

The Effect of Date Soy Milk (Delma) on Breast Milk Production in Post Partum at Loa Kulu Health Center's Work Area in 2023

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ARTICLE INFO

Keywords: Breast Milk Production, Date Soy Milk, Mother

Received : 4 August

Revised : 10 September

Accepted: 17 October

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ABSTRACT

Globally, stunting has reached 149.2 million. Exclusive breastfeeding can protect children from stunting. Consuming soybeans can increase breast milk production, which contains isoflavone. Moreover, dates are one of the natural galactagogues. The study analyzed the effect of giving soy date milk on breast milk production in postpartum at Loa Kulu Health Center in 2023th. The research method is a quasi-experiment with a pre-post-test control group. Sampling uses purposive sampling. Based on the independent sample t-test used for control and experimental groups, we obtained a Pvalue 0.000 ($Pvalue < \alpha$) that can be concluded that date soy milk affects breast milk production in postpartum at Loa Kulu Health Care Center in 2023. Isoflavones in soy milk will bind with α -estrogen receptors. Estradiol is the largest regulator for prolactin secretion, which plays a role in breast milk. Dates have a phytoestrogen, which exerts pressure on dopamine while stimulating the secretion of oxytocin and releasing breast milk. Producing date soy milk can be an economical alternative to increase milk production

INTRODUCTION

Globally, the stunting rate reached 22% or 149.2 million children experienced stunting; in Southeast Asia and East Asia, it reached 13.4%, and in Indonesia, it was 31.8% in 2020 (ONU, 2022). The stunting rate in East Kalimantan Province reached 28.3% and 37.5% in Kutai Kartanegara Regency in 2019 (SSGBI, 2019).

The intervention to deal with stunting targets pregnant women and children in the first 1,000 days of life. One is initiating early breastfeeding and providing exclusive breast milk (Ministry of Rural Development and Transmigration, 2017). To increase breast milk production, it is advisable to consume healthy and nutritious foods (Children's Health Queensland, 2021)

Meanwhile, in Indonesia, access to nutritious food still needs to be improved because the price is relatively expensive (Ministry of Rural Development and Transmigration, 2017).

So, one way is to process foods often found and at affordable prices, such as soy milk and dates. Soybeans contain isoflavone compounds, similar to estrogen, and they work due to compounds similar to 17 β -estradiol in soybeans (Jagga et al., 2021). Soy products contain abundant isoflavones, genistein, and daidzein, and their content in the body will increase after consuming soybeans (Tsugami et al., 2020). Genistein and daidzein will bind to estrogen receptors, which will cause an estrogenic effect and stimulate prolactin production during lactogenesis (Prमितasari et al., 2017).

Meanwhile, dates include Wrong One Natural Galactogues, which can stimulate breast milk production through increasing prolactin (Foong et al., 2020). Dates can be used as a sweetener experience because they produce high sugar (USDA, 2019).

This study aimed to analyze the effect of giving soy date milk on breast milk production in postpartum at Loa Kulu Health Center in 2023.

THEORETICAL REVIEW

Postpartum Period

The postpartum period is after childbirth, which begins after the end of the fourth stage of labor, up to 6 weeks (42 days) (Azizah & Rosyidah, 2019). According to Maritalia in Sumarni & Nahira (2019), the postpartum period is the time after childbirth is complete, typically lasting up to 6 weeks or 42 days, during which the mother and her baby undergo various physical and emotional changes.

Breast

Glands and fatty tissue primarily make up women's breasts. The fat tissue in each woman's breasts varies, so breast size does not affect milk production. (Boersma, 2018).

Breast Milk

Breast milk contains all the essential nutrients for the baby's development and growth (Mufdillah et al., 2017).

Soy Milk

Soy milk is a white emulsion that resembles cow's milk in appearance and consistency. Soy milk is a non-dairy plant-based drink, a popular alternative to cow's milk (Migala, 2022). Soy milk also has a source of protein and calories and is more affordable because it is cheap and very good for consumption (Fauziah et al., 2018).

Dates

Phoenix dactylifera is commonly known as date palm. Each country's name can differ (Manda et al., 2022). Date palms are traditionally cultivated in arid areas. However, the production and processing of dates continue to increase worldwide (Dghaim et al., 2021).

Making Soy Milk and Dates

According to Dewi et al. (2021), giving 100 grams of dates to postpartum mothers on days 3-9 for seven consecutive days can increase breast milk production. Based on Nengsih et al. (2020), giving 250 ml of soy milk can increase breast milk production. Meanwhile, according to Safitri (2018), 65 grams of edamame at 07.00 can increase breast milk production.

METHODOLOGY

This type of research is experimental (Hardani et al., 2020). This research was conducted from February to May 2023 within the jurisdiction of the Loa Kulu Community Health Center. The study employed a quasi-experimental design, conducting pre-tests and post-tests on the control and intervention groups.

The study's population included 39 postpartum mothers who gave birth in the Loa Kulu Community Health Center service area during the last three months of 2023. Samples were taken using the Federer formula, with as many as 18 people for each group.

The research inclusion criteria were willingness to be a research respondent, postpartum mothers on days 2-3, healthy condition of the mother and baby, mothers who exclusively breastfed their babies, and mothers who did not consume breast milk enhancers. Research exclusion criteria are mothers with breast problems who consume medicines, herbs, or breast milk-stimulating supplements.

Respondent data and monitoring of Delma milk consumption were collected using questionnaires. The mother's milk production was measured by pumping breast milk twice a day, starting from the first day of the study and continuing for seven days, with each pumping session occurring approximately 2 hours before the baby's scheduled breastfeeding time. This action aimed to monitor and record the amount of breast milk produced by the mother and identify any changes in breast milk production during the study period.

This study analyzes the differences in breast milk volume after and before the treatment (Nuryadi et al., 2017). The independent sample t-test is used to assess the differences between the control and experimental groups, and data analysis is carried out with the assistance of computer software to manage the data and calculate the results of statistical tests.

RESULTS

Respondent Characteristics

The respondents studied are postpartum mothers on the third day at the PMB within the Loa Kulu Health Center jurisdiction in 2023. The postpartum period begins after childbirth, typically lasting up to 42 days, during which the mother and her baby undergo various physical and emotional changes. The reproductive organs will gradually return to their pre-pregnancy state during this period. The distribution of the characteristics of the respondents being studied is shown in Table 1.

Table 1. Distribution of Respondent Characteristics

Variable	Category	Group			
		Control		Experiment	
		F (n = 18)	%	F (n = 18)	%
Age	< 20	2	11.1	0	0
	20-35	13	72.2	16	88.9
	> 35	3	16.7	2	11.1
	Total	18	100	18	100
Education	Elementary school	1	5.6	3	16.7
	Junior High School	3	16.7	7	38.9
	Senior High School	13	72.2	6	33.3
	University	1	5.6	2	11.1
	Total	18	100	18	100
Work	Housewife	16	88.9	18	100
	Working	2	11.1	0	0
	Total	18	100	18	100
Parity	Primipara	9	50	3	16.7
	Multiparous	8	44.4	14	55.9
	Grande multiparous	1	5.6	1	5.6
	Total	18	100	18	100

Source: Primary Data, 2023

Most respondents in the experimental and control groups fall within the 20-35 age range, comprising approximately 88.9% in the experimental group and 72.2% in the control group. This indicates a similar age distribution in both groups, with most respondents falling within the same age range.

On the distribution of education, in the experimental group, an average of 7 people (38.9%) had junior high school education. Respondents average educated SMA/SMKas many as 13 people (72.2%) in the control group.

The average control group respondents comprised 16 housewives (88.9%), and the experimental group were housewives, 18 people (100%).

Respondents in the average control group were nine people, primipara (50%), and the experimental group respondents were as many as 14 (55.9%).

Bivariate Test

Table 2. Results of Control and Experimental Group Analysis

Group	Variable	N	Mean ± Std. Deviation	Std. Error	P value
Control	<i>Pre-test</i>	18	43 ± 3,498	1,073	0,000
	<i>Post-test</i>	18	49.5 ± 4.232		
Experiment	<i>Pre-test</i>	18	42.78 ± 6.691	1,345	0,000
	<i>Post-test</i>	18	67.89 ± 6.703		

Source: Primary Data, 2023

The paired t-test results in Table 2 indicate a significant average difference in the control group, as evidenced by a P value 0.000. The statistical test results in the experimental group indicate that giving Delma milk significantly affects breast milk production in postpartum mothers, as evidenced by a P value of 0.000.

Table 3. Differences in Breast Milk Production in Control and Experimental Groups

Group	N	Mean ± Std. Deviation	Std. Error	P value
Control	18	49.5 ± 4.232	1,868	0,000
Experiment	18	67.89 ± 6.703		

Source: Primary Data, 2023

The table above displays the post-test results for both groups, involving 18 respondents. The findings indicate that giving Delma milk significantly impacts postpartum breast milk production.

DISCUSSIONS

Age

Based on the age distribution, the results show that the average number of respondents aged between 20-35 years was 13 people (72.2%) in the control group and 16 people (88.9%) in the experimental group. Research by Syukur and Purwanti (2020), mothers under 35 can produce more breast milk than mothers under 20. This is associated with the mother's ideal pregnancy, childbirth, and breastfeeding age. Maternal age over 35 negatively influences antioxidant levels in breast milk by reducing melatonin. Melatonin can enter the baby through breast milk, thereby providing a hypnotic effect with the initial formation of circadian rhythms (Gila-Díaz et al., 2020). Wardani (2017) that mothers aged 20-34 years are 4x more likely to breastfeed successfully than mothers aged over 35 years.

Researchers assume that mothers of good reproductive age will be able to reduce the risks during childbirth and breastfeeding to be better at breastfeeding.

Education

The respondents in the control group had an average of 13 years of high school education (72.2%). In the experimental group, an average of 7 people had a junior high school education (38.9%). The average respondent was at the secondary education level in both groups.

Education is often linked with one's ability to access information. However, based on Hamze et al. (2019) that sociodemographics. Mothers do not affect the breastfeeding process because information about breastfeeding can be obtained from the media or health workers.

Power Health provides support regarding breastfeeding to mothers through education, counseling, and assistance so mothers can provide breast milk with good (Idris et al., 2023).

This is supported by Wahyutri (2017), who states that providing education regarding breastfeeding can increase maternal knowledge and the success of the breastfeeding process. Good researchers will make it easier for mothers to receive and seek information that can help the process of breast-feed.

Work

Based on the analysis results for distribution work. The respondents in the control group were 16 people (44%) who were Housewives (IRT), while in the experimental group, 18 people (100%) were Housewives (IRT). Homemakers tend to have sufficient time to breastfeed. In contrast, working mothers tend to have physical and mental fatigue and limited time to regularly pump breast milk, which can hinder smoothness-breast milk production (Koba et al., 2019).

Researchers assume that mothers who become housewives can focus more on the success of the breastfeeding process.

Parity

Based on distribution parity, in the control group, most of them were primiparas, nine people (50%), and in the experimental group, 14 people (55.9%) were multiparas. Based on Hackman et al. (2015), mother primiparas have more breastfeeding problems than multiparous mothers. Mothers with prior breastfeeding experience tend to be more proficient or successful in breastfeeding than mothers who are breastfeeding for the first time. Previous experience can assist mothers in understanding and overcoming various challenges that may arise

when providing breast milk to their babies. Primiparous mothers must receive more attention to breastfeed well and exclusively. The research findings are consistent with Ariani et al.'s (2021) study, which asserts a correlation between maternal breast milk production and parity.

According to researchers' assumptions, maternal parity can provide more experience regarding the breastfeeding process. Mothers who have experienced problems in breastfeeding before will be more careful so that it does not happen again

Experimental Group Breast Milk Volume

The P-value, determined through paired sample t-test analysis in the experimental group, was 0.000, indicating statistical significance. This implies that the administration of Delma milk significantly affects breast milk within the experimental group.

Several previous studies have been confirmed to align with the research findings obtained. The effectiveness of soy milk in increasing breast milk has been demonstrated in Sagala et al.'s (2020) study. The research results by Siregar and Harahap (2022) revealed that postpartum mothers can enhance their breast milk production by consuming soy milk. Modepeng et al.'s (2021) research also confirmed that date consumption contributes to increased breast milk production.

According to researchers' assumptions, breast milk production increased in the group experiment can occur. There exists a process of hormonal physiology in the body due to the influence of the food consumed by the Mother, which encourages the secretion of oxytocin and prolactin so that breast milk production increases and can be expressed.

Prolactin and estrogen are hormones that play a role in breast milk production (Tabares et al., 2014). According to Sari et al. (2020), the efforts to increase breast milk production consume galactagogue. Galactogues are synthetic molecules that maintain, induce, and increase breast milk production by mediating complex processes in mammary epithelial secretory and lactotropic cells.

Soy products contain abundant isoflavones, genistein, and daidzein, and their content in the body will increase after consuming soybeans (Tsugami et al., 2020). Genistein and daidzein will bind to estrogen receptors, which will cause an estrogenic effect and stimulate prolactin production during lactogenesis (Pramitasari et al., 2017).

Meanwhile, dates can stimulate breast milk production by increasing prolactin (Foong et al., 2020). Dates can be used as a sweetener experience because they produce high sugar (USDA, 2019).

Volume Breast Milk Experimental Group

Based on the results, analysis of the paired sample t-test in the control group showed a P value of 0.000 ($< \alpha: 0.05$), so it was concluded that there was a significant difference in breast milk volume in the control group with an average value of 49.50 ml. This is by the HSE (2022) that in the first week, breast milk produced is between 30-60 ml without being given breast milk facilitating supplements.

According to researchers, food can increase the volume of breast milk by controlling factors that inhibit breast milk production. The daily food consumed by mothers can influence breast milk production. Breast milk production will run

smoothly by consuming nutritious food and a regular pattern (Azizah & Rosyidah, 2019).

Several foods can increase breast milk production, such as nuts, fruit, staple foods, vegetables, side dishes, and dairy products (Mufdillah et al., 2017). The increase in breast milk production in the control group could also be caused by the physiological factor lactogenesis II.

Lactogenesis II begins after delivery between 36-96 hours. After the birth of the placenta, progesterone and estrogen will decrease, and prolactin will increase, triggering lactogenesis II. Growth and development of alveoli and ducts increase so that. This causes the volume of breast milk to increase rapidly. In this phase, breast milk is produced mostly due to stimulation and hormonal release from the mother. Exclusive and frequent breastfeeding will maintain prolactin levels and increase breast milk production (Boersma, 2018).

The control group mainly consists of primiparous homemakers. The enthusiastic support from their families and husbands in welcoming their first child contributes to maintaining the mothers' nutritional needs and overall well-being. Moreover, you can focus on breastfeeding so lactogenesis II can run well. This is by research by Rahayu et al. (2022) that primiparous mothers with good food intake and family support can influence the mother's breast milk production so that she can continue the exclusive breastfeeding process. Hackman et al. (2015) also support this by researching that primiparous mothers should receive more support during breastfeeding.

Differences in Breast Milk Volume in the Control and Experimental Groups

Independent sample t-test analysis showed that the result for P was 0.000 ($P < \alpha$), so it could be concluded that there was an effect of giving Delma milk on breast milk production in mothers postpartum in the Loa Kulu Community Health Center working area in 2023. Although the control group also experienced increased breast milk volume, the average breast milk volume in the control and experimental groups differed.

The isoflavones in soy milk have a structure similar to 17β -estradiol and bind to the estrogen receptor α (Jagga et al., 2021). Estradiol is the largest regulator of prolactin secretion (Zárate & Seilicovich, 2010). Meanwhile, prolactin is a hormone that forms breast milk (Pillay & Davis, 2022). Estrogen (estrogen receptor β) is also a hormone that can help reduce behavior related to stress and anxiety so that it can increase the transcription of peptides from oxytocin (Acevedo-Rodriguez et al., 2015). The hormone oxytocin plays a role in releasing breast milk during breastfeeding (Pillay & Davis, 2022). Soy milk is a white emulsion that resembles cow's milk in appearance and consistency. Soy milk is a non-dairy plant-based drink, a popular alternative to cow's milk (Migala, 2022). Soy milk also has a source of protein and calories and is more affordable because it is cheap and very good for consumption (Fauziah et al., 2018).

Dates' phytoestrogen content can increase prolactin by putting pressure on dopamine while stimulating oxytocin secretion due to low dopamine levels (Basharat et al., 2020). Acts as a 5-HT_{2A} antagonist through track tubers infundibular, thus inhibiting dopamine and increasing prolactin secretion, which will stimulate lactation. An increase in oxytocin will cause the smooth muscles

around the alveoli to push breast milk into the milk ducts (Modepeng et al., 2021). Dates can also increase serum prolactin (Saeed Ebrahimi et al., 2018).

The research conducted by Pohan & Lestari in 2022 indicates that providing soy milk can increase breast milk production in breastfeeding mothers, while the study by Dewi et al. in 2021 found that consuming dates can increase breast milk production in postpartum mothers from day 3 to day 9. Therefore, the recent research results align with previous findings regarding the increase in breast milk production through the consumption of dates and soy milk.

The research results indicate that the study states that Delma milk is proven effective in increasing breast milk production. In other words, researchers believe that consuming Delma milk can stimulate the hormones responsible for boosting breast milk production in breastfeeding mothers. This indicates a belief or assumption that underlies the idea that Delma milk positively impacts the hormonal balance, contributing to increased breast milk production.

CONCLUSIONS AND RECOMMENDATIONS

Giving delma milk affects breast milk production in postpartum mothers in the Loa Kulu Community Health Center working area. It is recommended that Community Health Centers and health service agencies be able to provide counseling to mothers so they can use more economical alternatives to increase breast milk production. To research respondents and the public, delma milk can be made at home in predetermined quantities to save more.

ACKNOWLEDGMENT

This research was successfully carried out thanks to the support from various sources, especially the assistance of supervisors and examiners, the help from the midwifery department at the East Kalimantan Ministry of Health Polytechnic, and the support from friends and family. The author expresses heartfelt gratitude to all those who have supported the completion of this research.

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