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Effectiveness of Consuming Papaya on the Smoothness of Breast Milk in Breastfeeding Mothers in the Working Area of Songgon Community Health Center in 2025

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Abstract

Breast milk is the primary source of nutrition for newborns and plays a crucial role in infants' growth and immune system. However, smooth breast milk production is often a challenge for some breastfeeding mothers. One non-pharmacological effort that can support smooth breast milk production is consuming Papaya. Papaya contains lactogagum, which can secrete oxytocin and prolactin, hormones that stimulate breast milk production. This study aimed to determine the effect of papaya consumption on smooth breast milk flow in breastfeeding mothers in the Songgon Community Health Center working area in 2025. This study implemented a quasi-experimental design through a pre-test and post-test approach. 30 respondents were obtained through accidental sampling, which was divided into 2 groups, 15 intervention group respondents and 15 control group respondents, thus meeting the minimum number of samples suitable for the study. The intervention group was given papaya fruit 3 times a day for 7 days with a dose of 250 grams at each meal. The control group was not given any treatment. The sampling technique used was accidental sampling. The instruments used were a questionnaire indicator of smooth breast milk flow and an observation sheet. Data analysis was conducted using the Wilcoxon and Mann-Whitney tests using SPSS 25 for Windows. The study was conducted on January 31–February 25, 2025, with KEPK No. 071/01/KEPK-STIKESBWI/I/2024-2025. The results showed that the average smoothness of breast milk in the intervention group increased from 1.87 to 7.40, while the control group increased from 2.20 to 4.00. The average difference between the intervention group was 5.53, and the control group was 1.8. The p-value = 0.000 indicates an effect. Papaya can be recommended as a natural alternative to increase breast milk flow.

Keywords: Breastfeeding Mothers, Breast Milk, Papaya, Smoothness of Breast Milk

Introduction

Breastfeeding is a process in which a baby sucks and receives milk from the mother's breast.[1] Breast milk is a white liquid produced by the mammary glands and distributed through breastfeeding. ASI is a natural nutrient that the mother's body has prepared since pregnancy to meet the needs of the baby who will be born.[2] Insufficient breast milk is a condition where the production or release of breast milk is insufficient for the baby's needs or is hampered. WHO recommends exclusive breastfeeding for a period of 6 months.[3] Supported by government regulation number 33 of 2012 concerning exclusive breastfeeding, it states that breast milk is given to babies from birth for six months, without adding or replacing it with other foods or drinks (except medicines, vitamins, and minerals). [4]

In 2021, the WHO presented global data regarding exclusive breastfeeding. Only around 44% of babies aged 0-6 months received exclusive breastfeeding in the 2015-2020 period, where this figure has not yet reached the WHO target of at least 50% of babies receiving exclusive breastfeeding until the age of 6 months in 2025.[5] Referring to data from the Indonesian Health Profile in

2023, in Indonesia itself, the overall coverage of babies aged 6 months receiving exclusive breastfeeding in 2022 reached 61.5% and in 2023 experienced a slight increase to 63.9%, while in East Java Province in 2023 it reached 83.6%.[6]

The coverage of exclusive breastfeeding in Banyuwangi Regency, based on the 2023 Banyuwangi Regency Health Profile, reached 82%, and the lowest coverage was in Songgon District, specifically in the working area of Songgon Health Centre, namely 55.8%.[6] The latest data from the Songgon Health Center in 2024 from January to August showed that of the target of 50% exclusive breastfeeding coverage, 47% of the total target of 334 babies was still achieved, with 167 babies receiving exclusive breastfeeding.

When breastfeeding various problems arise so that the mother cannot do exclusive breastfeeding, breast milk that is not smooth is one of them, it refers to the results of initial interviews conducted with 5 breastfeeding mothers in the Songgon District area, 2 people admitted that breast milk did not come out after giving birth and 3 people stated that breast milk could only come out two days after giving birth but in small amounts and not smooth. There are various causes of breast milk not being smooth, one of which is from food factors, this is in accordance with the results of interviews with 7 breastfeeding mothers, 2 of whom did exclusive breastfeeding for their babies, it was found that the mother diligently consumed foods that could stimulate breast milk production for example consuming clear katuk and moringa vegetables since starting breastfeeding so that breast milk could be smooth.

Meanwhile, the remaining 5 mothers who stated during the previous interview that their breast milk was not flowing smoothly admitted that they were too lazy to try what foods could increase the production and smoothness of breast milk because they had to process it first and were bored if they had to consume the same food every day. Because most of the breast milk-stimulating foods known by the public, such as katuk leaves, moringa leaves, and banana blossoms are vegetables that need to be processed first before being consumed and if they cook these vegetables every day, family members will get bored, making mothers eat simple dishes without considering whether the food can help increase the smoothness of breast milk or not.

One of the factors that can influence breast milk is food; the food consumed by the mother really determines the breast milk produced by the mother's breasts. If the food consumed by the mother contains ingredients that can trigger an increase in breast milk production, the breast milk that comes out will be smoother. Mothers can take steps to provide exclusive breast milk, one of which is by stimulating the release of oxytocin and prolactin hormones through the food the mother consumes, so that breast milk production increases and breast milk becomes smooth. Lactogagum is a substance that can stimulate the hormones oxytocin and prolactin.[8] Papaya is one of the plants with lactogagum content that can stimulate the hormones oxytocin and prolactin, which provide benefits in triggering an increase and smooth production of breast milk.[9]

Besides being easy to obtain, especially in rural areas and its affordable price and no further processing required, papaya plants also contain the enzyme papain, carotenoids, alkaloids, flavonoids, monoterpenoids, minerals, vitamins, glucosinolates, and vitamins C, A, B, and E. Papaya is also known to provide gastroprotective, antibacterial, laxative, and lactogagum effects, the benefits of which have been scientifically proven. The lactogagum content in Papaya can help stimulate the hormones oxytocin and prolactin, so that it can be a strategy to overcome the problem of irregular breast milk production, enabling exclusive breastfeeding to be carried out. Based on several previous research results, it was found that consuming Papaya can influence the increase in breast milk production so that breast milk can flow smoothly in breastfeeding mothers.[11]

Based on the above description, Papaya contains lactogagum, which can help stimulate the release of oxytocin and prolactin, thus influencing breast milk production, promoting smooth milk flow and exclusive breastfeeding. Therefore, researchers are interested in researching the effect of papaya consumption on breast milk flow in breastfeeding mothers in the Songgon Community Health Center work area in 2024.

Method

This research is quantitative research that

uses experimental research methodology. The design used in the study is a Quasi-experimental, with a two-group pre-test and post-test design. The population includes all breastfeeding mothers in the Songgon Community Health Centre work area. In this study, the sample size is 30 respondents, who are classified into two groups, namely 15 respondents for the intervention group and 15 for the control group. The sample in this study was taken through the accidental sampling technique. This study was implemented in the working area of Songgon Community Health Center, Songgon District, Banyuwangi Regency. This study was conducted on January 31 - February 25, 2025. This research has obtained ethical approval with the code number 071/01/KEPK-STIKESBWI/I/2024-2025. The variables in this study include the independent variable (Papaya) and the dependent variable (breast milk flow). The research instrument is a variable of papaya fruit with SOP steps for consuming papaya fruit for breastfeeding mothers aged 1-7 days as a breast milk stimulant, and the variable of breast milk flow using a questionnaire. Data were analyzed using univariate and bivariate analyses with the Wilcoxon and Mann-Whitney tests.

Results And Discussion

A. Univariate Analysis

Table 1 Univariate Analysis Results

Characteristics	Intervention	Control
<20 Years	0 (0)	0 (0)
20-35 Years	14 (93.3)	15 (100)
> 35 Years	1 (6.6)	0 (0)
Parity		
Primipara	9 (60)	8 (53.3)
Multipara	6 (40)	7 (46.6)
Grande Multipara	0 (0)	0 (0)
Education		
basic education	7 (46.6)	5 (33.3)
Secondary Education	5 (33.3)	9 (60)
higher education	3 (20)	1 (6.6)

Based on the mother's age, the results obtained were that almost all respondents were in the age category of 20-35 years, totaling 14 (93.3%) respondents in the intervention group and only a small portion were aged >35 years, totaling 1 (6.6%) respondents, while for the control group, all respondents were aged 20-35 years, totaling 15 (100%) respondents, with the youngest age being 20 years, totaling two respondents and the oldest being 40 years, totaling 1 respondent.

Based on maternal parity, the results obtained showed that more than half of the respondents were primiparous mothers, with a total of 9 (60%) respondents, and less than half were multiparous mothers, with a total of 6 (40%) respondents, in the intervention group. In comparison, in the control group, more than half were primiparous mothers with a total of 8 (53.3%) respondents, and less than half were multiparous mothers with a total of 7 (46.6%) respondents, with the most significant number being 4 children with a total of 1 respondent.

Based on maternal education, the results obtained were that less than half of the mothers had primary education, amounting to 7 (46.6%) respondents. Less than half had secondary education, amounting to 5 (33.3%) respondents, and a small portion had higher education, amounting to 3 (20%) respondents in the intervention group. However, in the control group less than half had primary education, amounting to 5 (33.3%) respondents and more than half had secondary education, amounting to 9 (60%) respondents and a small portion had higher education, amounting to 1 (6.6%) respondents, with the lowest education being elementary school, amounting to 3 people and the highest being S1, amounting to 2 people.

B. Bivariate Analysis

Table 2. Smoothness of Breast Milk Before and After Intervention in the Intervention Group

	Pre-Test	*Post-Test*	Difference	P-*Value*
Mean	1.87	7.40	5.53	0.001a
Median	2.00	7.00	5.00	
Min-Max	1-4	6-8		

Referring to Table 2. Showing that before the intervention, the average smoothness of breast milk was 1.87 with a median of 2.00 and a range of values from 1 to 4, indicating that most breastfeeding mothers experienced low smoothness of breast milk according to the indicators of smoothness of breast milk. After the intervention, the average increased to 7.40 with a median of 7.00 and a range of values from 6 to 8. The average difference between before and after the intervention was 5.53, which indicates an increase.

Table 3. Smoothness of Breast Milk Before and After Intervention in the Control Group

	Pre-Test	*Post-Test*	Difference	P-*Value*
Mean	2.20	4.00	1.80	0.001a
Median	2.00	4.00	2.00	
Min-Max	1-3	3-6		

Referring to Table 3. Shows that before, the average smoothness of breastfeeding was 2.20 with a median of 2.00 and a range of values 1 to 3. After the intervention, the average increased to 4.00 with a median of 4.00 and a range of 3 to 6. The average difference between before and after was 1.80. However, the increase in the control group was not as much as in the intervention group.

Table 4. Analysis of the Effect of Consuming Papaya on Breast Milk Smoothness in Breastfeeding Mothers

Smoothness of breast milk	**Intervention**	**Control**	***P-Value***
	n=15	**n=15**	
Pre-test Mean	1.87	2.20	0.217[a]
Elementary School	834	775	
Median	2.00	2.00	
Min-Max	1-4	1-3	
Post-test Mean	7.40	4.00	0.000[a]
Elementary School	632	1,000	
Median	7.00	4.00	
Min-Max	6-8	3-6	
Difference/Improvement	5.53	1.8	
Indicator Smooth flow of breast milk			
p-Value	0.001b	0.001[b]	

a) Mann-Whitney test *b) Wilcoxon Test*
SD: Standard Deviation

Based on Table 4, the analysis results of the effect of papaya consumption on the smoothness of breast milk in breastfeeding mothers are obtained, comparing the effects in the intervention group and the control group. The pre-test conducted on both groups obtained the Mann-Whitney test (p=0.217), indicating no significant effect before the intervention was given. After the intervention, there was a significant increase in the influence in the intervention group, with the average smoothness of breast milk rising to

7.40. In contrast, the control group only increased to 4.00. The difference in the average increase in breast milk smoothness between the two groups was 5.53 in the intervention group and 1.8 in the control group; the median value in the intervention group was 7.00 and 4.00 in the control group. The minimum and maximum range values were 6-8 in the intervention group and 3-6 in the control group. This shows the difference in the intervention group, which had a significantly higher value than the control group. The post-test implemented in both groups obtained the results of the Man-Whitney test (p=0.000), which indicates the influence of papaya consumption on the smooth flow of breast milk in breastfeeding mothers.

The pre-test results conducted on both groups, namely the intervention group and the control group, using the Mann-Whitney test, did not show a significant effect, because the intervention had not been administered at this stage. Meanwhile, the post-test results analysed using the Mann-Whitney test showed a significant effect in both groups after implementing the intervention. The intervention group showed a higher increase in the mean, median, minimum, and maximum values, and had a larger difference in change than the control group.

Discussion

Breast Milk Flow Before and After Consuming Papaya in the Intervention Group

Referring to the findings before consuming papaya fruit in the intervention group, the average value was 1.87 with a standard deviation of 834, a minimum value of 1, and a maximum of 4 at the time of the pre-test. Which means that before consuming papaya fruit in the intervention group, mothers did not feel signs of smooth breast milk flow of more than 4, which, according to the assessment of smooth breast milk indicators, there are 1-8 indicators of smooth breast milk flow. Signs of smooth breast milk that the mother did not feel before the intervention were given included the baby not burping after being breastfed by the mother, the baby not breastfeeding 10-12 times in 24 hours, the mother not feeling her breasts tense and full and the mother not feeling ticklish breast milk flow when breastfeeding her baby, this condition occurs because the breast milk released by the mother is not smooth so that it hinders the process of breastfeeding her baby.

The factor that influenced this was the mother's parity, where more than half of the respondents were primiparous mothers. This means that the mother is still in the early stages of her role as a mother and has no experience in breastfeeding. This condition impacts the breastfeeding process because primiparous mothers are still learning to recognize correct breastfeeding techniques, understand signs of sufficient breast milk, and are not yet fully confident in breastfeeding their babies. [10] This uncertainty and limited knowledge influence the low achievement of the smooth breastfeeding indicator during the pre-test, where most respondents only meet 1 to 4 of the 8 indicators assessed.

Supported by Shanti (2021), who found that primiparous mothers who do not carry out proper breast care tend to experience problems in the lactation process, in contrast to multiparous mothers with more experience who can provide optimal exclusive breastfeeding. [10] Also supported by Halimatus (2020) research, which showed that 35.5% of primiparous mothers experienced poor breast milk production.[11] Researchers argue that the low value of the breast milk flow indicator before the papaya fruit consumption intervention reflects the initial condition of breastfeeding mothers who are not optimal, both physiologically and psychologically. This is because more than half of the respondents are primiparous mothers. In contrast to multiparous mothers, who generally have better experience and preparation in breastfeeding, primiparous mothers tend to adjust to their new role. Breastfeeding experience in previous pregnancies allows multiparous mothers to be better prepared, physically and mentally, to welcome the breastfeeding process in the future, which can impact the breastfeeding process. This suggests that lactation may not be optimal without additional nutritional support, particularly from natural sources like Papaya. Therefore, the pre-test results demonstrate the importance of additional nutrition in stimulating the production of the hormones oxytocin and prolactin, which can influence the flow of breast milk for breastfeeding mothers.

After breastfeeding mothers consume

Papaya regularly for seven consecutive days, the average will increase to 7.40 with a standard deviation of 632, a minimum value of 6, and a maximum of 8 at the post-test. There are also changes felt by the mother and baby, which fulfil 8 of the indicators of smooth breast milk. These changes include the baby urinating 6-8 times in 24 hours, the baby defecating 2-4 times in 24 hours, the baby burping after breastfeeding, this indicates the baby is satisfied and full after breastfeeding, the baby sleeps enough and soundly every day 2-4 hours, the baby breastfeeds at least 10-12 times in 24 hours this indicates that the milk is sufficient for the baby to suck continuously, the mother feels her breasts are tense and full of breast milk, the mother feels the flow of breast milk flowing in her breasts and the mother feels her breasts are empty every time she finishes breastfeeding her baby.

This is also indicated by an increase in the average difference of 5.53 before and after the intervention. This increase indicates that papaya consumption can significantly contribute to smoothing breast milk production in breastfeeding mothers. Statistical analysis using the Wilcoxon test yielded a p-value of 0.001, meaning that a statistically significant effect of papaya consumption on smooth breast milk production in breastfeeding mothers was found. Various factors contributed to this influence, including the characteristics of the respondents, where almost all respondents were of productive age.

Supported by Istiadhatul Arzakiyah (2020), it was found that the age of the breastfeeding mother can affect the smoothness of breast milk production. Mothers in the 20–35 age range, which is considered the ideal reproductive age, tend to be better physically and psychologically prepared for breastfeeding. This readiness includes understanding correct breastfeeding techniques, recognising signs of adequate breast milk in babies, and confidence in breastfeeding. Conversely, mothers under 20 or over 35 face additional challenges, such as psychological immaturity or certain health conditions, which can affect breast milk production and smoothness. Thus, maternal age is one of the crucial factors that must be considered in efforts to support successful breastfeeding.[12]

Papaya (*Carica papaya*) is a tropical fruit native to Central and South America, but is now widely cultivated in various tropical countries, including Indonesia. Papaya is known for its soft, orange to red flesh and sweet taste when ripe. Botanically, Papaya belongs to the *Caricaceae* family. This fruit contains many important nutrients, including vitamin A, C, E, folic acid, fibre, potassium, and the enzyme papain. Its high water content also helps maintain body hydration. Papaya contains lactogagum, a substance that can stimulate or increase the production and secretion of breast milk. The papain enzyme in Papaya is believed to help smooth the digestive system and increase the absorption of nutrients needed for breastfeeding.[13]

Supported by Wellina in 2021, it was found that in the intervention group that was given 2-3 pieces of papaya fruit 3 times a day for 7 days, the results were that 13 respondents had sufficient breast milk. In the control group that was not given anything, only five respondents had sufficient breast milk.[14] Also supported by Nursitiyaroh in 2023 which involved breastfeeding mothers and was given papaya fruit which was consumed regularly for 14 consecutive days with a dose of 250 grams and consumed once a day, the results showed that the average value before being given papaya fruit was 161.30 and after it was 182.80, so the average difference before and after obtained a value that had a difference of 21.5 in the values before and after.[15]

Researchers believe regular papaya consumption can be a natural and effective solution to increase breast milk flow in breastfeeding mothers. The achievement of indicators of breast milk flow experienced by breastfeeding mothers and their babies after papaya consumption interventions indicates that directly fulfilling nutritional needs through easily accessible foods without complicated processing can be an effective strategy in supporting successful breastfeeding, thus achieving exclusive breastfeeding. Papaya fruit is rich in nutrients and contains lactogagum, which has been proven beneficial in smooth breast milk flow in breastfeeding mothers.

Furthermore, almost all respondents in this study were of productive age, which researchers believe is the ideal phase for breastfeeding mothers, as they are more physically and psychologically prepared than mothers aged <20 or >35. Mothers of

productive age generally have better adaptability, a more mature understanding, and optimal readiness for the breastfeeding process, thus supporting the smooth production of breast milk overall.

Smoothness of Breast Milk Before and After Intervention in the Control Group

Referring to the previous findings in the control group, the average value was 2.20 with a standard deviation of 775, a minimum value of 1, and a maximum of 3 during the pre-test. This means that before being given postpartum care in the control group, mothers only met 3 of the 8 indicators of smooth breast milk flow, including the mother only feeling her breasts empty after breastfeeding her baby, the mother feeling ticklish after breastfeeding due to the flow of breast milk, and the baby sleeping enough for at least 2-4 hours each time. However, 5 indicators of smooth breast milk flow were not met. This condition indicates that the smooth breast milk flow is still not optimal and can impact the success of the breastfeeding process.

A factor influencing this is maternal education level, with more than half of respondents in the control group having a secondary education. Education shapes mothers' knowledge, attitudes, and behaviours regarding breastfeeding practices. Mothers with secondary education tend to have limited access to information and a suboptimal understanding of the importance of breastfeeding and proper breastfeeding techniques. This can lead to a lack of initiative to seek additional information or follow the recommendations of health workers. As a result, breastfeeding does not run smoothly, and more than half of the smooth breastfeeding indicators are unmet. This lack of knowledge also impacts mother's low readiness to overcome breastfeeding obstacles, which ultimately can hinder effective milk production and flow.

This is supported by research by Lindawati (2022), which shows that mothers with a high level of education are five times more likely to exclusively breastfeed than mothers with a low level of education. This is due to the ability of highly educated mothers to receive and apply information related to breastfeeding, including correct breastfeeding techniques and the importance of exclusive breastfeeding. Conversely, mothers with secondary or lower education usually have limited access to and understanding of related information, which can hinder breast milk production.[14]

Researchers believe that the pre-test results conducted on the control group are related to the importance of educational background in influencing maternal breastfeeding readiness. The low achievement of the breastfeeding smoothness indicator during the pre-test indicates that mother's limited understanding is related to secondary education, which influences the breastfeeding process. When information related to breastfeeding is not optimally absorbed, mothers tend to be less productive in seeking additional knowledge and are reluctant to follow the guidance provided by health workers. This results in the breastfeeding process not going as expected. Therefore, ongoing and easily understood educational support is crucial for mothers with secondary education so that they are better prepared, able to understand the benefits of breastfeeding, and skilled in applying proper breastfeeding techniques to facilitate milk production.

After providing postpartum care information to the control group, the results showed an increase in the average value of 4.00 with a standard deviation of 1,000, a minimum value of 3 and a maximum of 6 at the time of the post-test. This is also related to the changes that occurred by the mother and her baby where at the time of the post-test after being given postpartum care the mother was able to fulfill 6 of the 8 indicators of smooth breast milk flow, including the mother being able to feel her breasts tense and full, the mother feeling ticklish due to the flow of breast milk, the baby sleeping enough for 2-4 hours, the baby defecating 2-4 times in 24 hours, the baby burping after breastfeeding, and the baby breastfeeding 10-12 times in 24 hours. An increase in the average difference of 1.80 also showed this change. However, the magnitude of the increase was still lower than that of the intervention group that received additional papaya fruit intake, which showed a more significant increase in breast milk flow. Data analysis using the Wilcoxon test ($p=0.001$) in the control group, statistically indicating a significant effect on breast milk flow in breastfeeding mothers. The influencing factor was maternal parity, with half of the mothers in the control group

multiparous.

This is supported by Erlina's (2021) research involving 20 postpartum mothers, 60% multiparous. The intervention was the Marmet technique, a breast massage method to stimulate breast milk production and release. The findings showed that multiparous mothers who received postpartum care using the Marmet technique experienced an increase in breast milk flow compared to before. Previous experience with breastfeeding in multiparous mothers can increase the effectiveness of the care provided, as they are better prepared physically and psychologically for the breastfeeding process.[16]

According to Roy's adaptation theory, individuals respond to environmental stimuli by adapting through physiological, psychological, and social processes. In this context, information regarding postpartum care can be considered a positive social stimulus that can help mothers breastfeed their babies. Postpartum care information provided based on the KIA book includes examining the condition of the mother and baby, providing counselling on self-care, breastfeeding, postpartum danger signs, and referrals if health problems are found.[17]

Supported by Meiyana Sinaga (2024), who found that mothers with good knowledge about breast care tend to experience smooth breastfeeding, compared to mothers with less knowledge. This knowledge includes breast massage techniques, how to breastfeed correctly, and signs that the baby is getting enough breast milk. This indicates that providing information or education as part of postpartum care is important in preparing mothers to breastfeed physically and mentally, especially in managing lactation. The knowledge mothers obtain from health workers helps increase awareness, form a positive attitude towards breastfeeding practices, and motivate mothers to be more active in breast care. Thus, providing information in postpartum care is proven to support the smooth flow of breast milk.[18]

Researchers believe that providing postpartum information to breastfeeding mothers significantly contributes to increasing breast milk production, although not as optimally as efforts coupled with supplemental nutrition, such as Papaya. The fact that most breastfeeding indicators were met in the control group indicates that the basic knowledge mothers acquired improved their awareness and ability to care for themselves and their babies, particularly regarding breastfeeding. This is reinforced by the experience of multiparous mothers who had previously undergone a similar process, making them more psychologically prepared than primiparous mothers. The information provided during postpartum care, particularly regarding breast care and signs of adequate breast milk supply, encouraged the development of better breastfeeding habits.

The Effect of Consuming Papaya on Breast Milk Smoothness in Breastfeeding Mothers in the Working Area of Songgon Community Health Centre in 2024

This research on the effect of papaya consumption on the smooth flow of breast milk in breastfeeding mothers in the Songgon Community Health Centre working area utilised a quasi-experimental research design using pre-test and post-test with 30 breastfeeding mother respondents. It was classified into 2 groups: 15 respondents in the intervention group and 15 respondents in the control group. During the study, all respondents were cooperative until the study was completed, so no respondents dropped out.

The analysis of this study showed that before the intervention, the statistical test results using the Mann-Whitney test ($p=0.217$). This value indicates no significant effect on either group. However, after the intervention, namely papaya consumption in the intervention group and the control group, the results showed a significant effect on the smooth flow of breast milk in both groups ($p = 0.000$).

The results of the research on the intervention group of papaya fruit consumption which was consumed regularly 3 times a day with a dose of 100 grams per meal for 7 days showed an influence on the smoothness of breast milk, because the smoothness of breast milk is influenced by various factors, one of which is the intake of food nutrition, the food that the mother consumes really determines the breast milk produced by the mother's breasts, if the food consumed by the mother contains ingredients that can increase the smoothness of breast milk, the breast milk that comes out will be smoother. Papaya fruit is a fruit that has been

proven to increase the smoothness of breast milk.[19]

The findings in the intervention group showed that papaya fruit contributed to the smooth flow of breast milk for breastfeeding mothers. This is in accordance with the theory that there is a content in papaya fruit in the form of a lactagogum compound that can stimulate the hormones prolactin and oxytocin, which have a crucial role in producing and releasing breast milk. In addition, the content of vitamins A, C, water, and the enzyme papain in papaya fruit also supports the body's natural process in producing breast milk, so that breast milk is smooth and sufficient.[15]

Consuming nutritious foods, including fruits, is very important during lactation. According to Maslow's theory of basic needs, food is a basic physiological need that supports overall body function, including the hormonal functions involved in breastfeeding. Lactation physiology also supports the finding that certain foods, including Papaya, can act as a natural lactogagum. In this case, regular consumption of Papaya has been shown to provide positive signals to the hypothalamus to stimulate the anterior pituitary to produce prolactin, so Papaya can be part of a non-pharmacological intervention to overcome the problem of insufficient breast milk.[17]

Supported by Imelda in 2020 using a quasi-experimental method with two groups, the intervention group (breastfeeding mothers who were given Papaya) and the control group (without papaya intervention). Each group consisted of 16 breastfeeding mothers. The findings showed a significant increase in breast milk production in the group that consumed Papaya. Statistical testing using the t-test showed a p-value = 0.000, a statistical effect between the intervention and control groups.[16]

Also supported by Ani Barus in 2023 who used a pre-experimental research design with pre-test and post-test which was carried out by giving papaya fruit within a period of 1 week at a frequency of 3x/day and a dose of 300 grams/day to postpartum mothers from the first to the eighth day showed that the results of the paired sample t-test obtained a p value = 0.003. This data is evidence of an increase in breast milk production from giving papaya fruit. This can be seen from the amount of production and expenditure of breast milk volume, which increased in ml measurements from a minimum of 75 ml and a maximum of 250 ml to a minimum of 100 ml and a maximum of 300 ml, which means it has been proven to have an effect.[18]

Researchers believe the changes before and after the intervention in both groups were equally effective in increasing breast milk flow. However, papaya consumption provided greater improvements and impacts for both mothers and their babies. This is because Papaya's effectiveness in increasing breast milk flow is supported by its lactagogum compounds, which stimulate important hormones such as prolactin and oxytocin, which play a role in breast milk production and release. Furthermore, Papaya is a practical choice because it is readily available, especially in rural areas such as Songgon District, which is composed mainly of plantations. This fruit also does not require special processing, making it practical and can be consumed directly by breastfeeding mothers, thus increasing breast milk flow and achieving exclusive breastfeeding.

Conclusion

Referring to the findings, it was concluded that the smoothness of breast milk in the intervention group obtained pre-test results, a mean value of 1.87 with a minimum-maximum value of 1-4. While in the post-test, the mean value was 7.40 with a minimum - maximum value of 6-8. At the same time, the smoothness of breast milk in the control group obtained pre-test results, a mean value of 2.20, and a minimum-maximum value of 1-3. In the post-test, the mean value was 4.00, and the minimum and maximum values were 3-6. The analysis test results showed that papaya consumption affected the smoothness of breast milk in breastfeeding mothers (p=0.000). There was a greater increase in the intervention group, namely, a difference of 5.53> 1.8 compared to the control group.

This study offers several recommendations. Breastfeeding mothers should consider consuming Papaya as a natural way to increase breast milk production, along with a healthy lifestyle. Midwives should educate breastfeeding mothers about the benefits of Papaya as part of a healthy diet. Banyuwangi College of Health Science can utilise the results of this study as a learning resource and for further research. Songgon

Community Health Center is expected to incorporate these findings into its nutrition and lactation education program to support breastfeeding mothers in its area. Furthermore, future researchers are encouraged to expand their research with a larger sample size and compare Papaya with other foods that can potentially increase breast milk production.

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