaisikapuri16@gmail.com

Abstrak

Breast milk is a natural fluid produced by the mother's mammary glands and serves as the primary source of nutrition for infants, containing complete nutrients and antibodies to enhance the baby's immune system. Breast milk plays an important role in supporting optimal growth and development of infants. However, many breastfeeding mothers still experience insufficient or non-smooth breast milk production. Various non-pharmacological efforts can be implemented to increase breast milk production, including the consumption of red spinach which is rich in iron and essential nutrients, the use of lavender aromatherapy to promote relaxation, and oxytocin massage which stimulates the release of the oxytocin hormone to facilitate milk flow. The combination of these three methods is expected to improve breast milk production in breastfeeding mothers. Purpose of writing this study aimed to determine the effectiveness of red spinach consumption, lavender aromatherapy, and oxytocin massage on increasing breast milk production among breastfeeding mothers at PMB Ulva Aliah Sahidah in 2025. Methods this study employed a quasi-experimental design with a pretest-posttest approach. The sample consisted of 50 breastfeeding mothers selected using a specific sampling technique. The interventions included regular consumption of red spinach, application of lavender aromatherapy to induce relaxation, and oxytocin massage performed according to standard procedures. Breast milk production was measured before and after the interventions using an observation sheet. The collected data were analyzed using statistical tests to determine differences in breast milk production before and after the intervention. Results the results showed an increase in breast milk production after the administration of red spinach, lavender aromatherapy, and oxytocin massage. Before the intervention, most mothers experienced low or insufficient milk production, while after the intervention, most mothers showed smooth and increased milk production. Statistical analysis indicated a significant difference in breast milk production before and after the intervention. Conclusions and recommendations the provision of red spinach, lavender aromatherapy, and oxytocin massage was proven to be effective in increasing breast milk production among breastfeeding mothers. It is recommended that healthcare providers implement this combination of interventions as supportive non-pharmacological methods to enhance breast milk flow. Future research is suggested to involve larger sample sizes and explore additional factors influencing breast milk production.

Keywords : *Breast Milk, Red Spinach, Lavender Aromatherapy, Oxytocin Massage, Breastfeeding Mothers.*

* Corresponding author :

Address : Sekolah Tinggi Ilmu Kesehatan Program Studi Sarjana Kebidanan Abdi Nusantara

Email : linaisikapuri16@gmail.com

INTRODUCTION

Breast milk (ASI) is a natural fluid produced by mothers to optimally meet the nutritional needs of infants. It contains carbohydrates, proteins, fats, vitamins, minerals, as well as bioactive components such as antibodies, hormones, enzymes, and immune cells that help protect infants from various diseases. This combination of components makes breast milk easily digestible and capable of supporting infant growth and brain development. In addition to its benefits for infants, breastfeeding also provides advantages for mothers, such as accelerating postpartum recovery, reducing the risk of certain cancers, and offering economic and health benefits for families and society.

According to the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO), exclusive breastfeeding is recommended for the first six months of life, followed by continued breastfeeding along with complementary foods until the child reaches two years of age or older. Breast milk provides all the nutrients infants need safely, while early introduction of complementary foods may cause infections (Junita P., Madur, Kornelia Kurniati, 2024).

Breast milk is the best food for infants as it contains the most appropriate nutrients to support optimal growth. The World Health Organization (WHO) recommends that newborns receive exclusive breastfeeding for the first six months of life. WHO reports that the global rate of exclusive breastfeeding among infants aged 0–6 months is 41%. This figure remains low compared to the Global Nutrition Targets 2025, which aim to increase exclusive breastfeeding rates to at least 50%, and the target for 2030 of 70% (International Food Policy Research Institute, 2014; Victora et al., 2016). Based on Government Regulation No. 33 of 2012, the target for exclusive breastfeeding coverage in Indonesia is 100% (Etik Khusniyati & Purwati, 2024).

Exclusive breastfeeding coverage in Southeast Asia shows relatively similar figures across countries. For comparison, exclusive breastfeeding rates in India have reached 46%, in the Philippines 34%, in Vietnam 27%, and in Myanmar 24%. Although the benefits of breastfeeding and exclusive breastfeeding have been widely documented worldwide, only 39% of children under six months of age received exclusive breastfeeding in 2012. This global rate

has increased very slowly over the past few decades, partly due to low breastfeeding rates in several large countries and insufficient support for breastfeeding mothers from their surrounding environments. Cambodia successfully increased exclusive breastfeeding rates among infants under six months from 11.7% in 2000 to 74% in 2010. Togo and Zambia also increased their rates from 10% and 20% in the late 1990s to more than 60% in the 2000s. On the other hand, exclusive breastfeeding rates in Tunisia declined drastically from 46.5% in 2000 to only 6.2% by the end of the decade. Exclusive breastfeeding rates in Nigeria showed no improvement over the years, and some of the lowest rates in the world were found in Somalia, Chad, and South Africa (Dewi Srirahayu, 2024).

Exclusive breastfeeding coverage in Indonesia in 2022 was recorded at only 67.96%, decreasing from 69.7% in 2021, indicating the need for more intensive support to improve this coverage. According to the 2021 Basic Health Research (RISKESDAS) data, 52.5 percent — or only half of the 2.3 million infants under six months of age — received exclusive breastfeeding in Indonesia, reflecting a decline of 12 percent compared to 2019. The rate of early initiation of breastfeeding (IMD) also decreased from 58.2 percent in 2019 to 48.6 percent in 2021. In East Nusa Tenggara Province (NTT), the coverage of exclusive breastfeeding reached 81.18%. Failure to provide breast milk contributes to infant mortality due to poor nutritional status, which affects infant health and survival (Junita P., Madur, Kornelia Kurniati, 2024).

Achieving 100% exclusive breastfeeding remains a challenge in many countries, despite the negative impacts associated with the absence of exclusive breastfeeding practices. One consequence of low exclusive breastfeeding rates is poor nutritional status, including stunting, which can be prevented by providing optimal nutrition to infants, beginning with exclusive breastfeeding from birth until six months of age (Junita P., Madur, Kornelia Kurniati, 2024).

Insufficient breast milk contributes to infant mortality through poor nutritional status and negatively affects infant health and survival. The foundation for developing high-quality human resources begins during pregnancy and is supported by breastfeeding from early life. Breast milk promotes optimal growth and development and provides protection against diseases. The

benefits of breastfeeding are maximized when breast milk is given exclusively without the addition of other foods (Junita P., Madur, Kornelia Kurniati, 2024).

METHOD

The novelty of this study relates to the effectiveness of red spinach consumption, lavender aromatherapy, and oxytocin massage in increasing breast milk production among breastfeeding mothers at PMB. This is supported by several references from previous studies.

Problem Formulation

This study is motivated by the importance of efforts to increase breast milk production in breastfeeding mothers, considering that breast milk is the primary source of nutrition that plays a major role in infant growth and health. However, in practice, many breastfeeding mothers experience suboptimal milk production, thereby requiring interventions that are safe, easy to apply, and effective. Based on these conditions, this study formulates the main problem regarding the effectiveness of various non-pharmacological methods in increasing breast milk production, particularly through the provision of red spinach as a source of phytonutrients and iron, lavender aromatherapy as a relaxation method that may increase oxytocin hormone levels, and oxytocin massage which directly stimulates the release of oxytocin to facilitate breast milk flow. This study seeks to answer the question of how effective each of these interventions is in increasing breast milk production among breastfeeding mothers at PMB Ulva Aliah Sahidah in 2025, whether there are differences in effectiveness among the three interventions, and which intervention provides the most optimal results in increasing breast milk production. This problem formulation serves as an important foundation for determining strategies to empower breastfeeding mothers through appropriate, effective, and needs-based approaches within midwifery service facilities.

LITERATURE REVIEW

a. Concept of Breastfeeding Mother

Breastfeeding mothers are women who are in the lactation period after childbirth and produce breast milk as the primary source of nutrition for infants. The production and release of breast milk are influenced by the hormones prolactin and oxytocin, as well as nutritional factors,

psychological conditions, and breastfeeding frequency. Breast milk plays a crucial role in infant growth, development, and protection against diseases. Exclusive breastfeeding for six months is recommended to optimally fulfill infants' nutritional needs.

b. Definition of Exclusive Breastfeeding

Exclusive breastfeeding refers to providing only breast milk without any additional liquids such as formula milk, water, fruit juice, or other complementary foods from birth until the infant reaches six months of age. Breast milk is a fluid produced by the mother's mammary glands with a unique and specific composition, consisting of a fat emulsion in a solution of proteins, lactose, and inorganic salts, which serves as food for the infant. Breastfeeding is a natural process involving hormonal activities and reflexes that influence milk production and release.

Often, mothers fail to breastfeed successfully or stop breastfeeding earlier than recommended due to the belief that their milk supply is insufficient or that breast milk does not come out during the first days after delivery. In fact, this condition is not caused by inadequate milk production, but rather by a lack of maternal confidence in the sufficiency of breast milk for their infants (Azwa Zubaida, Immawati, 2024).

Breast milk contains various components such as white blood cells, immune substances, digestive enzymes, hormones, and proteins that are highly suitable to meet infants' needs up to six months of age. It also contains carbohydrates, proteins, fats, multivitamins, water, carnitine, and minerals in complete composition, which are easily absorbed and do not burden the developing kidneys of infants. The composition of breast milk is influenced by the stage of lactation, race, nutritional status, and maternal diet.

Breast milk contains antibodies that protect infants against diseases and reduce mortality caused by common infectious diseases during the first year of life. It also provides various nutrients necessary for general growth and development as well as the development of specific organs (Khotimah et al., 2024).

c. Prevention of Low Breast Milk Production

Low breast milk production is a common problem experienced by postpartum mothers and can be influenced by various factors such as inadequate nutritional intake, stress, fatigue, and insufficient optimal stimulation of the oxytocin hormone. One preventive effort that can be

implemented includes the consumption of red spinach, the use of lavender aromatherapy, and the application of oxytocin massage. Red spinach is a rich source of nutrients, including iron, vitamins, and minerals, which play an important role in improving the health of breastfeeding mothers and supporting breast milk production. These nutrients help promote blood circulation and function as a natural galactagogue that stimulates milk production.

In addition, lavender aromatherapy has a relaxing effect that can reduce stress and anxiety levels in postpartum mothers, thereby facilitating the release of oxytocin hormone, which is responsible for breast milk ejection. Oxytocin massage, performed on the back area along the spine to the shoulder blades, directly stimulates the oxytocin hormone, thus enhancing milk flow and increasing breast milk production. The combination of these three methods can serve as an effective preventive approach to overcome low breast milk production among breastfeeding mothers.

Research Methodology

a. Type and Research Design

This study employed a quantitative approach. The method used was a quasi-experimental or pseudo-experimental design. Quasi-experimental research aims to determine whether there is an effect of a particular intervention applied to research subjects (Dhonna Anggreini, 2022). The design used in this study was a one-group pretest–posttest design without a control group.

b. Location and Time of The Study

This study was conducted at the private midwifery clinic (PMB) of Midwife Ulva Aliah Sahidah in Kosambi, Tangerang Regency. The research was carried out in early November 2025.

c. Variables

1. Increase in Breast Milk Production (dependent Variable) This variable involved measuring breast milk production in postpartum mothers before and after the intervention. The results were recorded on an observation sheet in numerical form or categorized as smooth milk flow, low milk production, or no milk output. Measurements were conducted by comparing milk production before the intervention, after the intervention, and the increase in milk production. The measurement scale used was ordinal or ratio (if milk volume was measured).

2. Consumption of red spinach (independent Variable) Red spinach was prepared as food and consumed by postpartum mothers during the research period. The intervention was administered once daily for several days according to the research intervention schedule.

3. Therapeutic interventions (independent variable) These included lavender aromatherapy by inhaling lavender essential oil and performing oxytocin massage on the back area along the spine to the shoulder blades of postpartum mothers. The intervention was carried out once daily during the research period with the aim of stimulating oxytocin hormone release and improving breast milk production.

d. Data Collection Instruments

In research, high-quality data must be accurate, valid, and reliable. Such data should be free from errors and bias and must be trustworthy for use as a basis for decision-making. To achieve high data quality, researchers must use valid and reliable research instruments and follow systematic and objective data collection procedures. In addition, researchers must ensure that the collected data are relevant to the research objectives and capable of answering the research questions. Therefore, high-quality research data can enhance the validity and usefulness of research findings (Puji Harti & Umi Isnaini, 2025). The instruments used in this study included:

1. Observation sheet These were used to obtain respondent data, including age, parity, delivery history, and the results of initial measurements before and after the intervention was administered.

2. Research Instrument Sheets These included biological measurement tools, observation sheets, and other data collection devices used to observe and measure changes in breast milk production among breastfeeding mothers.

No	Name	Date	Age	Parity	Delivery history	Remarks
1.						
2.						
3.						

RESULTS AND DISCUSSION

Based on the results of the study presented in Table 5.1, it is known that the majority of postpartum mothers experienced low breast milk production. The data were obtained from a population of 50 postpartum mothers at PMB Ulva Aliah Sahidah. The classification shows that 37 mothers, or 74%, had the lowest level of breast milk production.

NO	Education level	Fx (momi)	percentagei (%)
1.	Elementary school	4	8
2.	Junior school high	17	34
3.	Senior school high	19	38
4.	Diploma/bachelor's degree	10	20

Based on the results of the study in Table 5.4, it is known that the majority of postpartum mothers had a final educational background of senior high school graduates, totaling 19 individuals (38%). Education has a significant influence on increasing breast milk production because educational level is closely related to mothers' knowledge, understanding, and attitudes in the breastfeeding process. Mothers with higher levels of education tend to more easily receive health information, understand the importance of nutrition, proper breastfeeding techniques, and the benefits of interventions such as nutritious food consumption, relaxation, and oxytocin massage in enhancing breast milk production.

Discussion

A. Discussion of Research Findings

The frequency distribution of breast milk production levels among postpartum mothers at PMB Ulva Aliah Sahidah indicates that the majority experienced low breast milk production below normal levels. A total of 37 mothers (74%) experienced low milk production, 9 mothers (18%) experienced smooth milk flow, while 4 mothers (8%) were in the category of no milk production at all. These findings indicate that breast milk production among postpartum mothers was not optimal.

The issue of low breast milk production among postpartum mothers is an important health concern within the PMB Ulva Aliah Sahidah setting. This condition may negatively affect infant nutrition, immune system development, brain growth, and overall infant nutritional status.

NO	Breast milk production	Fx (momi)	Percentagei (%)
1.	Smooth milk flow	9	18
2.	Low milk production	37	74
3.	No milk output	4	8
	Total	50	100

The data suggest the need for improved nutritional interventions as well as routine education regarding the importance of oxytocin massage and lavender aromatherapy among postpartum mothers to facilitate breast milk production at PMB Ulva Aliah Sahidah.

The effectiveness of improving breast milk production among postpartum mothers at PMB Ulva Aliah Sahidah after consuming red spinach, using lavender aromatherapy, and undergoing oxytocin massage was observed in this study. The research results showed a p-value of 0.000 ($p \leq 0.05$), indicating that statistically there was a significant effectiveness of red spinach consumption, lavender aromatherapy, and oxytocin massage on increasing breast milk production among postpartum mothers at PMB Ulva Aliah Sahidah in 2025.

The consumption of red spinach was proven to play a significant role in increasing breast milk production among postpartum mothers because it is an affordable, easily accessible, and highly nutritious vegetable favored by various community groups. Red spinach is a source of protein, vitamins A, B, and C, and contains mineral salts such as calcium, phosphorus, and iron. The leaves of red spinach (*Amaranthus tricolor L.*) also have potential diuretic properties. The chemical compounds found in red spinach include amaranthine, potassium nitrate, iron, pyridoxine, as well as vitamins A, C, and K, along with phosphate salts. Both the leaves and roots of red spinach have traditionally been used as natural remedies to promote breast milk flow and improve blood circulation (Raufaindah et al., 2022).

The effectiveness of lavender aromatherapy combined with oxytocin massage in increasing breast milk production among postpartum mothers was found to be highly significant. Lavender aromatherapy functions through inhalation, stimulating the olfactory nerves, which are then processed by the hypothalamus to activate the limbic system and pituitary gland anterior pathway, causing the adrenal glands to reduce the secretion of

adrenocorticotrophic hormone (ACTH) and cortisol. Sympathetic activity and acetylcholine release are inhibited, while the parasympathetic system becomes more dominant, resulting in relaxation effects, calming responses, and improved mood (Natania et al., 2025).

Meanwhile, oxytocin massage is an intervention performed on breastfeeding mothers in the form of a back massage along the spine with the aim of increasing the release of the oxytocin hormone. Oxytocin massage provides comfort to mothers, which in turn contributes to comfort in breastfeeding infants. This massage stimulates oxytocin production by the posterior pituitary gland (neurohypophysis). Oxytocin enters the bloodstream and causes contraction of specialized cells (myoepithelial cells) surrounding the mammary alveoli and lactiferous ducts. When the infant sucks, the breast milk stored in the sinuses is released into the infant's mouth. This movement of milk from the sinuses is known as the "let-down reflex" or milk ejection reflex. Simultaneously, stimulation of the anterior pituitary gland (adenohypophysis) causes prolactin to enter the bloodstream, leading the acinar cells in the alveoli to produce breast milk (the prolactin reflex) (Herselowati, SST, 2024).

The research findings showed a p-value of 0.000 ($p \leq 0.05$), indicating a significant relationship between postpartum mothers' delivery history and the effectiveness of breast milk production after consuming red spinach, receiving lavender aromatherapy, and undergoing oxytocin massage.

Generally, first-time mothers tend to have lower levels of knowledge, education, and experience, which may result in low breast milk production or even absence of milk secretion. Consequently, delivery history is one of the factors contributing to insufficient breast milk, which may cause mothers to experience stress and decide to switch to formula feeding (Puspasari & Istiyati, 2024).

This study also showed a p-value of 0.000 ($p \leq 0.05$), indicating a significant effect of compliance with red spinach consumption, lavender aromatherapy, and oxytocin massage on the effectiveness of increasing breast milk production among postpartum mothers.

High adherence to regular consumption of red spinach, combined with lavender aromatherapy and oxytocin massage as guided by health professionals, plays a crucial role in

enhancing breast milk production. Postpartum mothers who consistently followed these interventions tended to experience greater increases in breast milk production compared to those who were not consistent (Destri & Friscila, 2021).

CONCLUSION

The frequency distribution of breast milk production improvement among postpartum mothers at PMB Ulva Aliah Sahidah in 2025 indicated that the majority of respondents had below-normal milk production prior to the intervention. After the administration of red spinach consumption, lavender aromatherapy, and oxytocin massage there was a significant increase in breast milk production by 76.7% among postpartum mothers.

The research findings showed a p-value of 0.000 ($p \leq 0.05$), indicating a significant effect of red spinach consumption, lavender aromatherapy, and oxytocin massage on increasing breast milk production by 76.7% among postpartum mothers at PMB Ulva Aliah Sahidah.

Factors such as age, delivery history, adherence to red spinach consumption, and routine performance of oxytocin massage also influenced the effectiveness of increasing breast milk production. Postpartum mothers with high discipline and compliance demonstrated more optimal improvements in breast milk production.

The provision of red spinach, lavender aromatherapy, and oxytocin massage has been proven to be an effective and natural approach to facilitating breast milk production among postpartum mothers, particularly within family environments that play an important role in health monitoring and education.

REFERENCES

- Asrianti Safitri Muichtar1, I. N. (2025). Available online at: <https://pkm.lpkd.or.id/index.php/PanggungKeibakan>. 2.
- Azwa Zuibaida1, Immawati2, T. K. deiwi3. (2024). *PEINDAHULUAN ASI adalah cairan putih yang dihasilkan oleh kelenjar payudara ibu melalui proses menyusui . ASI merupakan makanan yang telah disiapkan untuk calon bayi saat ibu mengalami ASI eksklusif*

- adalah peimbeirian ASI saja tanpa tambahan cairan lain baik. 4, 194–200.
- Deistri, Ui., & Friscila, I. (2021). *Efektivitas Peimbeirian Aromaterapi Laveindeir Terhadap Produksi Asi Pada Ibu Nifas Normal : Liteiratur Reiview*. 3(01).
- DEWI SRIRAHAYUI, S. O. (2024). Vol. 6 No.4 Edisi 1 Juli 2024 <http://jurnal.einsiklopeidiakui.org> Ensiklopedia of Journal. *HUBUNGAN FAKTOR PENDORONG DAN PENDUKUNG PEMBEIRIAN ASI EKSKLUSIF DI WILAYAH KERJA PUSKESMAS SUKARAMAI KABUPATEN PAKPAK BHARAT*, 6(4), 352–359.
- Dhonna Anggreini., M. K. (2022). *Peineirbit STIKes Majapahit Mojokeirto BUKU AJAR*.
- Dinas Kesehatan Kota Tangerang, 2021. (2021). *PROFIL KESEHATAN TAHUN 2021*.
- Eitiki Khuisniyati, & Puirwati, H. (2024). (*ANALYSIS OF FACTORS THAT INFLUENCE THE PRODUCTION OF BREAST*). 13(1).
- Heilyaning, Ei., Yuliana, W., Hikmawati, N., Peisantreir, S. H., & Hasan, Z. (2024). *HUBUNGAN TINGKAT PENDIDIKAN IBU DENGAN PEMBEIRIAN ASI EKSKLUSIF PADA BAYI USIA 7-12 BULAN DI DESA CEPOKO PUSKESMAS SUMBER KABUPATEN PROBOLINGGO*. 2(1), 146–158.
- Heirselowati, SST, M. K. (2024). *BUKU AJAR*.
- Junita P, Madur, Kornelia Kurniati, N. M. (2024). *No Title*. 4, 4828–4834.
- Khotimah, K., Satillah, S. A., & Fitriani, V. (2024). *Analisis Manfaat Peimbeirian Asi Eksklusif Bagi Ibu Menyuisui dan Peirkeimbangan Anak*. 13(2), 254–266. <https://doi.org/10.26877/paudia.v13i2.505>
- Luistiani, I., Sari, D., Fairuza, F., Tinggi, S., Kesehatan, I., & Seirang, S. (2024). *PENGEILUARAN ASI PADA IBU POSTPARTUM DENGAN TEHNIK*. 5(2), 1012–1017.
- Nataria, D., Felina, M., Lubis, K., Nova, D., Kebidanan, F., Prima, Ui., Bukittinggi, N., & Barat, S. (2025). *Jurnal Kesehatan Peirintis*. 11(2), 197–202.
- Ningsih, N. K. (n.d.). *Peingaruih konsumsi makanan dan pola istirahat terhadap produksi asi pada ibu pasca melahirkan di keuirahan talang bakiung 1*.
- Pujiharti, Ei. S., & Umi Isnaini. (2025). Instruimein dan Peingumpulan Data dalam Meningkatkan Kualitas Data pada Peineilitian Peindidikan. *An Nahdliyah Jurnal Manajeimein Peindidikan Islam*, 4(1), 35–47.
- Puispasari, L., & Istiyati, S. (2024). *Peirawatan pada ibu nifas normal*. 2(Seipteimeir), 484–489.
- Raufaindah, Ei., Muizayyana, Sulistyawati, Ei., Hasnita, Y., Sari, N. A. M. Ei., Citrawati, N. K., Yanti, N. L. G. P., Muistikawati, N., Pateimah, Maryam, Meiriza, W., Wulandari, I. S., Badi'ah, A., Oviana, A., Rahayui, S., & Mayasari, D. (2022). Tatalaksana Bayi Baru Lahir. In M. Martini (Ed.), *Meidia Sains Indonesia* (peirtama). CV. MEDIA SAINS INDONESIA.