

Research Article

Effect of Soy Milk Consumption on Postpartum Mothers on Breast Milk (ASI) Production in Rejang Lebong Regency, Bengkulu Province

Wahyuni Sulia Nengsih^{*1}, Muh. Tahir Abdullah¹, Healthy Hidayanty², Apik Indarty Moedjiono¹, Stang¹ and Nurhaedar Jafar²

¹Department of Biostatistics, Faculty of Public Health, Hasanuddin University, Indonesia

²Department of Nutrition, Faculty of Public Health, Hasanuddin University, Indonesia

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Abstract: Nutritious food is needed to increase milk production, one of which is by consuming nutritious food, which is processed beans, especially soybeans. This study aims to determine the effect of soy milk on breast milk production in postpartum mothers in the Rejang Lebong Regency, Bengkulu Province. The method in this study is quantitative by using a quasi-experimental design method (non-equivalent control group approach). The total number of samples is 88 samples in which 44 treatment groups and 44 control groups. The results showed there was no effect of giving soy milk to postpartum mothers (with a value of $p > 0.05$) on the frequency of breastfeeding infants. There was no effect of giving soy milk to postpartum mothers (with a value of $p > 0.05$) on the sleep time of the baby after breastfeeding. There was no effect of giving soy milk to postpartum mothers (with a value of $p > 0.05$) on the frequency of urination of infants. There is an effect of giving soy milk to postpartum mothers (with a value of $p < 0.05$) on the increase in the baby's weight. There was no effect of giving soy milk to postpartum mothers (with a value of $p > 0.05$) on milk production.

Keywords: Soybean Milk, Postpartum Mother, Breast Milk (ASI).

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INTRODUCTION

ASI (breast milk) production can increase or decrease depending on the stimulation of the breast glands, as for one of the factors that can affect milk production, among others, the nutritional status of the mother (Maryunani, 2015). One of the causes of breast milk production is not optimal due to the nutritional status of the mother or the mother's nutritional intake that is not good, an unbalanced diet, and also consuming less regular foods causes inadequate milk production to be given to babies (Wahyuni *et al.*, 2012). The process of breastfeeding production is also influenced by several factors including maternal nutrition, breast care, baby sucking factors, socio-cultural factors, breastfeeding factors, and psychological factors (Kamariyah, 2014).

The success of exclusively breastfeeding depends on mothers who are breastfeeding should get additional food to avoid setbacks in the manufacture and production of breast milk (Flacking *et al.*, 2006; Avery *et al.*, 2009). Food consumed by the mother indirectly affects the quality, and the amount of milk produced. Mothers who breastfeed do not need to

overeat, but enough to maintain a balanced nutritional consumption (Imasrani *et al.*, 2016).

One alternative to increase milk production is to consume nutritious foods, one of which is processed beans, especially soybeans. This is in line with research from (Simanjuntak & Sudaryati, 2011) shows that mothers who during pregnancy up to the birth process routinely consume nuts, the volume of milk that comes out when breastfeeding is twice as thick and thick as women who from pregnancy to delivery do not routinely consume nuts. This is in line with theory (Dillah *et al.*, 2006) mentioned the content of legumes can help the process of fetal growth in pregnant women and be able to optimize the expenditure of milk and color sensitivity of breast milk in nursing mothers.

Soybeans have a high nutritional value. The main value in soybeans is protein, where soybeans contain high protein (Rao *et al.*, 2002). As many as 35% even in superior varieties the protein content can reach 40-43%. In addition to protein, soy also contains various important minerals such as calcium, phosphorus, iron, zinc, potassium, and various vitamins such as vitamin A, niacin, vitamin B6, folic acid, pantothenic acid, and so forth.

Soy milk is one of the processed soybeans. Soy milk has many nutritional contents and benefits. Soy milk contains fat (2 gr), carbohydrates (2.9 gr), calcium (15 mg), phosphorus (49 mg), iron (1.2 mg), provitamin A, vitamin B complex (except B12) and water (90.8 gr) (Astawan, 2004).

Soy milk is a nutritious beverage, especially its protein content (3.6 gr). Soy milk protein has an amino acid composition similar to cow's milk so that it can be used as a substitute for cow's milk for those who are allergic (lactose intolerance) or for those who don't like cow's milk. Besides protein, soy milk also contains lactogogum. Lactogogum which consists of alkaloids, polyphenols, steroids, flavonoids.

Research conducted by (Puspitasari, 2018) shows that (42.5%) of respondents who have breastfeeding problems are not yet fluent. Before being given the intervention as many as 14 respondents (35%) complained that the ASI was a bit smoother. Increased milk production after being given soy milk by 35 respondents (77.5%) with the category of very smooth milk and 5 respondents (12.5%) smooth milk. Where the results of the study showed a positive effect after the mother consumed soy milk regularly during the day. In line with research (Sianturi, 2015) shows that regular and regular consumption of soy milk in nursing mothers can increase milk production. Postpartum mothers were given 250 ml of soy milk for 29 days and consumed in the afternoon regularly. Based on this description, this

study aims to determine the effect of soy milk on breast milk production in postpartum mothers in the Rejang Lebong Regency, Bengkulu Province.

METHODS

This type of research is quantitative research. The study used a quasi-experimental design method using a non equivalent control group approach. The population in this study were breastfeeding mothers who had children aged 0-1 days at the Perumnas Health Center and the Curup Health Center in Rejang Lebong Regency in 2019. The population in 2018 mothers who breastfed their babies 0-1 days at the Perumnas and Curup Puskesmas had 600 mothers. The number of samples for each group in this study was 44. Researchers divided into two groups namely the treatment group and the control group with a ratio of 1: 1 to reduce research bias. So, the total sample is 88 samples in which 44 treatment groups and 44 control groups.

The research instrument used in this study was the respondent's identity sheet, checklist sheet and Semi FFQ (Food Frequency Questionnaire). Data collection techniques in this study are primary data taken directly from respondents (breastfeeding mothers) in the Work Area of the Perumnas Health Center and Curup Health Center in Rejang Lebong Regency. Data analysis was performed through univariate analysis, bivariate analysis, and multivariate analysis.

RESULTS

Table 1. Distribution of Characteristics of Postpartum Mother

Variable	Intervention Group		Control Group		Nilai P
	n	%	N	%	
Mother's age					
< 20 yo	1	2.3	2	4.5	0.449
20-35 yo	34	77.3	37	84.1	
> 35 yo	9	20.5	5	11.4	
Mother's education					
Low	11	25	8	18.2	0.604
High	33	75	36	81.8	
Gravida					
Primipara	15	34.1	13	29.5	0.819
Multipara	29	65.9	31	70.5	
Gestational age (Weeks)					
37	7	15.9	4	9.1	0.545
38	9	20.5	15	34.1	
39	13	29.5	10	22.7	
40	13	29.5	14	31.8	
41	2	4.5	1	2.3	
Early Breastfeeding Initiation (IMD)					
Ya	36	81.8	32	72.7	0.445
Tidak	8	18.2	12	27.3	
Birth Situation of the Baby					
Sehat	43	97.7	44	100	1.000
Tidak Sehat (Asfiksia)	1	2.3	0	0	
Baby's Gender					
Male	18	40.9	29	65.9	0.033
Female	26	59.1	15	34.1	

Source: Primary Data 2019

Based on table 1 it is known that the distribution of postpartum mothers by age, almost all respondents were aged 20-35 years, namely 34 respondents (77.3%) in the intervention group. And almost all respondents in the control group were at the age of 20-35 years as many as 35 respondents (79.5%). Chi-square test results obtained p-value (0.449) > 0.05, meaning that there is no difference in the age of postpartum mothers in the intervention group and the control group. Chi-square test results showed a p-value (0.604) > 0.05, meaning that there was no difference in postpartum maternal education in the intervention group and the control group. Chi-square test results in p-value (0.819) > 0.05, meaning that there is no difference in postpartum maternal gravida in the intervention group

and the control group. Chi-square test results obtained p-value (0.545) > 0.05, meaning that there is no difference in gestational age at delivery in postpartum mothers in the intervention group and the control group. Chi-square test results showed a p-value (0.445) > 0.05, meaning that there was no difference in postpartum mothers who performed IMD in the intervention group and the control group. Chi-square test results showed p-value (1,000) > 0.05, meaning that there was no difference in the condition of the baby at birth in the postpartum mother of the intervention group and the control group. Chi-square statistical test results showed that the p-value (0.033) < 0.05, meaning that there were differences in the sex of the baby in the postpartum mother of the intervention group and the control group.

Table 2. Effects of Soymilk Consumption on Frequency of Breastfeeding Babies, Sleep Time of Babies After Breastfeeding, and Frequency of Urination of Babies in Rejang Lebong District, Bengkulu Province

Variable	Intervention Group				Control Group				P-value
	Before n	%	After N	%	Before N	%	After n	%	
Frequency of Breastfeeding Babies									
Good	37	84.1	42	95.5	29	65.9	42	95.5	1.000
Less good	7	15.9	2	4.5	15	34.1	2	4.5	
Baby Sleep Time After Breastfeeding									
Good	26	59.1	37	84.1	38	86.4	31	70.5	0.203
Less Good	18	40.9	7	15.9	6	13.6	13	29.5	
Frequency of urinating infants									
Good	30	68.2	43	97.7	21	47.7	42	95.5	1.000
Less Good	14	31.8	1	2.3	23	52.3	2	4.5	

Source: Primary Data 2019

Test: Chi- Square

Based on table 2 it is known that in the intervention group after being given intervention for 14 days, almost all respondents (95.5%) experienced an increase in the frequency of breastfeeding infants into good categories. And in the control group, almost all respondents (95.5%) also experienced an increase in the frequency of breastfeeding babies into a good category. Statistical test results show the value of p (1,000) > 0.05, meaning that Ho is accepted. So it can be concluded that there is no effect of soy milk consumption on

postpartum mothers on the frequency of breastfeeding infants. Statistical test results show the value of p (0.203), meaning the value of p > 0.05 means that Ho accepts. So it can be concluded that there is no effect of soy milk consumption on postpartum mothers on the baby's sleep time after breastfeeding. Statistical test results show the value of p (1,000) > 0.05, meaning that Ho is accepted. So that there is no effect of soy milk consumption on postpartum mothers on the frequency of urinating infants.

Table 3. Effect of Soymilk Consumption on Average Weight of Infants in Rejang Lebong Regency Bengkulu Province

Group	N	Mean	SD	CI 95%		Nilai P
				Lower	Upper	
Δ Intervention	44	328.41	226.294	-73.036	104.855	0.723
Δ Control	44	312.5	192.029	-73.070	104.888	

Source: Primary Data 2019

Test: Paired Sampels Test

Based on table 3 it can be seen that the average difference in infant body weight in the intervention group after being given the intervention is 328.41 ± 226.294 grams and in the control group 312.5 ± 192.029 grams. Where the value of the statistical test

results showed the value of p (0.23) > 0.05, meaning that Ho was accepted, meaning that there was no effect of soy milk consumption in postpartum mothers to increase infant weight in Rejang Lebong Regency, Bengkulu Province.

Table 4. Effect of Soybean Milk Consumption on Breast Milk Production in Rejang Lebong Regency, Bengkulu Province

Variable	Intervention Group		Control Group		P-value
	n	%	n	%	
Breast milk production					
Good	40	90.9	33	75.0	0.089
Less Good	4	9.1	11	25.0	

Source: Primary Data 2019

Test: Chi- Square

Based on table 4, it can be seen that milk production with a good category in the intervention group was 40 respondents (90.9%) and in the poor category only 4 respondents (9.1%). Whereas in the control group were 33 respondents (75%) who were in the good milk production category and only 11

respondents (25%) were in the poor category. Statistical test results show the value of $p (0.089) > 0.05$, meaning that H_0 is accepted. So it can be concluded that there is no effect of soy milk consumption on postpartum mothers on breast milk production in Rejang Lebong Regency, Bengkulu Province.

Table 5. Effect of Age, Education, Gravida, IMD, Baby Gender on Breast Milk Production in Rejang Lebong Regency Bengkulu Province

Variable	Breast Milk Production				p-value
	Good		Less Good		
	n	%	n	%	
Mother's Age					
Risky	13	76.5	4	23.5	0.477
Not risky	60	84.5	11	15.5	
Mother's Education					
High	14	73.7	5	26.3	0.300
Low	59	85.5	10	14.5	
Gravida					
Primipara	22	78.6	6	21.4	0.545
Multipara	51	85	9	15	
IMD					
Yes	59	86.8	9	13.2	0.097
No	14	70	6	30	
Baby's Gender					
Male	38	80.9	9	19.1	0.781
Female	35	85.4	6	14.6	

Source: Primary Data 2019

Test: Chi-Square

Based on table 5. it can be seen in the age group of mothers at risk as many as 13 respondents (76.5%) with good milk production, in the age group of mothers not at risk as many as 60 respondents (84.5%) with good milk production. Statistical test results showed p -value $(0.477) > 0.05$, meaning that there was no effect of maternal age on the production of breast milk. Statistical test results show that the value of $p (0.300) > 0.05$, meaning that there is no effect of maternal

education on the production of breast milk. Statistical test results show the value of $p (0.545) > 0.05$, meaning that there is no gravida effect on milk production. Statistical test results show p -value $(0.097) > 0.05$, meaning that there is no effect of IMD on milk production. Statistical test results showed a p -value $(0.781) > 0.05$, meaning that there was no effect of the sex of the baby on breast milk production.

Table 6. Effects of Frequency of Breastfeeding, Sleep Time of Babies After Breastfeeding, Frequency of Urinating Infants, and Increased Weight of Babies on Breast Milk Production in Rejang Lebong Regency Bengkulu Province

Variable	Produksi ASI				p-value
	Good		Less Good		
	N	%	n	%	
Frequency of Breastfeeding Babies					
Well	73	86.9	11	13.1	0.001
Not good	0	0	4	100	
Baby Sleep Time After Breastfeeding					
Well	66	97.1	2	2.9	0.000
Not good	7	35	13	65	
Frequency of urinating infants					
Well	72	84.7	13	15.3	0.074
Not good	1	33.3	2	66.7	

Increased Baby Weight					
Well	57	95	3	5	0.000
Not good	16	57.1	12	42.9	

Source: Primary Data 2019

Test: Chi-Square

Based on table 6 it is known that the frequency of breastfeeding a good baby there are 73 respondents (86.9%) with good milk production. And the frequency of breastfeeding babies is not good there are 4 respondents (100%) with poor milk production. Chi-square test results showed a p-value (0.001) <0.05, meaning that there was an influence of the frequency of breastfeeding on milk production.

Chi-square statistical test results obtained p-value (0,000) <0.05, meaning that there is an influence of the baby's sleep time after breastfeeding with milk production. Chi-square statistical test results showed a p-value (0.074) > 0.05, meaning that there was no effect of the frequency of urinating infants on breast milk production. Statistical test results show the value of p (0,000) <0.05, meaning that there is an effect of increasing infant weight on breast milk production.

Table 7. Effects of Consumption of Other Food Sources on Breast Milk Production in Rejang Lebong District, Bengkulu Province

Variable	Breast Milk Production		Less Good n	%	p-value
	Good N	%			
Beef					
Weekly	16	88.9	2	11.1	0.726
Monthly	57	81.4	13	18.6	
Chicken meat					
Daily	3	100	0	0	0.303
Weekly	64	84.2	12	15.8	
Monthly	6	66.7	3	33.3	
Fish					
Daily	0	0	1	100	0.058
Weekly	69	83.1	14	16.9	
Monthly	4	100	0	0	
Egg					
Daily	4	57.1	3	42.9	0.158
Weekly	65	85.5	11	14.5	
Monthly	4	80	1	20	
Meatballs					
Weekly	5	83.3	1	16.7	1.000
Monthly	68	82.9	14	17.1	
Tofu					
Daily	41	82	9	18	1.000
Weekly	32	84.2	6	15.8	
Tempe (fermented soybean cake)					
Daily	36	80	9	20	0.725
Weekly	35	85.4	6	14.6	
Monthly	1	100	0	0	
Nuts					
Weekly	34	85	6	15	0.856
Monthly	39	81.3	9	18.7	
Katuk Leaves (<i>Sauropus androgynus</i>)					
Weekly	29	85.3	5	14.7	0.863
Monthly	44	81.5	10	18.5	
Banana Heart (<i>banana blossom</i>)					
Daily	0	0	1	100	0.039
Weekly	16	94.1	1	5.9	
Monthly	57	81.4	13	18.6	
Broccoli					
Weekly	23	85.2	4	14.8	1.000
Monthly	50	82	11	18	
Spinach					
Weekly	70	83.3	14	16.7	0.533
Monthly	3	75	1	25	

Source: Primary Data 2019

Test: Chi-Square

Based on table 7, it was known that postpartum mothers had a weekly beef consumption of 16 respondents (88.9%) with good milk production and monthly beef consumption of 57 respondents (81.4%) with good milk production. Chi-square statistical test results showed a p-value (0.726) > 0.05, meaning that there was no effect of beef consumption in postpartum mothers with breast milk production. Statistical test results showed p-value (0.303) > 0.05, meaning that there was no effect of chicken meat consumption on postpartum mothers on breast milk production. Statistical test results obtained p-value (0.058) > 0.05, meaning that there is no effect of fish consumption on postpartum mothers on breast milk production. Statistical test results showed p-value (0.158) > 0.05, meaning that there was no effect of egg consumption on postpartum mothers on breast milk production. Statistical test results obtained p-value (1,000) > 0.05, meaning that there is no effect of meatball consumption in postpartum mothers on breast milk production. Statistical test results show the value of p (1,000) > 0.05, meaning that there is no effect of tofu consumption on postpartum mothers on breast milk production. Statistical test results showed p-value (0.725) > 0.05, meaning that there was no effect of tempe consumption on postpartum mothers on breast milk production. Statistical test results showed the value of p (0.856) > 0.05, meaning that there was no effect of consumption of nuts on postpartum mothers on breast milk production.

Statistical test results obtained p-value (0.863) > 0.05, meaning that there was no effect of katuk leaf consumption on postpartum mothers on breast milk production. Statistical test results obtained p-value (0.039) < 0.05, meaning that there is an influence of consumption of banana hearts in postpartum mothers on breast milk production. Statistical test results show p (1,000) > 0.05, meaning that there is no effect of broccoli consumption on breast milk production. Statistical test results showed the value of p (0.533) > 0.05, meaning that there was no effect of spinach consumption on postpartum mothers on breast milk production.

DISCUSSION

One of the factors that influence a baby's weight is mother's nutrition. The nutritional needs of breastfeeding mothers increase during breastfeeding to support the growth and development of infants, especially for the lactation process.

The results of this study did not influence the consumption of soy milk in postpartum mothers to increase infant weight in Rejang Lebong Regency, Bengkulu Province. The results of this study are not in line with Suksesty (2017) where the increase in infant body weight on the 15th day in the intervention group was higher than the control group obtained p-value

<0.05. And not in line with research (Sianturi, 2015), where regular and regular consumption of soy milk in nursing mothers can increase milk production as measured by the baby's body weight. Statistical test results obtained p-value = 0.002 so it can be concluded that there is a difference in the production of breast milk in the control group and the intervention group on infant weight after 1 month.

Not in line with research (Suryani & Astuti, 2013) showed that there was a significant increase in body weight with a p-value (0.001) where these results showed a difference in body weight at 2 times the measurement of oxytocin massage intervention. Also not in line with research (Aliyanto & Rosmadewi, 2019) that there is effectiveness in the administration of Moringa leaf vegetables compared to the provision of young papaya vegetables on breast milk production based on the baby's weight gain. Moringa leaf vegetables and young papaya vegetables and soy milk both contain phytosterols (lactogogum effect). While oxytocin massage is a number of ways to expedite milk production.

The results showed that the production of breast milk with a good category in the intervention group were 40 respondents (90.9%). While in the control group were 33 respondents (75%) who were included in the good milk production category. Statistical test results show the value of p (0.089) > 0.05, meaning that H_0 is accepted. So it can be concluded that there is no effect of soy milk consumption on postpartum mothers on breast milk production in Rejang Lebong Regency, Bengkulu Province.

The results of this study are not in line with the study (Puspitasari, 2018), where the provision of soy milk has a positive effect on increasing milk production in postpartum mothers. Where the results of the bivariate analysis show the value of p = 0,000 (p < 0.05). Not in line with research (Sianturi, 2015), the results showed that regular and regular consumption of soy milk in breastfeeding mothers can increase milk production. This is consistent with the theory (Dillah *et al.*, 2006) which states that the content of legumes can help the process of fetal growth in pregnant women and is able to optimize the expenditure of milk and the color density of breast milk in nursing mothers.

Isoflavones with higher levels in infants are found in mothers who regularly consume tofu and soy milk. Isoflavones in processed soybean are believed to increase milk production and reduce the risk of breast cancer (Franke *et al.*, 2006).

Based on the results of the research and theory above, it can be concluded that soy milk does not affect the production of postpartum breast milk. This milk production can be influenced by other factors, one of

which is the intake of food consumed by the mother and other factors.

Soy milk can be used as one to meet the nutritional needs of nursing mothers because during breastfeeding, mothers need nutrients, especially protein to help metabolize the mother and produce milk. So it is expected to be able to support the success of government programs in increasing coverage of exclusive breastfeeding.

CONCLUSION

There was no effect of giving soy milk to postpartum mothers (with a value of $p > 0.05$) on the frequency of breastfeeding babies in Rejang Lebong Regency, Bengkulu Province. There was no effect of giving soy milk to postpartum mothers (with a value of $p > 0.05$) on the sleep time of infants after breastfeeding in Rejang Lebong Regency, Bengkulu Province. There was no effect of giving soy milk to postpartum mothers (with a value of $p > 0.05$) on the frequency of urinating infants in Rejang Lebong Regency, Bengkulu Province. There is an effect of giving soy milk to postpartum mothers (with a value of $p < 0.05$) on the increase in infant weight in Rejang Lebong Regency Bengkulu Province. There was no effect of giving soy milk to postpartum mothers (with a value of $p > 0.05$) on the production of breast milk in Rejang Lebong Regency, Bengkulu Province.

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