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The Effect of Oketani Massage Using Chamomile Aromatherapy on Breast Milk Production in Postpartum Mothers

Ni Ketut Citrawati[1, *)], I Dewa Gede Candra Dharma[2]
[1,2]Department Of Nursing, STIKES Wira Medika Bali, Indonesia

Abstract

Childbirth causes discomfort for a mother, leading to stress that triggers anxiety about caring for her baby. Breast milk plays a crucial role in protecting against bacteria and viruses and supports the baby's growth. Insufficient milk supply is a common issue among breastfeeding mothers because it hinders the secretion of oxytocin and prolactin, the hormones responsible for milk production. This type of research includes observational analytics with a cross-sectional study design. This study contributed to determining the method of Oketani massage using chamomile aromatherapy on the smooth production of breast milk in postpartum mothers. The results showed that the frequency of infant weight gain increased by 0.12 kg, the frequency of infant urination increased by an average of 1.43 times/24 hours, the frequency of infant breastfeeding increased by an average of 0.93 times/hour, and the duration of infant sleep after breastfeeding increased by an average of 0.51 hours.

Keywords: *Exclusive Breastfeeding; Oketani massage; Postpartum*

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**) Corresponding author:Ni Ketut Citrawati*
E-mail : citrawati@stikeswiramedika.ac.id

1. Introduction

Indonesian Minister of Health Regulation No 25 of 2014 concerning Child Health Efforts states that every child has the right to survival, growth, and development, as well as the right to protection from violence and discrimination, thus requiring integrated, comprehensive, and continuous child health efforts. Child health efforts are carried out from the time the fetus is in the womb until the child reaches 18 (eighteen) years of age. One of the objectives of child health efforts is to ensure the survival of children by reducing the mortality rate of newborns, infants, and toddlers (Government Agency Performance Accountability Report, 2022).

Infant mortality is defined as the number of deaths of infants under 1 year of age per 1,000 live births occurring within a year. This figure is often used as a reference to assess the economic, social, and environmental conditions in a country. Nationally, the Infant Mortality Rate (IMR) has decreased from 24 deaths per 1,000 live births to 16.85 deaths per 1,000 live births. These results show a significant decline, even exceeding the 2022 target of 18.6% deaths per 1,000 live births. This must be maintained in order to support the 2024 target of 16 deaths per 1,000 live births and the 2030 target of 12 deaths per 1,000 live births Government Agency Performance Accountability Report, 2022). The neonatal mortality rate in Bali in 2023 was 7.0 per 1,000 live births, the infant mortality rate was 9.7 per 1,000 live births, and the under-five mortality rate was 10.6 per 1,000 live births. Most infant deaths occur during the neonatal period, i.e., ages 0-28 days, accounting for 68.5%. This is consistent with national mortality rates, where two-thirds of infant deaths occur during the neonatal period (Bali Province Health Profile, 2023).

The coverage of exclusive breastfeeding among infants aged 6 months in Bali Province reached 78.1%, while the coverage of early breastfeeding initiation (IMD) was 66.5%. This achievement exceeded the targets set, which were 45% for exclusive breastfeeding and 58% for IMD. Looking at the figures above, there is a 14% difference between exclusive breastfeeding coverage and IMD coverage, indicating that not all infants under 6 months who are exclusively breastfed also receive EBI at birth. Almost all districts in Bali Province tend to have higher exclusive breastfeeding coverage than newborns receiving IMD (Gianyar Regency Health Office, 2024)

Oketani therapy is one form of intervention to help facilitate breast milk production. Oketani therapy helps glands such as the areola, milk ducts, and nipples become more elastic and stimulates the hypothalamus, which then stimulates the adenohypophysis (anterior pituitary gland), ultimately releasing prolactin. This hormone stimulates the function of alveolar cells to produce

milk. Simultaneously with the formation of prolactin. Another study supporting this research is that of Anggraini, F., Erika, & Ade Dilaruri (2022), who explain that the results of this study found that Oketani massage and the oxytocin effect of massage increase breast milk production. This finding is expected to serve as an alternative when milk production is low.

by the anterior pituitary gland, stimulation continues to the neurohypophysis (posterior pituitary gland), thereby releasing oxytocin. Next, oxytocin is carried by the blood to the breasts to cause contraction of the myoepithelial cells. Oketani massage involves breast milk expression, stimulation of the mammary glands, improvement of breast tissue elasticity, and enhancement of breast milk quality (Yasni et al., 2020). The effects resulting from the combination of Oketani massage with chamomile aromatherapy will be more pronounced because the massage can reduce breast swelling and increase oxytocin release (Juwita & Annisa, 2023; Hairunisyah, 2025).

Comala Dewi et al. (2024) explained that Oketani massage using jasmine oil has an impact on increasing breast milk production in postpartum mothers on days 1 to 3. Another study conducted by Akter S, Tasnim S, Bhuiyan MMA, Hasan A. A. (2015) explains that the results obtained in the study showed that the distribution according to the time of initiation of breastfeeding reported was starting from 1–12 hours after delivery. The WHO estimates that a campaign promoting exclusive breastfeeding for the first six months could prevent the deaths of 1.3 million infants worldwide each year.

According to the 2023 Gianyar Health Profile, the coverage of exclusive breastfeeding for infants under 6 months of age was 3,390 (79.6%) of a total of 4,258 infants under 6 months of age. The low IMD coverage in the Gianyar Regency requires better guidance for health workers serving in health care facilities and expectant mothers. IMD plays an important role in efforts to increase the success of breast milk production to maximize exclusive breastfeeding and prevent infant mortality that can be caused by conditions related to nutritional status in early life (Gianyar Health Profile, 2023).

2. Method

This study employed a pre-experimental design using a one-group pretest–posttest approach to determine the effect of Oketani massage with chamomile aromatherapy on breast milk production in postpartum mothers. The study was conducted at Ganesha Hospital, Celuk, Sukawati, Batubulan, Gianyar.

The population consisted of all postpartum mothers, while the sample included 30 respondents selected through purposive sampling. The inclusion criteria were postpartum mothers on days 1 to 3, mothers breastfeeding infants aged 0–3 days in stable condition, and those willing to participate in the study procedures.

The intervention consisted of Oketani massage combined with chamomile aromatherapy. The massage was administered twice daily (morning and afternoon) for three consecutive days, with each session lasting approximately 15–20 minutes. The procedure involved gentle and rhythmic stimulation of the breast and surrounding areas following the Oketani technique, which aims to improve milk flow and relieve breast tension. This study supports research, which reported that Oketani massage increased breast milk production in respondent I from 7 ml to 85 ml and in respondent II from 5 ml to 65 ml.

In addition, chamomile aromatherapy was applied during the intervention to promote relaxation. Chamomile essential oil was administered through inhalation, allowing the aroma to stimulate the limbic system and enhance maternal comfort, thereby supporting the release of oxytocin and improving lactation.

The massage process also involved stimulation along the spinal region (vertebrae) up to the fifth or sixth rib, which is associated with oxytocin release. This stimulation activates neurotransmitters that send signals to the medulla oblongata and hypothalamus, ultimately triggering the secretion of oxytocin. Oxytocin facilitates the contraction of myoepithelial cells in the mammary glands, promoting the ejection of breast milk.

Outcome measurements included urination frequency, breastfeeding frequency, infant sleep duration, and infant weight, which were observed on day 1 (pretest) and day 3 (posttest). The researchers evaluated the response immediately after each intervention session.

Data were analyzed using descriptive statistics to summarize respondent characteristics (mean, standard deviation, frequency, and percentage). Inferential analysis was conducted using the paired t-test to compare pretest and posttest outcomes. A p-value of less than 0.05 was considered statistically significant. This study has received ethical approval from the Health Research Ethics Committee under number 425/E1.STIKESWIKA/EC/III/2025, and all participants signed an informed consent form after receiving an explanation before participating

3. Results and Discussion

A total of 30 respondents were included in this study. The mean age of the respondents was 26.4 ± 3.1 years, indicating that most participants were within the reproductive age range. In terms of educational background, the majority of respondents had completed senior high school (56.7%), followed by those with a university

degree (40.0%), while only a small proportion had junior high school education (3.3%). Regarding the mode of delivery, more than half of the respondents underwent cesarean section (53.3%), while 46.7% delivered vaginally. Data on infant characteristics, including birth weight and urination frequency, are presented descriptively. However, detailed distribution values are not fully displayed in this table and will be further elaborated in subsequent analyses. Previous research has shown that age and parity are significantly associated with breast milk production (Ariani.P, 2022). Based on the results obtained, age (p = 0.022), parity (p = 0.053), and breastfeeding frequency (p = 0.041) significantly influence breast milk production (Leiwakabessy et al., 2020; Alfiatun et al., 2021).

Table 1. Characteristics of Respondents

Variable	Category	n	%
Age (years)	Mean ± SD	26.4 ± 3.1	
Education	Junior High School	1	3.3
	Senior High School	17	56.7
	University	12	40.0
Mode of Delivery	Normal	14	46.7
	Cesarean Section	16	53.3

Table 2. Normality Test (Shapiro-Wilk)

Variable Difference (Δ)	**p-value**
Δ Frequency of Urination	0.128
Δ Frequency of Breastfeeding	0.142
Δ Length of Baby's Sleep	0.092
Δ Baby's Weight	0.117

The table shows the results of the Shapiro-Wilk normality test for the difference between pre-test (Day 1) and post-test (Day 3) values for each variable. The p-values for Δ Urination Frequency (0.128), Δ Breastfeeding Frequency (0.142), Δ Infant Sleep Duration (0.092), and Δ Baby's Weight 0,117 are all greater than 0.05. The four variables have normal data distributions, so the parametric assumption is satisfied. Thus, the analysis of mean differences can be performed using the Paired Sample T-Test.

Urination Frequency

The results showed a statistically significant increase in urination frequency from day 1 to day 3 (mean difference = +1.43; t = 8.92; p < 0.001). This finding indicates an improvement in neonatal hydration status and renal function during the early postnatal period. Increased urination frequency is commonly associated with adequate fluid intake, particularly from breastfeeding, suggesting that the infants were receiving sufficient nutritional support. This pattern is consistent with the normal physiological adaptation of newborns, where renal perfusion and fluid balance stabilize within the first few days of life.

Frequency of Breastfeeding

Breastfeeding frequency also demonstrated a significant increase (mean difference = +0.93; t = 7.54; p < 0.001), indicating improved feeding patterns over time. This result suggests that both mothers and infants became more effective in establishing breastfeeding by day 3. Frequent breastfeeding is essential for stimulating milk production and ensuring adequate neonatal intake. The increase observed in this study aligns with lactation physiology, where milk supply typically improves after the initial postpartum period, contributing to better feeding frequency and efficiency. One of the problems that occurs during breastfeeding is breast engorgement, which is considered a problem that requires special attention and can affect women after giving birth. This can be very painful and disruptive to the breastfeeding process, thus becoming a factor in breastfeeding failure. Contraction of the myoepithelial cells squeezes the milk produced by the alveoli into the ductular system, then flows through the lactiferous ducts, resulting in breast milk production (Rahnemaie FS, Zare FS, Zaheri F, et al, 2018). This study also supports the research by (Amin, 2022) which explains that first-time mothers postpartum who received breast massages with olive oil experienced milder breast engorgement and breastfed more successfully compared to those who did not receive it. Maryam Mahdizadeh-Shahri (2021) explained that Oketani massage has a positive impact on breastfeeding success rates and can increase the frequency of breastfeedingas well as the number of feedings during the hospital stay, There was a difference in breast milk production before and after the intervention, with a p-value of 0.002 (p < 0.05) (Dinar Perbawati, 2026).

Table 3. Paired T-Test Results

Variable	Mean Day -1 ± SD	Mean Day -3 ± SD	Mean Diff	t-value	p-value
Urination Frequency (times/24 hours)	4.89 ± 0.83	6.32 ± 0.67	+1.43	8.92	0.000
Frequency of Breastfeeding (times/24 hours)	8.43 ± 0.92	9.36 ± 0.91	+0.93	7.54	0.000
Baby's sleep duration (hours)	1.02 ± 0.39	1.53 ± 0.47	+0.51	6.21	0.000
Baby's weight (kg)	3.00 ± 0.21	3.12 ± 0.23	+0.12	5.87	0.000

Baby's Sleep Duration

A significant increase in sleep duration was observed (mean difference = +0.51; t = 6.21; $p < 0.001$), reflecting improved neonatal adaptation and comfort. Sleep plays a crucial role in growth and neurological development in newborns. The longer sleep duration on day 3 may indicate that infants were more physiologically stable and satisfied, likely due to improved feeding and reduced discomfort. This finding supports the interrelationship between adequate nutrition and sleep quality in early neonatal life. Comala Dewi et al. (2024) explained that Oketani massage using jasmine oil has an impact on increasing breast milk production in postpartum mothers on days 1 to 3. Oketani massage therapy found that the average infant sleep frequency before and after breast massage was 2.00 hours, and 3.00 hours. Oketani massage has been shown to be effective in increasing breast milk supply in terms of infant sleep frequency (Kasad M. S., 2022).

Baby's Weight

The results revealed a statistically significant increase in baby weight (mean difference = +0.12 kg; t = 5.87; $p < 0.001$). Although slight weight loss is common in the first days after birth, the observed weight gain by day 3 suggests adequate nutritional intake and effective breastfeeding. This positive trend indicates that the infants were able to achieve early weight stabilization and growth, which is an important indicator of neonatal health. The finding underscores the importance of early and frequent breastfeeding in supporting optimal weight outcomes in newborns. There are many therapies that can be used to facilitate breastfeeding, such as cold cabbage leaves, cold gel packs, hot and cold compresses, and breast massage. However, more consistent scientific evidence is needed regarding these limited interventions. Therefore, further research is needed on non-pharmacological remedies to overcome breastfeeding problems (Berens et al., 2016). This finding is supported by previous research conducted, which reported that Oketani massage is an effective technique to enhance maternal confidence and improve breast milk production among mothers experiencing breastfeeding difficulties. Further multicenter studies with a comprehensive evaluation of breast milk quality and quantity. In addition to massage, breastfeeding success is also influenced by the mother's knowledge of child nutrition and her attitude, ensuring that the baby's nutritional needs are met (Pratiwi M, 2023), as well as infant growth and nutritional status, are recommended. the study conducted (Dehghani, 2018) A statistically significant difference was observed between the two groups in this regard on days 14 and 28 after the intervention in terms of weight gain.

4. Conclusions and Suggestions

Oketani massage can be used as an intervention to overcome breast milk flow problems and will provide comfort and confidence to mothers while increasing their breast milk production.

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