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THE EFFECTIVENESS OF VIRGIN COCONUT OIL (VCO) AND
MORINGA LEAF (*Morinaga oleifera*) ON BREST MILK
PRODUCTION IN POSTPARTUM MOTHER AT TUMINTING
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ABSTRACT

Breastmilk (Air Susu Ibu/ASI) is food and drink given by the mother to her baby. According to Riskesdas 2013, exclusive breastfeeding in Indonesia only reached 30.2% while the expected target was 80%. From the Manado City health profile data the coverage of exclusive breastfeeding in 2017 was 32.7%, while in Tuminting Public Health Center in 2017 was 18%. The coverage is still below the national target of 80%. From interviews with a number of puerperal women in Tuminting, 25% of them did not provide exclusive breastfeeding because of the small production of breast milk. This is one of the reasons for conducting research on "The effectiveness of Virgin Coconut Oil (VCO) and Moringa leaf (*Morinaga oleifera*) combination on breast milk production in postpartum mothers at Tuminting Public Health Center in Manado in 2019. The research method used in this study was an experimental posttest only control group design. The population in this study all third trimester pregnant women who visited the Tuminting Public Health Center in Manado. The research sample consisted of 30 treatment groups, 30 control groups. The sampling technique was done by purposive sampling technique. The results of this study indicate that there is an increase in breastmilk production in the treatment group. So there is an effect of providing a combination of Virgin Coconut Oil (VCO) and Moringa leaf (*Morinaga oleifera*) on the production of breast milk in postpartum mothers. With the results of this study, it is expected to contribute to the success of government programs especially maternal and child health in reducing infant and child mortality rate and support the success of exclusive breastfeeding programs.

Keywords: VCO, *Morinaga leaf*, Breastmilk production

BACKGROUND

Breastmilk (Air Susu Ibu/ASI) is food and drink given by the mother to her baby. The Indonesian Pediatrician Association (Ikatan Dokter Anak Indonesia/IDAI) states that ASI provides all the nutrients needed by babies. According to Riskesdas 2013, exclusive breastfeeding in Indonesia has only reached 30.2% while the expected target is 80%. From the Manado City health profile data the coverage of exclusive breastfeeding in 2017 was 32.7%, while in Tuminting Public Health Center in 2017 was 30%. The coverage is still below the national target of 80%. The low level of exclusive breastfeeding can be caused

by various factors including socio-cultural factors, the influence of the promotion of formula milk, the support of health workers, maternal health that have an impact on reduced milk production, knowledge and attitudes of mothers. In Indonesia, Moringa is a local food material that has the potential to be developed in nursing mothers because it contains phytosterol compounds that function to increase and facilitate breastmilk production.

RESEARCH METHODS

The research method used in this study is the posttest only control group design. The treatment group was treated while the control group was not, the two groups were compared. In the experimental group treatment was carried out by giving a combination of Virgin Coconut Oil (VCO) and Moringa leaf (*Moringa oleifera*) as much as 1 (one) tablespoon 2 times day for 5 weeks while in the control group no treatment was given.

RESULTS AND DISCUSSION

Respondent characteristic (Univariate analysis)

Table 4.1. Respondent Distribution by Age

No.	Age	Treatment Group		Control Group	
		N	%	N	%
1	<20 y.o & >35 y.o	3	10.0	5	16.6
2	20 -35 y.o	27	90.0	25	83.4
Total		30	100	30	100

Table 4.1 shows the majority of respondents aged 20 to 35 years as much as 90% in the treatment group and 83.4% in the control group

Table 4.2. Respondent Distribution by Parity

No	Parity	Treatment Group		Control Group	
		N	%	N	%
1	1-3	28	93.3	26	86.7
2	>3	2	6.7	4	13.3
Total		30	100	30	100

Table 4.2 the shows that majority of respondents parity is 1-3 as much as 93.3% in the treatment group and 86.6% in the control group

Table 4.3. Respondent Distribution by Breastmilk Production on Pospartum Mother

No	Breastmilk Production	Treatment Group		Control Group	
		N	%	N	%
1	≤ 3 (Less breastmilk production)	0	0	3	10.0
2	4-5 (Moderate breastmilk production)	3	10.0	25	83.3
3	6-7 (Good breastmilk production)	27	90.0	2	6.7
Total		30	100	30	100

Table 4.3 shows that most of the respondents with good ASI production ie 90% in the treatment group and ASI production was 83.3% in the control group

Bivariate Analysis (Analysis of treatment and control group outcome)

Table 4.4 Difference of breastmilk on treatment and control group.

No	Breastmilk production	Mean	Standard Deviation	95% Confidence Interval of the Difference		p-Value
				Lower	Upper	
1	Treatment Group	6.67	0.661	-2.263	-1.804	0.001*
2	Control Group	4.63	0.890			

Table 4.4 the mean value in the treatment group is greater than the control group and the value of $p = 0.001$

Based on the study results of the frequency distribution of the treatment group most of the respondents with good ASI production was 90%, moderate ASI production was 10%, less ASI production was than 0% whereas in the control group good ASI production was 6.7%, moderate ASI production was 83.3% and less ASI production was than 10%.

There was an increase in breastmilk in the average treatment group (mean) before treatment 6.67 compared to the control group 4.63 after the intervention. The value of $p = <\alpha$ is 0.001 $p < 0.05$ and this result shows that there is a significant difference between the production of breast milk in the treatment and control groups.

This research is supported by several studies conducted by Mutiara et. al. in 2012 stating that Moringa leaf flour can significantly increase milk production. Giving Moringa flour doses above 42 mg/kg body weight of white Wistar rats, markedly increased the secretion of the mother's milk and the weight of the rat child. Subsequent research in 2018 Indri et al. Moringa oleifera leaf extract can increase breastfeeding hormone levels in increasing the quantity and quality of breast milk. The abundance of nutrients in the leaves of Moringa (Moringa oleifera) such as phytosterol compounds (lactogogum effect) in increasing levels of breastfeeding hormones and iron can have a positive impact on baby's health. Zakaria in 2016 shows that the average volume of breast milk increased significantly in both groups before and after the intervention ($p < 0.001$), the Moringa extract group increased by 263.1 ± 40.8 ml (66.2%) and the Moringa flour group increased by 151.4 ± 9.4 ml (33.7%). The difference in the increase in milk volume between the Moringa extract group was significantly higher than the Moringa flour group ($p = 0.040$). Average changes in breast milk quality were not significantly different ($p > 0.05$) between the intervention and control groups on iron nutrition (0.8 ± 1.0 vs 0.7 ± 0.9 mg / L); vitamin C (48.6 ± 12.7 vs 45.1 ± 11.4 mg / L); and vitamin E (5.2 ± 2.0 vs 5.6 ± 2.5 mg / L).

In Indonesia, Moringa is a local food ingredient that has the potential to be developed in nursing mothers because it contains phytosterol compounds that function to increase and facilitate production (lactogogum effect). The use in increasing milk production is by consuming plant leaves either steamed or boiled as vegetables, can also use Moringa flour to make drinks. Moringa powder contains: Vitamin A, 10 times more than carrots, Beta Carotene, 4 times more than carrots, Vitamin B1, 4 times more than pork, Vitamin B2, 50 times more than sardines, Vitamin B3, 50 times more than beans, Vitamin E, 4 times more than corn oil, Protein, 2 times more than milk, Protein, 9 times more than yogurt, Amino

acids, 6 times more than garlic, iron, 25 times more than spinach, Potassium, 15 times more than bananas, Calcium, 17 times more than milk, Zinc, 6 times more than almonds, Fiber (Dietary Fiber), 5 times more than vegetables in general, GABA (Gamma) -aminobutyric acid), 100 times more than brown rice, Polyphenol, 2 times more than red wine. The many nutritional content in the leaves of Moringa (*Moringa oleifera*) such as phytosterol compounds (lactogogum effect) in increasing levels of the hormone prolactin and iron can have a positive impact on baby's health because breast milk is the baby's natural food most important and best.

This research is in accordance with the theory that the benefits of VCO for pregnant and postpartum women: VCO is very good to be consumed by pregnant women because VCO contains lauric acid with the highest levels such as breast milk which is useful as anti-microbial, anti-virus and anti-protozoa, protecting babies from harmful microorganisms, and increase the baby's immunity level from virus attacks. During pregnancy in general, mothers are susceptible to infection with several viruses such as the herpes virus and cytomegalo virus, VCO can help the absorption of nutrients for babies, pregnant women who consume VCO, can also reduce the risk of birth defects or miscarriages at the time of birth, VCO optimizes metabolism so that the body burns more calories and increases energy quickly and endurance, which is very important for pregnant women for uterine contractions and straining strength during labor. VCO helps to streamline the body after giving birth, VCO is useful to facilitate breast milk and can improve the quality of breast milk, which increases the amount of lauric acid in breast milk. In 1 tablespoon a combination of Virgin Coconut Oil (VCO) and Moringa leaf (*Moringa Oleifera*) contains:

No.	Test name	Repeats			Mean
		U1	U2	U3	
1.	Protein test	4.226	4.228	4.230	4.228 mg
2.	Lipid test	13.25 %	13.24%	12.25%	12.91%
3.	Flavonoid	7.624	7.622	7.559	7.601mg
4.	Alcoloid	4.256	5.111	5.119	4.829 mg
5.	Antioxydant	8.32961	8.32961	8.32961	8.32961mg
6.	Phenol	78.2	77.4	86.2	80.6 mg
7.	Calcium	8.101	8.105	8.102	8.102 mg

CONCLUSION AND RECOMMENDATION

The average breastmilk production in the treatment group was 6.67 (good production). The average milk production in the control group was 4.63 (moderate production). The mean value in the treatment group was greater than the control group and the p-value= 0.001. There is a significant difference between the production of breast milk in the treatment group and the control group. There is an effect of giving a combination of Virgin Coconut Oil (VCO) and Moringa leaf (*Moringa oleifera*) on milk production.

This research is expected to contribute to the success of government programs especially maternal and child health in reducing infant and child mortality rate and to support the success of exclusive breastfeeding programs.

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