

The effectiveness oxytocin massage combination moringa leaves and soy milk on breastmilk production postpartum mothers

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ABSTRACT

Breastfeeding is very influential on infants' and child's growth. Survey result in 2018 mentioning the coverage of exclusive breastfeeding is 68.74% in Indonesia and 64.19% in Central Java. Some factors caused breastfeeding obstructions are breast milk didn't ooze and small quantity of the ooze. Breast milk obstruction caused due lack of oxytocin and prolactin hormone stimulation. This can be cured by giving moringa leaves and oxytocin massage. The study's goal is to examine breast milk production after a combination oxytocin massage with moringa leaves and soy milk. The research design is quasi-experimental with a post-test only control group, and the data analysis design is an independent T-test. Population of this study is postpartum mothers in Central Java. With 83 total samples in Salatiga, Semarang, Grobogan, Rembang, Blora, Kendal and Demak. The group combined with moringa leaves, has 1,183.24 grams difference weight before and after treatment, estimated 185.21 ml volume of breast milk. The group combined with soy milk, has 1,088.04 grams difference weight before and after treatment, with 170.31 ml estimated of breast milk volume. The difference baby's weight from two combination groups was 95.2 grams with a p-value of 0.108. Conclusion of the study is the difference is not significant. The weight gain of infants in the oxytocin massage combination with moringa leaves group was higher than soy milk combination. Recommendation of moringa leaves can be offer for postpartum mother to increase the ooze of breast milk production.

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1. INTRODUCTION

The greatest meal for newborns is breast milk (ASI), which is a natural diet that is simple to digest and includes nutrients that meet the needs of the baby for development, immunity, intellect, and the prevention of many ailments. Because the infant suckles right from the mother's breast, breast milk is also safe and guaranteed to be hygienic. In addition, nursing a baby will shield them against digestive disorders including vomiting and diarrhoea [1].

In 2018, 68.74% of women in Indonesia were exclusively nursing. This number has above the 47% objective set in the 2018 Strategic Plan, an increase compared to 2016 and 2017 61.33% [2]. Some mothers feel anxious about breastfeeding and use a schedule for breastfeeding, which affects the quantity of breast milk produced and does not meet the needs of the baby. Inadequate milk production is one reason mother stop breastfeeding early [3]. This can raise psychological disturbances in breastfeeding mothers, because they feel unable to support the increase baby's weight and meet his needs [4]. A mother's health or sickness, nursing

frequency, parity, alcohol or tobacco use, using contraceptive pills, stress, and nutrition consumption are all factors that can affect or help produce breast milk. Breastfeeding women require an additional 300-500 calories per day to effectively nurse their newborns. The 300 calories required by a newborn are derived from fat deposited throughout pregnancy. This means that nursing women do not need to overeat in order to maintain a nutritional balance. Malnourished mothers cannot afford to solely nurse their children. There are also individuals whose milk does not come out; nonetheless, nursing women who eat well can nurse their kids for at least six months or exclusively [5].

WHO data explains that coverage exclusive breastfeeding in various countries of the world in 2017 by 38% [6]. This figure still below the WHO target by 50%. Different as the coverage of exclusive breastfeeding in Indonesia in 2018 turned out already exceeded the WHO target of 65.16%. Of course, this is still far from strategic targets Ministry of Health by 80% [7]. The psychological element of exclusive breastfeeding is one of the aspects to consider, breastfeeding is not just giving food to the baby but is very much influenced by the mother's emotions and affection for the baby. Feelings of affection between mother and baby can increase hormone production, especially oxytocin, which in turn can increase milk production [8]. Coverage exclusive breastfeeding (ASI) 0-6 months in Indonesia fluctuates in four years. Finally, according to survey data social economy (SUSENAS) coverage of exclusive breastfeeding of 34.3%. In 2009, in 2010 decreased to 33.6% (babies who are breastfed), in 2011 it rose to 42% and according to survey Indonesian demographic and health (IDHS) 2012 coverage of exclusive breastfeeding by 27% [9]. Using information from the provincial health office (Dinkes) [10]. According to data from the Central Java Provincial Health Office (Dinkes) in 2012, exclusive breastfeeding coverage was 42.35%. In 2013, 30.2% of babies aged 0-6 months were exclusively breastfed (*Central Java Provincial Health Office (Dinkes)*, 2013). Based on Basic Health Research (*Rikesdas*) (2013), percentage exclusive breastfeeding to babies 0-6 months in Indonesia by 54.3%. Constraints to exclusive breastfeeding include the fact that the milk does not come out or the amount of milk is small [11].

Another initiative to enhance the health of women and children is the exclusive breastfeeding promotion program, which is based on government regulation number 23 of 2012. Breast milk is provided to newborns from birth for six months without the addition or replacement of other meals or liquids (excluding medications, vitamins, and minerals) [12]. The mother's achievement in providing exclusive breastfeeding, the mother must receive additional food and adequate nutrition so that the milk-producing glands can work properly to produce breast milk. Most of infants with exclusive breastfeeding had normal growth and development [13].

Breastfeeding exclusively can enhance newborn health, prevent sickness, and promote child growth and development [14]. Using soy milk is one approach to stimulate the production of breast milk. In addition to being composed of 35% protein, soy milk also includes isoflavones, alkaloids, polyphenols, steroids, and other compounds that have the ability to stimulate the synthesis of prolactin and oxytocin, two hormones that help to promote and enhance the production of breast milk [15], [16]. The phytosterol components of moringa, also known as *moringa oleifera*, have a lactagogue action, which aids in boosting the production of breast milk. Consequently, postpartum moms can utilize moringa as a meal element [17].

The research objective was to investigate the features of the mother's age and the respondents' parity. Analyze milk production in postpartum women using an oxytocin massage with moringa leaves. Analyze breast milk production in postpartum moms by conducting massage oxytocin combination of soy milk.

2. METHOD

This is known as a Quasy Experiment. This study has two groups that is given group intervention massage oxytocin combination moringa leaves and the given group massage oxytocin combination of soy milk. The design that used is posttest control group design is the only thing that matters. Postpartum Mothers were the study's population. The sample for this study was chosen by accidental sampling, namely, a sample determination technique based on chance where anyone who happened to meet the researcher could be used as a sample. Taking into consideration the number of deliveries at the research site. On average, there were 6 to 10 mothers giving birth each month at the selected location. Determination group intervention using a random system. Massage oxytocin done 2 times each day, measurement of milk volume with count the difference in weight before and after breastfeeding, mother drinks moringa leaves 2 times a day in the morning and evening can be added with enough sugar, soy milk is drunk 2 times a day as much as 30 grams equivalent to 3 tablespoons.

Research variables is variable free is massage oxytocin combination moringa leaves and massage oxytocin combination of soy milk. Dependent variable is postpartum mother's milk production. Milk production was measured with Baby's Weight. The baby's weight is weighed at birth and after 40 days or week 4 with baby scales. Validity and reliability tests were carried out by testing the readings on baby scales.

This research was conducted in 2020. The research was conducted at Public Health Center and/or Midwifery Independent Practice in Central Java: Semarang City and Semarang Regency, Grobogan Regency, Salatiga City, Kendal Regency, Rembang Regency, Blora Regency and Demak Regency. The area is an illustration of the variation in the coverage of ASI in Central Java and with characteristics that describe the

geography of Central Java. Determination of the sample in this study looked at the number of deliveries using accidental sampling. The average number of deliveries at the study site was 6 to 10 mothers giving birth each month. This research was supported by Budget Implementation Plan (DIPA) Health Polytechnic of Semarang with Ethical Clearance letter number [HK.02.03/6.1/3939/2020].

2.1. Research flow

The agreement was made with the respondents who expressed their willingness to exclusively breastfeed their babies. The enumerator midwives provided instruction on how to perform oxytocin massage to the families. The families, in turn, agreed to perform the massage with oxytocin once or twice a day. Additionally, the respondents were open to consuming either moringa leaves or soy milk twice daily, which were provided by the researcher. The respondents included normal postpartum mothers who were monitored from the first day after giving birth until 1 to 40 days postpartum. The enumerator midwife diligently recorded the data using a checklist. Furthermore, the weight of the baby was measured at birth and again after 40 days or at week 4. The enumerators regularly evaluated the consumption of moringa leaves and soy milk through WhatsApp and maintained a record of it using the checklist.

3. RESULTS AND DISCUSSION

Socio-demographic characteristics: Total sample for each treatment was 50 people. This method uses inclusion and exclusion criteria. So the sample was 37 mothers who were given intervention using Moringa leaves and 47 mothers who were given soy milk intervention in this study as seen in Figure 1. Therefore, the confounding variables that were considered did not exist in this study [18].

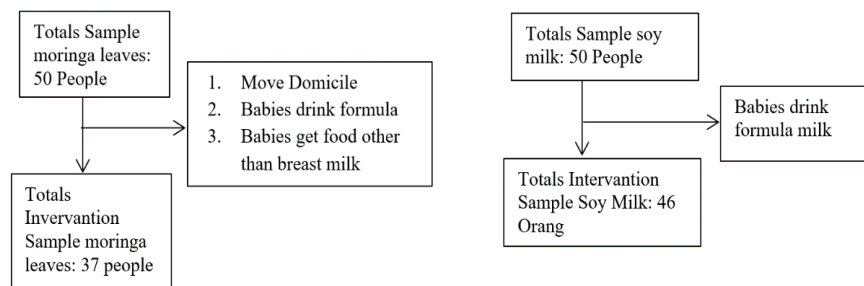


Figure 1. Consort table

3.1. Characteristic frequency distribution includes age, parity of respondents in the oxytocin massage group combined with moringa leaves and the oxytocin massage combination with soy milk

According to the data in Table 1, the average age of the respondents is oxytocin massage group combined with drinking moringa leaves was 27.70 years, while the average age in the oxytocin massage group combined with soy milk was 29.76 years. The average age of the healthy reproductive category is between 20 and 35 years. The youngest age in the oxytocin massage group combined with drinking moringa leaves was 20 years and in the oxytocin massage group combined with drinking soy milk was 28 years group. The oldest age in the moringa leaves group was 37 years, while in the soy milk group it was 38 years. The average parity characteristics of respondents in the oxytocin massage group combined with drinking moringa leaves obtained two results, while the average number of parity groups in the soy milk group was two children. The minimum parity in the moringa leaves group was one child, while in the oxytocin massage group combined with drinking soy milk there was also one child. The maximum number in the moringa leaves group showed three children while in the soy milk group there were five children.

Table 1. The distribution of respondent characteristics depending on age and parity

Variable	N	Mean	SD	Min	Max
Age					
Oxytoxin massage with moringa leaves	37	27.70	5.43	20	37
Oxytoxin massage with soy milk	46	29.76	4.66	28	38
Paritas					
Oxytoxin massage with moringa leaves	37	1.76	0.43	1	3
Oxytoxin massage with soy milk	46	1.80	0.45	1	5

3.2. Distribution of postpartum moms' breast milk production in the oxytocin massage combination of moringa leaves

According to Table 2, the average body weight before treatment for the 37 responders in the oxytocin massage group with the combination of moringa leaves was 3,129.46 grams. The minimum value of body weight before being given treatment is 2,100 grams while the maximum value is 3,700 grams. After being given oxytocin massage with a combination of moringa leaves, the results obtained for the average baby's weight were 4312.70 grams, the lowest value for the lowest figure for baby's weight was 3,450 grams, while the maximum value for baby's weight was 5,100 grams. The average difference in body weight between before and after the intervention in the oxytocin massage group using the moringa leaf combination was 1,183.24 grams. As a result, the approximate amount of breast milk is as:

$$\begin{aligned} \text{Estimated milk volume} &= \text{Babies weight difference (in pounds)} \times 2.5 \times 28.4 \\ &= \frac{1183.24 \times 2.5 \times 28.4}{453.592} \\ &= 185.21 \text{ ml} \end{aligned} \quad (1)$$

Table 2. Description of breast milk production prior to and after the baby's weight in the oxytocin massage group combined with moringa leaves

Variable	Treatment	N	Mean	SD	Min	Max
Baby's weight	Before	37	3,129.46	324.68	2,100	3,700
	After	37	4,312.70	381.56	3,450	5,100

3.3. Analysis of postpartum moms' milk production in the oxytocin massage combination of soy milk

According to Table 3, the average baby's weight before treatment of the 46 responders in the oxytocin therapy group paired with soy milk was 3,121.74 grams, the lowest value for baby's weight was 2,500 grams and the highest value for milk production was 3,900 grams. The average baby's weight following therapy was 4,209.78 grams, with 3,600 grams being the lowest and 5,100 grams being the highest. The difference in weight between the newborn before and after therapy obtained an average of 1,088.04 grams. As a result, the amount of breast milk utilized is:

$$\begin{aligned} \text{Estimated milk volume} &= \text{Babies weight difference (in pounds)} \times 2.5 \times 28.4 \\ &= \frac{1088.04 \times 2.5 \times 28.4}{453.592} \\ &= 170.31 \text{ ml} \end{aligned} \quad (2)$$

Table 3. Description of Weight central tendency in the massaged oxytocin group with the combination of soy milk

Variable	Treatment	N	Mean	SD	Min	Max
Breast Milk Production	Before	46	3121.74	310.49	2500	3900
	After	46	4209.78	353.02	3600	5100

3.4. Differences in breast milk production as measured by the rise in babies' weight before and after the oxytocin massage with moringa leaves

Table 4 demonstrates that in the treatment group before being given oxytocin massage combined with moringa leaves, the average baby's weight was 3,129.46 grams, after being given oxytocin massage combined with moringa leaves increased to 4,312.70 grams. The paired t test yielded p-values of 0.000 and 0.005, indicating that there was a difference in body weight before and after the intervention in the oxytocin step group and combination of moringa leaf. This research is consistent with earlier studies that demonstrate there is an effect on raising breast milk production when respondents ingest moringa leaves and that there are chemicals that promote breast milk production [19]. Extract of moringa leaves includes non-enzymatic antioxidants such as vitamin A (beta carotene), vitamin C, and vitamin E, which can prevent deoxyribo nucleic acid (DNA) damage [17], as well as phytosterol compounds [2]. Regarding the effect of consuming moringa leaves are more effective in increasing baby's weight at the age of 30 days compared to consumption of young papaya vegetables [20]. Moringa leaves contains phytosterol compounds that function to enhance and facilitate breast milk production (lactagogum effect). Apart from phytosterol, moringa leaves also contain Fe 5.49 mg/100 g, sitosterol 1.15%/100 g, and stigmasterol 1.52%/100 g, where these substances are able to stimulate increased breast milk production [21]. In addition to fulfilling their nutritional needs, to stimulate the hormone oxytocin which can also facilitate breastfeeding, oxytocin massage is carried out neurotransmitters excite the modulla oblongata, which directly sends impulses to the hypothalamus in the posterior pituitary to produce oxytocin,

prompting the breasts to express milk. Massage in the lumbar area will also relax and decrease stress, allowing the oxytocin hormone to be released and aid in the expulsion of the mother's milk, which will be aided by the baby sucking on the nipples. immediately after the baby is born in normal circumstances [22]. In other research, it shows that the increase in breast milk production in the intervention group was 36,667, and the average increase in the control group's breast milk production was 11,333. The t-test yielded a p-value of 0.000 (0.05), indicating that there is an impact of moringa leaf extract on breast milk production in postpartum moms at Independent Midwifery Practice. Eliana Putriani, Amd, and Jati Agung District, South Lampung 2019 [23]. This is in accordance with research conducted by Triansyah *et al.* which shows that there is a relationship between oxytocin massage and breastfeeding in breastfeeding mothers [24]. The odd ratio (OR) value in this study was eight which explained that primiparous postpartum mothers who did oxytocin massage had an eight times chance of producing breast milk faster than mothers who did not do oxytocin massage.

3.5. Differences in breast milk production as measured by the rise in infant weight before and after the oxytocin massage combined with soy milk

Table 5 demonstrates that in the treatment group before being given oxytocin massage combined with soy milk, the average baby's weight was 3,121.74 grams, after being given oxytocin massage combined with soy milk it increased to 4,209.78 grams. The paired t-test results reveal that the p-value is 0.000, where the value is 0.05, indicating that a significant change in body weight before and after treatment in the oxytocin massage group with the soy milk combo. Soybeans are one of the many protein sources that are beneficial to our bodies. One of the constituents is phytoestrogen, which, if ingested frequently by nursing moms, will assist the mother in increasing the production of plentiful breast milk and obtaining high-quality breast milk [25]. This study is consistent with prior studies, showed that at the beginning of the breastfeeding process the respondents who experienced problems included 17 people (37.5%) sore nipples and 15 people (42.5%) that the production of breast milk was not smooth. Prior to the soy milk intervention, 14 (35%) of the 40 responders stated that their milk was a bit smooth [26]. Soy milk consumption by mothers can boost breast milk supply, reducing the need for formula milk and increasing baby weight. Soybean milk can therefore boost breast milk production in nursing postpartum women. Another study with ten participants discovered that smoothness of postpartum moms' breast milk production before being given soybean milk was 10%, but after being given soybean milk, the smoothness of breast milk production was 100% [27]. After being administered soy milk, 35 people (77.5%) increased their milk output, whereas five people (12.5%) increased their milk production. The findings of the bivariate analysis, which compared pre-test and post-test values, revealed a value of p is 0.000 in cases when less than <0.05, which means there was a significant difference.

Table 5. Differences in milk production as measured by the rise in infant weight before and after the oxytocin massage combined with soy milk

Variable	Treatment	N	Mean	SD	p-value
Baby's weight	Before	37	3121.74	310.49	0.000
	After	37	4209.78	353.02	

Table 4. Differences in milk production as measured by changes in baby weight before and after in the group given oxytocin massage with a combination of moringa leaves

Variable	Treatment	N	Mean	SD	p-value
Baby's weight	Before	37	3,129.46	324.68	0.000
	After	37	4,312.70	381.56	

3.6. Differences of oxytocin massage combination of moringa leaves and breast milk production increased by soy milk

According to the Table 6, the independent t test produced significant findings in this investigation, with a p-value of 0.108. that this value is more than (>0.05), implying that no meaningful difference exists in mean infant weight in the oxytocin massage group combined with moringa leaves and soy milk. Even though it showed no significant difference, the average value of weight gain in the oxytocin massage group with a combination of moringa leaves was 1,183.24 g, which was 1,183.24 g more than the soy milk group which was 1,088.04 g. 95.2 grams.

There are some findings from this study of the 37 respondents in the oxytocin massage group combined with moringa leaves, after being given treatment for four weeks the average baby's weight became 4,312.70 grams. Whereas in the oxytocin massage group combined with soy milk, the average baby's weight was 4,209.78 grams. According to the findings of this study, the infant in the oxytocin massage group combined with moringa leaves had more increased milk production compared to the oxytocin massage group combined with soy milk. The babies weight indicator can be used to calculate the amount of breast milk production. Soybeans, which are able to increase and facilitate breast milk production, contain isoflavones, alkaloids, polyphenols, steroids and other substances that can stimulate the hormones oxytocin and prolactin [28]. In the early months of the baby's age, it is expected that the minimum increase in the baby's weight reaches 0.5 to 1 ounce per day (28.35 gr) and

the average increase is more than 1 ounce per day in the healthiest baby [29]. Although it did not show an insignificant difference, the average value of weight gain in the oxytocin massage group combined with moringa leaves was 1,183.24 more than the soy milk group which was 1,088.04 grams or if converted into ml in the combination oxytocin massage group the moringa leaves amounted to 185.21 ml while the amount of breast milk in the soy milk group was 170.31 ml. Babies who were breastfed for six months or more had 33.3 times better survival than babies who were breastfed for less than four months with successful breastfeeding in this study [30].

Table 6. Differences of oxytocin massage combination of moringa leaves breast milk production increased by soy milk

Variable	Group	N	Mean	SD	p-value
Baby's Weight	Oxytocin massage combined with Moringa Leaves	37	1183.24	279.58	0.108
	Oxytocin massage combined with Soy Milk	46	1088.04	252.80	

4. CONCLUSION

Characteristics of respondents who are on average of healthy reproductive age, from the moringa leaves group and from the soy milk group and multiparity average. According to the research findings, the oxytocin massage group with the combination of moringa leaves is more beneficial for boosting breast milk production than the control group to the oxytocin massage combination with soy milk as seen from the average baby's weight gain that results in greater. The treatment of the two groups statistically did not show a significant difference. Giving oxytocin massage with a combination of moringa leaves was able to increase the baby's weight by 95.2 grams higher than oxytocin massage with a combination of soy milk.

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