MORINGA LEAVES AND BANANA BLOSSOM ON BREAST MILK PRODUCTION IN POSTPARTUM MOTHERS : AN EXPERIMENTAL STUDY

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ABSTRACT

Inadequate breast milk production remains a common problem among postpartum mothers and may affect exclusive breastfeeding practices. Although moringa leaves and banana blossom have been traditionally used as natural galactagogues, evidence regarding their combined effect on breast milk production remains limited. This study aimed to analyze the effect of moringa oleifera leaves and banana blossom consumption on breast milk production among postpartum mothers in the working area of Ngasem Public Health Center, Kediri Regency, Indonesia. A pre-experimental one-group pretest–posttest design was conducted involving 15 postpartum mothers selected using purposive sampling. Breast milk production was assessed before and after the intervention using an observation checklist. Data were analyzed using the Wilcoxon Signed Rank Test with a significance level of 0.05. The findings showed that breast milk production improved after the intervention, with 86.7% of respondents demonstrating adequate milk production. Statistical analysis indicated a significant difference before and after intervention (p=0.003). Consumption of moringa leaves and banana blossom may improve breast milk production among postpartum mothers and could be considered a low-cost complementary nutritional intervention to support breastfeeding programs.

Keywords: banana blossom; breast milk production; moringa leaves; postpartum mothers

INTRODUCTION

The Postpartum Period (Puerperium) is the recovery period immediately after the birth of the baby and placenta, reflecting the mother's physiological condition, especially as the reproductive system returns to its pre-pregnancy state. This period lasts for six weeks or ends when fertility returns (Yefi and Nyna, 2022). Breast Milk is the milk produced by mothers that contains all the nutrients needed by infants for growth and development. Exclusive breastfeeding means that the baby receives only breast milk without any additional liquids such as formula milk, orange juice, honey, tea, or water, and without solid foods such as bananas, papayas, porridge, biscuits, or rice gruel for six months (Mufdillah, 2017). Breast milk is beneficial for maintaining the baby's immune system because it contains anti-infective substances. A study conducted by Carina Venter and Tara Dean in 2018 stated that breast milk contains immune-modulating substances and unique nutrients. Moreover, breast milk provides complete nutrition, including carbohydrates in the form of lactose, high levels of fat (polyunsaturated fatty acids), easily digestible proteins such as lactalbumin, and various vitamins and minerals (Venter, 2018).

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According to Riskesdas data, the coverage of exclusive breastfeeding in Indonesia in 2022 was recorded at only 67.96%, down from 69.7% in 2021. This figure is still below the national Minimum Service Standard (SPM) target for exclusive breastfeeding, which is 80%. Based on district/city data, the coverage of babies receiving exclusive breastfeeding in East Java in 2020 was 30.72%, while those not exclusively breastfed amounted to 69.28% (East Java Health Office, 2020). Meanwhile, the exclusive breastfeeding rate in 2021 reached 68.3% of East Java's target of 75% (East Java Health Office, 2022). According to data from the Kediri District Health Office, in 2022, 320 mothers (49.8%) provided exclusive breastfeeding, and in 2024 (October–December), the number increased to 133 mothers (56.1%) (Kediri District Health Office, 2024). Based on a preliminary survey conducted by the researcher in the working area of Ngasem Health Center during January 2025, there were approximately 34 postpartum mothers. The survey results showed that 9 (64.28%) of 14 postpartum mothers experienced problems with milk production, while 5 (35.72%) needed to pay attention to several factors to improve the quality and quantity of their breast milk. Some recommendations for breastfeeding mothers include consuming vegetables, fruits, and nuts—particularly moringa leaves and banana blossoms.

The prolactin reflex hormonally stimulates breast milk production. When the baby suckles on the mother's nipple, neurohormonal stimulation occurs at the nipple and areola, which is transmitted via the vagus nerve to the anterior pituitary gland. The anterior pituitary then secretes the hormone prolactin into the bloodstream, reaching the mammary glands, which are stimulated to produce milk (Murtiana, 2022). The oxytocin hormone, produced by the neurohypophysis, is carried through the blood to the breasts, promoting the contraction of smooth muscle fibers around the mammary glands and thus stimulating milk ejection (Satuhu, 2016).

Moringa leaves are widely consumed as vegetables, especially by postpartum mothers, as they can increase breast milk production. Moringa leaves contain 5.49 mg/100 g of iron (Fe) and phytosterols such as sitosterol (1.15%/100 g) and stigmasterol (1.52%/100 g), which can stimulate milk production (Natallini, Sitti, and Balittro, 2024). Meanwhile, the banana blossom is a part of the banana plant used to enhance milk production. It contains protein, minerals (especially phosphorus, calcium, and iron), and vitamins A, B1, and C. Research by Brar et al. (2022) found that women who consumed Moringa oleifera leaf capsules produced more breast milk per day from postpartum days 3 to 10 compared to those who received a placebo, although the results were not statistically significant. However, a recent review article reported that consuming 500 mg/day of Moringa is associated with increased milk production.

Based on the description above, the researcher seeks to find an easy and low-cost alternative therapy to increase breast milk production, namely through the consumption of moringa leaves and banana blossoms. Therefore, the researcher is interested in conducting a study entitled " This study aimed to evaluate the effect of moringa leaves and banana blossoms on breast milk production among postpartum mothers in the working area of Ngasem Health Center, Kediri District, in 2025".

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RESEARCH METHODS

This study is a pre-experimental research design. This study involved all breastfeeding postpartum mothers in the working area of Ngasem Community Health Center, Kediri Regency, Indonesia, as the study population. The sample consisted of postpartum mothers who exclusively breastfed their infants and met the inclusion criteria, including mothers with normal nipple anatomy, no breastfeeding problems, and no provision of complementary feeding or formula milk. Meanwhile, mothers with breast disorders such as mastitis, breast engorgement, or breast cancer, as well as mothers whose infants received complementary feeding or formula milk, were excluded from the study. The sample size was determined using the Infinite Population Formula, resulting in 15 respondents after rounding. Respondents were selected using a purposive sampling technique based on specific considerations and predetermined eligibility criteria (Sugiyono, 2019). The data were analyzed using the Wilcoxon statistical test.

The research materials used in this study included informed consent forms, observation sheets, and Standard Operating Procedures (SOPs) for the preparation and administration of *Moringa oleifera* leaves and banana blossom. The intervention was administered to postpartum mothers in the form of 100 g of boiled moringa leaves and 100 g of cooked banana blossom, consumed twice daily for seven consecutive days during the postpartum period. Breast milk production was assessed before and after the intervention using a structured observation checklist that evaluated indicators of adequate milk production, including breast fullness, infant satisfaction after breastfeeding, frequency of infant urination, breastfeeding frequency, and milk leakage during feeding.

To minimize bias, several potential confounding factors such as maternal nutritional intake, parity, maternal psychological condition, frequency of breastfeeding, maternal rest patterns, and fluid consumption were monitored throughout the study period. Respondents who experienced breastfeeding complications, used lactation-enhancing medications, or provided complementary feeding or formula milk were excluded from the study.

Data collection was conducted in the working area of Ngasem Community Health Center, Kediri Regency, Indonesia, from June to July 2025. The collected data were analyzed using the Wilcoxon Signed Rank Test to determine differences in breast milk production before and after the intervention, with a significance level set at $\alpha = 0.05$. During the intervention period, participants were monitored for possible adverse effects, and no significant side effects or health complications were reported among either the mothers or their infants.

RESULTS

The results of the study on the effect of moringa leaf and banana blossom administration on increasing breast milk production among postpartum mothers in the working area of Ngasem Public Health Center, Kediri Regency, in 2025 are presented in the form of a frequency distribution table as follows: The education level of the respondents showed that the majority (53.3%) had a senior high school education, totaling 8 respondents. The age distribution indicated that almost all respondents (80.0%) were 20–35 years old, totaling 12 respondents. Regarding occupation, most respondents (66.7%) were housewives, totaling 10 respondents. In terms of parity, the majority of respondents (66.7%) were primiparous mothers, totaling 10 respondents.

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Table 1. frequency distribution of respondents

Characteristics	Category	*f*	%
Education	Elementary	4	26,7
	Middle	8	53,3
	High	3	20,0
	Total	15	100
Age	< 20 years old	1	6,7
	30-35 years old	12	80,0
	>35 years old	2	13,3
	Total	15	100
Profession	Housewife	10	66,7
	Entrepreneur	5	33,3
	PNS	0	0
	Total	15	100
Parity	Primipara	10	66,7
	Multipara	5	33,3
	Total	15	100

Analysis of the Effect on the Increase of Breast Milk Production Among Postpartum Mothers Before and After Being Given Moringa Leaves and Banana Blossoms in the Working Area of Ngasem Public Health Center, Kediri Regency, in 2025.

Table 2. Frequency Distribution Based on the Increase of Breast Milk

Category	Before		After	
	F	%	F	%
Smooth ASI	11	73,3	2	13,3
Not Smooth ASI	4	26,7	13	86,7
	15	100	15	100
p-value = 0,003 α = 0,05				

Based on Table 2, the adequacy of breast milk production among postpartum mothers improved following the administration of *Moringa oleifera* leaves and banana blossom. Prior to the intervention, most respondents demonstrated inadequate breast milk production. After the intervention, the majority of respondents showed adequate breast milk production, indicating an improvement in lactation adequacy among postpartum mothers. The results of the Wilcoxon Signed Rank Test demonstrated a statistically significant difference in breast milk production adequacy before and after the intervention ($p = 0.003$; $\alpha = 0.05$). The analysis revealed positive ranks in nine respondents and no negative ranks, while six respondents showed no change in breast milk production adequacy scores. These findings indicate that the consumption of moringa leaves and banana blossom significantly improved breast milk production adequacy among postpartum mothers in the working area of Ngasem Community Health Center, Kediri Regency, Indonesia.

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DISCUSSION

Based on Table it shows that out of 15 respondents, before being given moringa leaves and banana blossoms, the majority of respondents (73.3%) experienced inadequate breast milk production, and after being given moringa leaves and banana blossoms, almost all respondents (86.7%) experienced adequate breast milk production, totaling 13 respondents, while a small proportion (13.3%) or 2 respondents still experienced inadequate milk production. These data indicate that there was an increase in breast milk production among postpartum mothers after being given moringa leaves and banana blossoms. The results of the Wilcoxon Signed Rank Test showed that the value of ρ = 0.003 and α = 0.05, which means ρ-value < α, thus H_0 is rejected and H_1 is accepted. Therefore, it can be concluded that there is a significant effect of moringa leaf and banana blossom administration on increasing breast milk production in the working area of Ngasem Public Health Center, Kediri Regency, in 2025, as evidenced by the values of Negative Ranks = 0, Positive Ranks = 9, and Ties = 6.

The results of this study are in line with the research conducted by Ely Tjahjani (2024) on the effect of moringa leaves and banana blossoms consumption on breast milk production among postpartum mothers in the working area of Gundi Public Health Center, Surabaya City, in 2024 . The results showed that among 15 respondents who experienced difficulties in milk ejection, all of them (100%) or 12 people had insufficient milk production. Meanwhile, based on the findings in the working area of Ngasem Public Health Center, Kediri Regency, in 2025, it can be interpreted that out of 15 respondents who were given moringa leaves and banana blossoms, almost all (86.7%) or 13 respondents experienced smooth breast milk production. The food consumed by breastfeeding mothers greatly affects breast milk production. If the mother's diet contains adequate nutrition and is consumed regularly, milk production will proceed smoothly. Breast milk production is said to be smooth when milk is produced in excess, characterized by milk dripping or spraying when the baby sucks (Purwanti, 2010). One of the factors that can help increase breast milk production is nutritional fulfillment by consuming moringa leaves and banana blossoms. The use of moringa in increasing milk production can be done by consuming its leaves either steamed or boiled as vegetables. It has been found that moringa leaves contain phytosterol compounds that function to increase and facilitate milk production (lactagogue effect). Theoretically, compounds that have lactagogue effects are sterols, which belong to the steroid group.

Banana blossoms (Musa paradisiaca) also contain lactagogue compounds that have the potential to stimulate oxytocin and prolactin hormones, including alkaloids, polyphenols, steroids, flavonoids, and other substances such as phytosterols, which are most effective in increasing and facilitating milk production. The prolactin reflex works hormonally to produce milk. When the baby sucks the mother's nipple, neurohormonal stimulation occurs in the nipple and areola, which is transmitted to the pituitary gland via the vagus nerve, then to the anterior lobe. This lobe releases prolactin hormone, which enters the bloodstream and reaches the milk-producing glands, stimulating them to produce milk (Wahyuni, 2012). According to the researcher, if moringa leaves and banana blossoms are given regularly and consistently to postpartum mothers, breast milk production will increase. In addition to maintaining proper food and fluid intake during the postpartum period, mothers should also pay attention to their emotional state and self-perception, believing that they can

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produce enough milk for their babies. This is because such positive perception sends signals to the brain to stimulate milk production.

CONCLUSION

The results of the study showed that breast milk production among postpartum mothers in the working area of Ngasem Public Health Center, Kediri Regency, in 2025, before being given moringa leaves and banana blossom, was mostly inadequate. After the administration of moringa leaves and banana blossom, nearly all respondents experienced adequate breast milk production. The statistical analysis using the Wilcoxon test indicated that there was a significant effect of moringa leaf and banana blossom administration on increasing breast milk production among postpartum mothers in the working area of Ngasem Public Health Center, Kediri Regency, in 2025. It is recommended that postpartum mothers regularly consume moringa leaves and banana blossoms to enhance breast milk production.

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