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The Effect of Feeding Papaya Vegetables on Breast Milk Production in Breastfeeding Mothers

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ABSTRACT

Breast milk is a fatty emulsion in a protein, lactose and organic that is secreted by the mammary glands of mother, as the main food baby. The purpose of this study is to determine the effect of vegetables from papaya fruit to milk production in breastfeeding mothers. The research design is two group post test only control group design. The data were analyzed by univariate analysis, which treated the results of data in percentage form and bivariate analysis using Mann-Whitney test. The result obtained from univariate test analysis were most of the respondents (75.0%) with good milk production in treatment group and half of respondents (50.0%) with good milk production in the control group the Mann-Whitney test is $p = 0.010 < \alpha = 0.05$. The conclusion of this research is there is influence of papaya fruits vegetation on breastfeeding production in breastfeeding mothers.

Keywords: breast milk, milk production, papaya fruit

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BACKGROUND

Mother's Milk (ASI) is the best natural nutrition for babies because it contains the energy and substances needed for the first six months of a baby's life. But there are times when a mother has problems in breastfeeding. The main obstacle is because milk production is not smooth (Saleha, 2009). Breastfeeding is the best source of nutrition with a bioactive composition that can improve the health status of mothers and children, this is in line with the goals of SDGs number 2 and 3, namely eradicating hunger, health and welfare problems. Babies who are breastfed with the gold standard of baby food are proven to have a higher IQ and better performance so that they have a decent job and income, so of course it is sustainable with the goal of SDGs number 4, which is to ensure equal distribution of quality education. Exclusive breastfeeding can help equal rights and obligations of men and women in child care in accordance with the goal of SDGs 5, namely gender equality (Altahira, 2019; Dewey et al., 2004) 2007 Indonesian Health Demographic Survey showed that less than one in three infants under the age of six months were exclusively breastfed. Therefore, most babies in Indonesia do not get the benefits of breastfeeding related to nutrition and protection against disease (Unicef, 2012). The optimal frequency range is between 8 and 12 times daily. While it's easy to divide 24 hours into 8 to 12 feedings, and come up with an approximate schedule, this is not how most babies eat. Many babies in the span of a few hours suckle several times, sleep for how many hours, and wake up to feed again. Mothers are encouraged to breastfeed in response to the baby's cues, and stop breastfeeding if the baby seems full.

The results of the 2010 Basic Health Research show that breastfeeding in Indonesia is currently apprehensive, the percentage of infants who are exclusively breastfed for up to 6 months is only 15.3%. This is because public awareness in encouraging increased breastfeeding is still relatively low (Kemenkes, 2014). According to the 2013 Indonesian Health Profile, the percentage of exclusive breastfeeding in Indonesia in 2013 was 54.3% (Kemenkes RI, 2014). The achievement of exclusive breastfeeding in Indonesia has not yet reached the expected figure of 80%. Based on the 2012 IDHS report, the achievement of exclusive breastfeeding was 42%. The 2015 East Nusa Tenggara Province Health Profile said that the coverage of exclusive breastfeeding was 74% and still did not meet the 80% target. From the survey data of the Ende District Health Office in 2018, there were 3,818 babies, the number of babies who were exclusively breastfed was 2,462 (64.5%). The Puskesmas with the highest breastfeeding rate was Welamosa Health Center at 91.3%, while the Rukun Lima Health Center had the lowest breastfeeding at 57.4% (Pesak et al., 2021; WHO and UNICEF, 2003).

The initial survey conducted by researchers at the Rukun Lima Health Center, the data found that the number of babies in the area from January to December 2018 was 617, 545 babies were examined, the number of babies who were exclusively breastfed (E6) was 195 babies (35.77%) of the 80% target. Data for August 2019 the number of babies examined was 40 babies, 17 babies were exclusively breastfed (4.25%). And the results of interviews conducted on 15 breastfeeding mothers whose babies were aged between 0-6 months, it was found that 9 mothers still only gave breast milk to their babies and as many as 6 mothers had given additional food, namely formula milk to their babies, they said their breast milk was only a little not enough for the baby, so the child is always fussy, his sleep is also not restful, the mother also said there were no other factors such as nipples getting in, breast milk dams or other factors. Based on the data obtained in the initial survey, it was found that there was a problem with breast milk production at the Rukun Lima Health Center where it was found that some babies had received additional food in the form of formula milk before the baby was 6 months old due to insufficient mother's milk production. Although these benefits of breastfeeding have been documented worldwide, only 39% of children under six months were exclusively breastfed in 2012. This global figure has only increased very slowly over the last few decades, in part because of the low rates of breastfeeding in some countries. large countries, and the lack of support for breastfeeding mothers from the surrounding environment (Chakrabarti & Chakrabarti, 2017; Dewey et al., 2004).

The advantages of breast milk as infant nutrition have been widely studied and proven by researchers so that the World Health Organization (WHO) recommends exclusive breastfeeding for infants until the age of 6 months and then continued with complementary foods until the baby is 2 years old or older. However, the rate of exclusive breastfeeding in Indonesia according to the Indonesian Demographic and Health Survey in 2007 only reached 32% and also, babies born in health facilities tend to be given formula milk (Chakrabarti & Chakrabarti, 2017). The cause of reduced milk production is due to several factors, namely maternal food, fatigue (occurring mainly due to lack of rest can be one

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of the causes of reduced milk production), health (if the mother's body is not healthy, the body is not fit or suffers from lack of blood or anemia can also cause reduced milk production). Breast milk, rarely drinking breast milk which is rarely drunk by babies automatically causes reduced milk production), and stress (when the body is stressed, milk production will decrease, (Ncube et al., 2001; WHO and UNICEF, 2003).

Mothers who have problems with milk production cannot provide exclusive breastfeeding to their babies. This breast milk production problem causes the mother's failure to provide exclusive breastfeeding to the baby, as a result, the baby is susceptible to infectious diseases, formula feeding causes the baby to be at risk for diarrhea, the baby can also experience malnutrition due to lack of nutrients to meet the baby's needs (Altahira, 2019). Some mothers have negative attitudes and perceptions about exclusive breastfeeding due to several factors, namely they think that exclusive breastfeeding is not too important and if the baby is only given breast milk without complementary foods it will not be enough, there are socio-cultural changes, such as mothers who are busy working so that babies are given Complementary feeding before the age of 6 months and the belief that formula milk is more prestigious than breast milk, as well as problems that often arise in breastfeeding, such as flat or inverted nipples, sore nipples and the presence of breast milk dams (Dewey et al., 2004; Sulistiawati et al., 2017).

Breastfeeding can prevent 13% of under-five deaths, 16% of neonatal deaths can be prevented if the baby is breastfed on the first day after birth, and this figure increases to 22% if the baby has an IMD in the first 1 hour after birth (Altahira, 2019; Dewey et al., 2004). Epidemiology shows that women who do not breastfeed have a higher risk of breast and ovarian cancer, as well as obesity, type 2 diabetes, metabolic syndrome and cardiovascular disease (Monika & Yunita, 2021). There are several factors that influence breast milk production, namely food, peace of mind and mind, breast care, breast anatomy, physiological factors, rest patterns, gestational age at delivery, cigarette and alcohol consumption (Luecha & Umehara, 2013)(Ikhlasiah et al., 2020). A small amount of breast milk can be overcome by consuming the right vegetables and fruits. The production of breast milk that is quite good in quantity and quality will determine the growth of the baby. Efforts to achieve optimal infant nutrition up to the age of 6 months can only be done through improving maternal nutrition. This illustrates that the food consumed by breastfeeding mothers greatly affects milk production (Ngadiarti et al., 2021; Pesak et al., 2021).

Lactagogum is a drug that can increase milk production. Synthetic lactagogums are not widely known and relatively expensive. This causes the need to look for alternative laktagogums. Indonesia is a country that is rich in various types of plants that are efficacious as medicinal plants. Some of them are efficacious as Lactogogum. Papaya as an alternative fruit to increase breast milk production contains Lactogogum, which is known as a tropical fruit known as Carica papaya. Papaya fruit is also one type of fruit that has a high nutritional content and is rich in health benefits. Lactogogum has the potential to stimulate the hormones oxytocin and prolactin such as alkaloids, polyphenols, steroids, flavonoids and other substances that are most effective in increasing breast milk production. When the baby sucks on the mother's nipple, neurohormonal stimulation occurs on the nipple and areola of the mother. This stimulus is transmitted to the pituitary via the vagus nerve, then to the anterior lobe. From this lobe will secrete the hormone prolactin, enter the blood circulation and arrive at the glands that make breast milk, these glands will be stimulated to produce milk (Chakrabarti & Chakrabarti, 2017; Luecha & Umehara, 2013)his study aims to determine the effect of giving papaya fruit vegetables to breast milk production in breastfeeding mothers at the Rukun Lima Health Center in 2020.

METHODS

This type of research is a Quasi Experiment with a two group post test only control group design approach. This study consisted of an intervention group and a control group. The intervention group was given the treatment of giving papaya fruit, after being treated for some time in this case 7 days of administration, then these two groups were measured after the treatment. The population and sample in this study were breastfeeding mothers in the working area of the Rukun Lima Health Center in 2020. as many as 30 people. The sampling technique used in this study is purposive sampling technique with a large number of 15 researchers obtained, so that with each 8 people in the treatment/intervention group and the remaining 8 people in the control group. While the inclusion criteria for the research sample are

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mothers who have babies aged 0-6 months and are breastfeeding and are willing to be respondents, mothers who can read and write. The independent variable in this study was the provision of vegetables and the dependent variable in this study was the production of breast milk. The instruments used in this study were observation sheets, informed consent sheets, ballpoint pens. The technique of data analysis used univariate analysis in the form of distribution tables and then interpreted the data and then carried out bivariate analysis and analysis to determine the relationship between one independent variable and one dependent variable. The statistical test technique chosen in this study if the normality test is normally distributed then uses the t-test, while if the normality test is not normally distributed, it uses the Mann Whitney test. This calculation is done computerized using the SPSS program. The degree of error used is 0.05 or 95% confidence level with the interpretation of the results of the hypothesis test, namely if the p value > (0.05).

RESULT

Univariate Analysis

1. Characteristics of respondents by age

Table 1. Distribution of respondents' characteristics by age

Age (Years)	Treatment Group		Control Group		Total	
	F	%	f	%	f	%
<20	0	0	0	0	0	0
20-35	8	50.0	8	50.0	16	100
>35	0	0	0		0	0
Total	8	50.0	8	50.0	16	100

Primary data sources for 2020

Based on Table 1. it can be interpreted that half of the respondents in the treatment group and the control group (50%) are 20-35 years old.

2. Characteristics of respondents based on last education

Table 2. Distribution of respondent characteristics based on last education

Last Education	Treatment Group		Control Group		Total	
	F	%	f	%	f	%
Based	1	6.25	1	6.25	2	12.5
Interndiate	7	43.75	7	43.75	14	87.5
College	0	0	0	0	0	0
Total	8	50.0	8	50.0	16	100

Primary data sources for 2020

Based on Table 2. shows that half of the respondents (50%) in the treatment group and the control group have secondary education.

3. Characteristics of respondents by occupation

Table 3. Distribution of respondent characteristics by occupation

Respondent's Job	Treatment Group		Control Group		Total	
	F	%	f	%	f	%
Housewife	7	43.75	7	43.75	14	87.5
Self employed	0	0	0	0	0	0
Civil servant	0	0	0	0	0	0
Private	1	6.25	1	6.25	2	12.5
Total	8	50.0	8	50.0	16	100

Primary data sources for 2020

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Based on table 3, it can be interpreted that half of the respondents (50.0%) in the treatment group and the control group do not work or are Housewife.

Research Focus Data

1. Characteristics of breast milk production to the treatment group by giving papaya fruit to nursing mothers

Table 4. Distribution of breast milk production in the treatment group by giving papaya to breastfeeding mothers

Breast Milk Production Indicator	f	(%)
Well	6	75.0
Enough	2	25.0
Not Enough	0	0
Amount	8	100

Primary data sources for 2020

Based on table 4, it can be interpreted that most of the respondents (75.0%) have good breast milk production.

2. Characteristics of breast milk production to the control group of breastfeeding mothers

Table 5. Distribution of breast milk production in the control group of breastfeeding mothers

Breast Milk Production Indicator	f	(%)
Well	0	0
Enough	4	50.0
Not Enough	4	50.0
Amount	8	100

Primary data sources for 2020

Based on table 5 it can be interpreted that half of the respondents (50%) with sufficient milk production and half of the respondents (50%) with insufficient milk production.

3. Analysis of the effect of giving papaya fruit to breast milk production in nursing mothers

Table 6. Analysis of the effect of giving papaya fruit to breast milk production in nursing mother

Group		**Z**	**ρ-value**
Breastmilk Production	Treatment Group Control Group	-2.580	0.010

Primary data sources for 2020

Based on the results of the analysis through the Mann Whitney test, table 6 shows -value: 0.010 where the value of < 0.05, it can be concluded that H0 is rejected and H1 is accepted, meaning that there is an effect of giving fruit vegetables to breast milk production in nursing mothers.

DISCUSSION

Breast Milk Production for the Treatment Group for Giving Papaya Fruit to Breastfeeding Mothers

Based on table 4, it can be interpreted that most of the respondents (75.0%) have good breast milk production. Sufficient milk production, both in quantity and quality, will determine the baby's growth. Efforts to achieve optimal infant nutrition up to the age of six months can only be done through improving maternal nutrition. This illustrates that the food consumed by breastfeeding mothers greatly affects the production of breast milk.

Papaya fruit is a type of plant that contains laktagogums which have the potential to stimulate oxytocin and prolactin hormones such as alkaloids, polyphenols, steroids, flavonoids and other substances that are most effective in increasing and facilitating breast milk production. Hormonal

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prolactin reflex to produce breast milk, when the baby sucks the mother's nipple, neurohormonal stimulation occurs in the mother's nipple and areola. This stimulation is transmitted to the pituitary via the vagus nerve, then to the anterior lobe. From this lobe will secrete the hormone prolactin, enter the blood circulation and arrive at the glands that make breast milk. This gland will be stimulated to produce breast milk (Ikhlasiah et al., 2020; Monika & Yunita, 2021).

According to researchers, maternal age can also be one of the factors that influence milk production in breastfeeding mothers. Based on table 4.1 shows that all respondents (100%) in the treatment group were 20-35 years old. According to (Hidayati et al., 2010), those who are less than 20 years old are considered to be physically, mentally and psychologically immature in dealing with pregnancy, childbirth and breastfeeding, while those who are more than 35 years of age are considered dangerous because both the reproductive and physical organs of the mother have decreased and decreased. so that the ability of a mother to exclusively breastfeed is also not optimal anymore due to a decrease in the function of the reproductive organs such as the breasts. Exclusive breastfeeding is mostly given by mothers in the 20-35 year old group because at this time the ability of the breast organs is mature to produce breast milk in this group. This is in accordance with the opinion that maternal age affects milk production. Mothers who are younger or aged less than 35 years produce more breast milk than mothers aged 35 years and over where hormone production is relatively reduced, resulting in a decreased lactation process (Sulistiawati et al., 2017).

Breast Milk Production to the Control Group of Breastfeeding Mothers

Based on table 5.5, it can be interpreted that half of the respondents (50%) with sufficient milk production and half of the respondents (50%) with insufficient milk production. Amount or volume of colostrum 150-300 ml/24 hours. Although the amount is small, it is in accordance with the capacity of the baby's stomach and according to the needs of the newborn. On the third or fourth day, breast milk production begins. The milk produced is transitional milk, which is the transition from colostrum to mature breast milk with increasing volume according to the baby's needs. At the end of the first or second week, mature milk is secreted with a relatively constant composition and the amount according to the needs of the baby up to the age of six months without giving food or (Heryati et al., 2019; WHO and UNICEF, 2003).

Factors that influence production include food factors, emotions and psychological states, breast care, breast anatomy, physiological factors, rest patterns, child sucking and drug factors (Kristiyansari, 2009). According to Deddy, the volume of breast milk produced is influenced by the psychological condition of a mother and the food she consumes. Therefore, mothers should not feel excessive stress and anxiety. This situation greatly affects the volume of breast milk in the first week of breastfeeding the baby. According to the researcher, one of the factors that influence breastfeeding mothers in this study is mother's education. Based on table 4.6 shows that almost all respondents (87.5%) have secondary education. The low level of maternal education results in a lack of knowledge of mothers in dealing with problems, especially in exclusive breastfeeding. This knowledge is acquired both formally and informally. Meanwhile, mothers who have a higher level of education are generally open to accept changes or things to maintain their health.

The Effect of Giving Papaya Vegetables on Breast Milk Production in Breastfeeding Mothers

Based on the results of the analysis through the Mann Whitney test, in table 5.6 obtained -value: 0.010 where the value of < 0.05, it can be concluded that H0 is rejected and H1 is accepted, meaning that there is an effect of giving fruit vegetables to breast milk production in breastfeeding mothers in the Work Area of the Public Health Center. Based on previous research by Sri Banun Titi Istiqomah et al (2014) calm the effect of papaya on smooth milk production in breastfeeding mothers shows that milk production before consumption of papaya fruit the average frequency of breastfeeding is 5.7 times with a standard deviation of 0 .80131 and after consuming papaya the average frequency of breastfeeding increased to 9.75 times with a standard deviation of 0.78640. The correlation between the two variables is 0.793 and the difference in the average value of the increase in breast milk production in mothers who do not consume and consume papaya fruit is 4.05000 with a sig of 0.000. Because sig < 0.05, it means that the average milk production before and after consumption of papaya fruit is

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different. Thus it can be stated that the provision of papaya fruit can affect the increase in breast milk production of nursing mothers (Luecha & Umehara, 2013; Ncube et al., 2001).

Papaya fruit is a type of plant that contains laktagogums which have the potential to stimulate oxytocin and prolactin hormones such as alkaloids, polyphenols, steroids, flavonoids and other substances that are most effective in increasing and facilitating breast milk production. Hormonal prolactin reflex to produce breast milk, when the baby sucks the mother's nipple, neurohormonal stimulation occurs in the mother's nipple and areola. This stimulation is transmitted to the pituitary via the vagus nerve, then to the anterior lobe. From this lobe will secrete the hormone prolactin, enter the blood circulation and arrive at the glands that make breast milk. These glands will be stimulated to produce milk(Monika & Yunita, 2021).

The cause of reduced milk production is due to several factors, namely maternal food. Mothers who have problems with milk production cannot provide exclusive breastfeeding to their babies. This breast milk production problem causes the mother's failure to provide exclusive breastfeeding to the baby, as a result, the baby is susceptible to infectious diseases, formula feeding causes the baby to be at risk for diarrhea, the baby can also experience malnutrition due to lack of nutrients to meet the baby's needs (Altahira, 2019). Based on the results of the study, consuming papaya fruit can increase breast milk production in breastfeeding mothers as shown in the mean value in table 5.7 which shows the mean value in the treatment group is greater (11.50) than the mean value in the control group (5.50). According to researchers, there is a match between theory and the fact that consuming papaya fruit can increase breast milk production.

Knowing the content of laktogogum which is similar to oxytocin compounds in young papaya fruit which plays a role in the enlargement of the alveoli during pregnancy and stimulates the muscles around the breast to squeeze out milk which is needed during breastfeeding so that consuming young papaya fruit can increase milk production. So papaya fruit can be used to meet the need for food for nursing mothers (Ngadiarti et al., 2021)(Ikhlasiah et al., 2020).

CONCLUSION

The conclusions from this study will be described, namely as follows The production of breast milk to the treatment group giving papaya fruit to breastfeeding mothers was found by most of the respondents with good breast milk production. Milk production for the control group of breastfeeding mothers was found to be half of the respondents with less milk production. There is an effect of giving papaya fruit vegetables to breast milk production in nursing mothers.

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CONFLICTS OF INTEREST

"No potential conflict of interest was reported by the authors."

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