

The effect of giving edamame nuts on the improvement of breast milk production in postpartum women

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ABSTRACT

Breast milk is the first natural food for babies. Breast milk provides all the energy and nutrients a baby needs for the first months of life. Lack of breast milk production results in the practice of breastfeeding in infants is not met. The purpose of this study was to find out the effect of edamame beans on the production of breast milk in postpartum mothers at the Midwife Clinic. This research uses Quasy Eksperimen Design using one Group Pretest-Posttest Design. The population in this study is all postpartum mothers day 3-10 amounted to 6 people and a sample of 6 people. this research uses purposive sampling technique with univariate and bivariate analysis. The results of the study obtained from data analysis with Wilcoxon test showed in mothers who postpartum can be concluded pre-test and post-test edamame beans. The results in the table are known that the value of P- value $(0.025) < \alpha 0.05$ then H_0 rejected H_a received which means there is an influence of pre-test and post-test on the administration of edamame beans on the production of breast milk in postpartum mothers in the Midwife Clinic. The conclusions in this study showed the results that there is an influence of edamame beans on the production of breast milk in postpartum mothers.

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INTRODUCTION

Breast milk is the natural first food for babies. It provides all the energy and nutrition a baby needs for the first months of life (Journal of Midwifery et al., 2021) (Pratiwi et al., 2020). Breastfeeding is an excellent way of providing ideal food for the healthy growth and development of babies (Dewi et al., 2021) (Nur et al., 2020). Lack of breast milk in nursing mothers is one of the problems that are often faced by nursing mothers, from the lack of milk production, breastfeeding mothers give formula milk to babies so that babies are not fussy because of thirst.

Humans drink human milk, cows drink cow's milk. This is an immutable principle. However, starting when, under the encouragement of various advertisements for powdered milk, the general public has the wrong idea, that cow's milk is the best, then breast milk (ASI). But in reality, think about it, every powdered milk factory makes every effort to improve the nutritional

composition of powdered milk, the aim is to make the quality of the powdered milk as much as possible with the quality of breast milk. However, breast milk is the most appropriate choice for babies (Sri Banun Titi Istiqomah, Dewi Triloka Wulanadari, 2015).

In order to reduce infant morbidity and mortality, UNICEF and WHO recommend that babies should only be breastfed for at least 6 months, and continued breastfeeding until the baby is two years old (WHO, 2018)(Angraini, 2021)(Sikki & Simbung, 2021). In order for mothers to maintain exclusive breastfeeding for 6 months, WHO recommends initiating breastfeeding within the first hour of life, the baby only receives breast milk without additional food or drink, including water, breastfeeding on demand or as often as the baby wants, and not using bottles or pacifiers (Istianingsih, 2018).

The Sustainable Development Goals in The 2030 Agenda For Sustainable Development target that by 2030 it can reduce neonatal mortality by at least 12 per 1,000 live births and deaths in children under the age of 5 by at least 25 per 1,000 live births. This can be achieved one of them by implementing exclusive breastfeeding properly (United Nations)(Istianingsih, 2018).

However, only 44% of newborns in the world are breastfed within the first hour after birth, and even a few babies under the age of six months are exclusively breastfed. The coverage of exclusive breastfeeding in Central Africa is 25%, Latin America and the Caribbean is 32%, East Asia is 30%, South Asia is 47%, and developing countries is 46%. Overall, less than 40 percent of children under six months of age are exclusively breastfed (Istianingsih, 2018).

This is not in accordance with the WHO target, which is to increase exclusive breastfeeding in the first 6 months to at least 50%. This is WHO's fifth target in 2025 (Istianingsih, 2018).

In Indonesia, there are 29.5% of babies who have been exclusively breastfed until the age of six months.(Istianingsih, 2018). This is not in accordance with the target of the Ministry of Health's Strategic Plan for 2015-2019, namely the percentage of infants aged less than 6 months who receive exclusive breastfeeding is 50% (Health & Indonesia, 2011).

The 2018 Riskesdas results show that the proportion of breastfeeding patterns for infants aged 0-5 months in Indonesia is 37.3% exclusive breastfeeding, 9.3% partial breastfeeding, and 3.3% predominant breastfeeding. Breastfeeding is predominantly breastfeeding the baby but never giving a little water or water-based drinks, such as tea, as a prelacteal food/drink before the milk comes out. While partial breastfeeding is breastfeeding the baby and being given artificial food other than breast milk such as formula milk, porridge or other food before the baby is 6 months old, either given continuously or as prelacteal food (Ministry of Health, 2018).

Prelacteal food is food or drink that is given to the baby before breastfeeding. According to the 2013 Riskesdas, the highest percentage of prelacteal food given to newborns in Indonesia in 2013 was formula milk (79.8%) (Ministry of Health, 2018).

The percentage of exclusive breastfeeding for babies 0-6 months in Aceh in 2019 is 55% with a target of 100%.(Aceh, 2019). This figure has decreased compared to the percentage in 2018 which amounted to 61% with a target of 100% (Ferdiyus, 2018). In Simeulue District, exclusive breastfeeding is still far from the expected target. The dominant factor that hinders exclusive breastfeeding is generally the community's habit of giving food/drinks shortly after birth in the form of honey, sugar solution, powdered milk, wak bananas, etc. for fear that the baby will starve which is a hereditary tradition. In addition to breastfeeding, complementary foods are also given to children aged 6-23 months. The coverage of exclusive breastfeeding in Simeulue Regency in 2018 was 890 babies or 71.3% of the total babies (0 – 6 months) registering breastfeeding in February and August of 1249 babies. From 2018 it showed that the Simeulue Timur Health Center with a percentage of 63% had not reached the target of 100% (Sugiyono, 2016).

Regarding the understanding of the importance of breastfeeding for babies and breastfeeding mothers, it turns out that there are obstacles that are often faced in relation to breastfeeding either from the mother or the baby. In breastfeeding mothers there is often less milk production, mothers do not understand proper lactation management, mothers want to breastfeed

again after given formula milk (relactation), the baby is already getting, prelacteal feeding (giving sugar or dextrose water, formula milk in the first days of birth) maternal abnormalities: mother's nipples are sore, mother's nipples are sore, breasts are swollen and the mother works while the baby often problems occur such as sick babies or baby abnormalities (Sri Banun Titi Istiqomah, Dewi Triloka Wulanadari, 2015).

During breastfeeding, mothers are advised to increase their intake of energy, protein, calcium, iron, folic acid, and other vitamins and minerals to meet nutritional needs during breastfeeding. In order for mothers to be able to produce 1 liter of breast milk, additional food is needed. If a mother who is still breastfeeding her baby does not get additional food, it can result in a decline in the manufacture and production of breast milk (Fauzia et al., 2016).

Edamame plant is a local food ingredient that has the potential for nutrition for breastfeeding mothers, because it contains phytosterol compounds which function to increase and facilitate milk production (lactagogum effect)(Ade Febriani, Nova Yulita, 2020).

Theoretically, compounds that have a lactagogum effect include sterols. Sterols are compounds of the steroid group. In addition, the high content of vitamin A in edamame 95 SI can increase milk production (Ade Febriani, Nova Yulita, 2020).

Edamame has a fairly high nutritional value, namely 582 Kcal, 11.4 g protein; carbohydrates 7.4 g; fat 6.6 g; vitamin A 100 mg; B1 0.27 mg; B2 0.14 mg; B3 1 mg; and vitamin C 27%; as well as minerals such as phosphorus 140 mg; calcium 70 mg; iron 1.7 mg; and 140 mg potassium in 100 g of edamame (Johnson, et al. 1999, Nguyen, 2001) and contains nine essential amino acids that the body needs, contains no cholesterol and little saturated fat and is rich in fiber, vitamins C and B, calcium, iron or magnesium, and folic acid (Ariyantini et al., 2017).

Research conducted by Ade Febriani DKK (2020) The results of this study were respondents whose milk production was smooth, namely 14 people (46.7%), breastfeeding a little smoothly 11 people (36.3%), and breastfeeding very smoothly 6 people (20%). The increase in milk production after being given soybeans was 24 people (80%) with very good breastfeeding category and 6 people breastfeeding smoothly (20%). The results of this test showed a value of $p=0.000$ ($p<0.05$). Based on the results of the study it was concluded that there was an effect of soybean consumption in breastfeeding mothers on production (Ade Febriani, Nova Yulita, 2020).

Research conducted by Rani Safitri (2018), Soybean vegetables (*Glycine max* L.Merill), known as Edamame, have the potential for nutrition for breastfeeding mothers, because they contain phytosterol compounds which function to increase and facilitate milk production (lactagogum effect). The purpose of this study was to determine the effect of giving edamame (*Glycine max* L.Merill) on milk production in primipara puerperal mothers at Dillah Sobirin Midwife Practice (PMB), Pakis District, Malang Regency. The research method used experiments with a one group pretest posttest approach. The research sample was primipara postnatal mothers on days 3-7 as many as 20 respondents. Sampling was taken using purposive sampling. Provision of edamame as much as 65 grams / day for 5 days (Rani Safitri, 2018).

Interviews with clinical midwives said that those who gave exclusive breastfeeding to babies were very rare because there were 15% of the milk that did not come out at all, there were 55% less milk production, and there were also 5% of the mother's nipples. Only 25% give exclusive breastfeeding. ASI whose production is less presentation than in 2019 is only 55% of the 100% target.

Based on the results of the initial survey, the researchers conducted interviews with 10 postpartum mothers. 6 of them postpartum mothers experienced a lack of milk production and 4 postpartum mothers did not experience a lack of milk production. Postpartum mothers stated that they did not know that the benefits of edamame beans could increase milk production. And there are reasons for researchers taking edamame beans as additional food for postpartum mothers as we know that in 100 grams of edamame beans has a fairly high nutritional value (Ariyantini et al., 2017), and easy to obtain in the research area. Then there is a culture in the local area that edamame beans or yellow beans can increase breast milk by postpartum mothers.

From the results of these data the authors are interested in conducting research on how "The Effect of Giving Edamame Beans on Increasing Breast Milk Production in Postpartum Mothers".

RESEARCH METHOD

The design used is a Quasy Experiment Design using the one Group Pretest-Posttest Design. This research was conducted in the working area of the Ardianti Midwife Clinic, which was conducted from April to November 2020. The population in this study was postpartum mothers on days 2-7 in the working area of the clinic, consisting of 10 people. The sample in this study was taken by purposive sampling, which was based on certain considerations made by the researchers themselves by identifying all the characteristics of the population. The sample in this study, the researchers took a sample of postpartum mothers on days 2-7 who were experiencing a lack of milk production, totaling 6 people from September to November in the working area of the clinic. Data collection instrument by conducting interviews with postpartum mothers. The data analysis used was univariate and bivariate analysis using the paired T-test, which is a parametric test (normal data distribution) which is used to find the relationship between two or more variables if the data is in the form of a numeric scale, but if the data distribution is not normal, the Wilcoxon test can be used. Then the data is presented in the form of tabulation of frequency distribution and cross tabulation.

RESULTS AND DISCUSSIONS

Results

Respondent Characteristics; Based on Table 1 above it is known that from 6 respondents the majority of respondents in age group 20-35 years namely 3 respondents (50%) and 2 respondents (33.3%) in the age group <20 years and a minority at the age of >35 years, namely 1 person (16.7%).

From table 1. above it is known that of the 6 respondents it can be seen that the majority of respondents were primiparous mothers as many as 4 respondents (66.7%), and a minority of multiparous mothers were as many as 2 respondents (33.2%).

Age	F	%
<20	2	33.3
20-35	3	50.0
>35	1	16.7
Parity		
Primipara	4	66.7
Multipara	2	33.3

Univariate Analysis; Based on table 2 it can be seen that of the 6 respondents in the results before giving edamame beans, all respondents did not experience an increase in milk production and after giving edamame beans the majority of respondents experienced an increase in milk production, namely as many as 5 respondents (83.3%).

Table 2. Distribution frequency of pre test and post test provision of edamame beans on breast milk production in postpartum mothers

Milk production	Pre-test		Post-test	
	f	%	f	%
Not increased = (<25-50ml/time)	6	100.0	1	16.7
Increase = (>25-50ml/time)	0	0	5	83.3
Total	6	100	6	100

Bivariate Analysis; Based on Table 3 above shows that all variables have $p < 0.05$. This means that all variables in this study are not normally distributed. So the test used in this study is the

Wilcoxon test. The decision to use the Wilcoxon test is that H_0 is accepted if the significance value (p) is > 0.05 , meaning there is no difference between pretest and posttest giving edamame beans to milk production in postpartum mothers at the clinic. H_0 is rejected if the significance value (p) is < 0.05 , meaning there is a difference between pretest and posttest giving edamame beans to milk production in postpartum mothers at the clinic.

Table 3. Summary of data normality test results

No	Variable	Observation	P value
1	Giving Edamame Beans		0.000
2	Milk production	Pretest	0.000
		Posttest	0.000

Change Analysis Milk Production in Postpartum Mothers in Clinics.

To find out if there is a change in milk production in postpartum mothers, then a bivariate statistical analysis was performed using SPSS. The hypothesis test used was Test *Wilcoxon*, because the data studied has a distribution of data that is not normal.

Results pretest and posttest Wilcoxon test analysis milk production in postpartum mothers can be seen in the following table:

Table 4. Wilcoxon test results

Variable	N	Z	P-values
pre-post test	6	-2,236	0.025

Based on table 4.5 above using the test *Wilcoxon* it can be seen that in post partum mothers it can be concluded that giving edamame beans pre-test and post-test with a sample of 6 respondents has a Z value of -2,236. Results in the table it is known that the value P-value (0.025) $< \alpha 0.05$ then H_0 is rejected H_a is accepted, which means that there is an effect of pre-test and post-test on giving edamame beans to milk production in postpartum mothers.

Discussion

Frequency Distribution of Increased Milk Production in Postpartum Mothers Before Consuming Edamame Beans

Based on the results of this study it can be seen the frequency distribution increase in milk production in postpartum mothers before consuming edamame beans in the work area of the Midwife Ardianti Clinic, Simeulue Timur District, Aceh Province in 2020 was 6 respondents (100%) there was no increase in milk production where all respondents did not experience an increase in milk production.

This research is also in line with the research conducted by Ade Febriani et al (2020) "influence Provision of edamame beans to increase milk production. The results of this study were respondents whose milk production was smooth, namely 14 people (46.7%), breastfeeding a little fluent 11 people (36.3%), and breastfeeding very smoothly 6 people (20%). The increase in milk production after being given soybeans was 24 people (80%) with very good breastfeeding category and 6 people breastfeeding smoothly (20%). The results of this test showed a value of $p=0.000$ ($p<0.05$).

The process of lactation or breastfeeding is the process of forming breast milk which involves the hormone prolactin and the hormone oxytocin. The hormone prolactin during pregnancy will increase but breast milk has not come out because it is still inhibited by the high estrogen hormone. And at the time of delivery the hormones estrogen and progesterone will decrease and the hormone prolactin will be more dominant so that breast milk secretion occurs.

Nutritional intake in nursing mothers is very closely related to milk production. Breast milk is clearly needed by babies so that the baby's growth and development is normal and good. The

calorie needs of breastfeeding mothers must be proportional. Caloric needs during breastfeeding must be equivalent to the amount of mother's milk produced. The number of calories must also be higher during breastfeeding than during pregnancy.

According to the researchers' assumption that to increase the amount of milk production in postpartum mothers, it is necessary to consume edamame beans. Because edamame beans contain the most high-quality complete protein compared to other plants, it also contains the amino acids the body needs in perfect composition. The nutritional value of edamame is equivalent to cow's milk and higher than that of beef.

Frequency Distribution of Increased Breast Milk Production in Postpartum Mothers After Consuming Edamame Beans

Based on the results of this study, it can be seen that the frequency distribution of increased milk production in postpartum mothers before consuming edamame beans in the clinical work area is that the majority experienced an increase in milk production where out of 6 respondents there were 5 respondents (83.3%) who experienced an increase in milk production and 1 respondent (16.7%) did not experience an increase in milk production. 5 Respondents said there was an increase in breast milk, where the edamame beans did not react immediately on the first day, so pumping was done 2 times before giving edamame beans and after giving edamame beans. Where on day 8 pumping was carried out, the results of the beans were seen in breast milk where the milk increased. Where the edamame plant is a local food ingredient that has the potential for nutrition for breastfeeding mothers,

The results of this study are in line with research conducted by Ade Febriani DKK (2020). The results of this test showed a value of $p = 0.000$ ($p < 0.05$). According to the researcher's assumption, giving edamame beans is very effective in increasing breast milk production.

Effects Before and After Consuming Edamame Beans on Increasing Breast Milk Production in Postpartum Mothers

Based on Wilcoxon test results pretest and posttest values giving edamame beans on milk production in postpartum mothers, the result is that the value is 0.025. This shows that the p-value is less than 0.05. So it can be concluded that there is an influence giving edamame beans to breast milk production which has been done in postpartum mothers. This meaningful result shows that at postpartum mother experienced an increase in milk production.

The results of this study are in line with research conducted by Rani Safitri (2018) "influence Provision of edamame beans to increase milk production. This type of research is an experiment with a one group pretest posttest design. The application of consuming edamame beans was carried out by 20 respondents as much as 65gr/day for 5 days in the morning. Bivariate analysis used the Wilcoxon statistical test. The results of the study obtained p value = 0.009, thus H_0 was rejected and H_a was accepted, which means that there was an effect of giving Edamame on milk production in postpartum mothers.

This research is also in line with the research conducted by Wiwit Fetrisia et al (2020) The results show. (p-value 0.000), it can be concluded that there is an effect of giving soy (edamame) on the volume of breast milk in postpartum mothers. Soybean vegetables (edamame) are local food ingredients that have the potential for nutrition for breastfeeding mothers, because they contain phytosterol compounds which function to increase and facilitate milk production.

Nutritional intake in nursing mothers is very closely related to milk production. Breast milk is clearly needed by babies so that the baby's growth and development is normal and good. The calorie needs of breastfeeding mothers must be proportional. Caloric needs during breastfeeding must be equivalent to the amount of breast milk produced. The number of calories must also be higher during breastfeeding than during pregnancy. The average calorie content of breast milk produced by a mother with good nutritional status is 70 cal/100 ml. Meanwhile, the calories needed

are 85 cal for every 100 ml produced.

Edamame contains the most high-quality complete protein compared to other plants, it also contains the amino acids the body needs in perfect composition. The nutritional value of edamame is equivalent to cow's milk and higher than that of beef.

In addition to the ingredients above, edamame contains vitamins B1, B2, B3, B5, B6 and K. The iron content in edamame is almost equivalent to the iron content in 4 ounces of grilled chicken breast. Edamame also contains protein, organic compounds such as folic acid, manganese, isoflavone, beta carotene and sucrose.

According to the researcher's assumption that giving edamame beans is effective in increasing the amount of milk production. This is evidenced by the results of research conducted by the researchers themselves. In this study the researchers found that there was 1 postpartum mother who did not experience an increase in the amount of milk production even though she had been given edamame beans. After the researchers conducted interviews with the respondents, the results showed that the respondents did not consume edamame beans regularly like the other respondents. From this the researchers found that consuming edamame beans regularly also affected the effectiveness of increasing breast milk production.

This is evidenced by the results that the researchers obtained, where the number of respondents was 6 postpartum mothers, 5 postpartum mothers including increased milk production and only 1 postpartum mother who did not experience an increase in breast milk production due to the forgetting factor that there were several times the mother did not eat edamame beans. The increase in breast milk production is caused by the regularity of consuming edamame beans.

According to researchers, consuming edamame beans is very effective as an alternative for postpartum mothers who want to increase their little milk production, so that by consuming edamame beans the amount of milk production will increase. Mothers can breastfeed their babies well, and edamame beans can also be consumed and processed so that they can be eaten by postpartum mothers every day.

CONCLUSION

Based on the results and discussion of the study, it can be concluded that there are differences before and after consuming edamame beans on increasing milk production in postpartum mothers. This research is expected to be a consultation material or referral material to patients at the clinic to increase milk production.

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