

A Combination of Back Massage Frirage and Acupressure on Accelerating the Time of Breastmilk Production and Adequate Breastmilk for Babies

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ABSTRACT

Failure to produce breastmilk in the first days can interfere with early breastfeeding. In 2017, 44% of infants get prenatal meals 3 days after birth. The study was using a complementary technique of combination back massage frirage and acupressure to speed up the breastmilk production and increase the breastmilk supply to the baby so that we can prevent stunting in the baby. Researchers had done a quasi-experimental with a post-test design only with a control group design. The size sample of 60 mothers after giving birth and their babies with sample size of each group was 30 respondents, selected using systematic random sampling. Data collection was using an interview checklist for breastmilk extraction times and sufficient breastmilk for the baby. The researcher conducted an analysis of data using Mann Whitney U and independent samples t-tests. In the results of this study, there was an effective combination of back massage frirage and acupressure techniques on accelerate breastmilk production and increase breastmilk requirements for babies (p-value <0.05). When the breastmilk production reaches an average of 5.26 hours, a total of 14.80 criteria was found, the baby's weight on the 7th day averages 3350 grams and an average increase in baby's weight of 224.33 grams. A combination of back massage frirage and acupressure has been able to quicken breastmilk production soon after the mother gives birth and increase the breastmilk supply in the baby to prevent stunting in infants and create healthy, strong, and intelligent generations of successors.

Keywords: back massage frirage; acupressure; breastmilk production time; adequacy of breastmilk

INTRODUCTION

Background

Breastmilk is the best and most suitable food given by mothers to babies because it contains the nutrients that babies need for their growth and development. Experts state that breast milk contains various nutrients that are easily digested, according to the needs and essential ingredients for the growth and development of the baby's brain. Exclusive breastfeeding for 6 months for newborns can maintain the baby's immune system because it contains active factors, especially antibodies such as lysozyme, lactoferrin, and secretory immunoglobulin A. The World Health Organization (WHO) reports that 40% of infant deaths in developing countries are caused by diarrhea and acute respiratory infections that can be prevented by exclusive breastfeeding ⁽¹⁾.

The midwife's effort to facilitate the release of the hormones prolactin and oxytocin is to carry out breast care from pregnancy to the puerperium. Research conducted ⁽³⁾ stated that the combination of breast care and oxytocin massage was effective in increasing breastmilk production. The average amount of breastmilk production in postpartum mothers increased by 4.49 cc in the intervention group, while the control group increased the average amount of milk production by only 3.23 cc. The results revealed by Desmawati showed that mothers who were given breast care and oxytocin massage had a 5,146 times chance of producing breast milk less than 12 hours postpartum ⁽²⁾.

Back massage could increase breastmilk production, this massage was carried out along the neck, shoulders, and spine (vertebrae), and could make mothers feel calm and relaxed, and increase the pain threshold. Back massage frirage could accelerate parasympathetic work by stimulating the posterior pituitary to release oxytocin. This massage method combines several massage techniques, namely friction and effleurage movements that massage the entire back, shoulders, and upper arms of both hands so that the relaxation effect was deeper and increases the post-partum pain threshold. Acupressure technique by pressing on several meridian points in the shoulders, and the spine (BL11-25, BL42, BL44, S.I15, S.I14, TB14, TB13, and TB12) that supply the breast and meridian points around the scapula to relieve maternal tension ⁽⁴⁾. This combination of back massage frirage and acupressure was carried out on mothers immediately after giving birth on body parts and meridian points in the neck, shoulders, and back areas which aim to stimulate the hormone prolactin, oxytocin, and endorphins so that breastmilk can come out immediately and smoothly. This action was carried out by the midwife for ± 30 minutes to 1 hour from day 1 to 3 postpartum. This action was done at least 1 time per day. After the 3rd postpartum day,

this action was carried out on the 7th postpartum day and was repeated for the mother once every 1 week until the baby's needs for breastmilk were optimally met.

The importance of facilitating a mother to be successful in the lactation process contributes greatly to creating a good next generation and preventing stunting in children. Success in exclusive breastfeeding is the beginning of a mother's struggle, so every health worker must be able to facilitate the effective release of the hormones oxytocin and prolactin to increase milk production. An effort to facilitate the release of this hormone was to use a combination of back massage frirage, and acupressure method.

Purpose

General-purpose of this study was to analyze the effective combination of back massage frirage and acupressure on the timing of expenditure and the adequacy of breastmilk for infants. Special purposes were: (1) Analyzing the effective combination of back massage frirage, and acupressure at the time of breastmilk production, and (2) Analyzing the effective combination of back massage frirage, and acupressure on the adequacy of breastmilk for infants.

Hypothesis

The hypotheses in this study are: (1) The combination of back massage frirage, and acupressure was effective in accelerating the time of breastmilk production; and (2) The combination of back massage frirage and acupressure was effective in increasing the adequacy of breastmilk in infants.

METHODS

Research Design

The research was carried out at the midwife's practice (PMB) in Magetan District. The type of study used in this research was quasi-experimental with a posttest-only design with a control group design. In this design, the combination of back massage frirage and acupressure technique was performed only in the intervention group, while the control group did not take any action.

Population

The population in this study were all postpartum mothers and their babies in 3 midwife's practices (PMB Ny.W Magetan, PMB Sr Jabung, and PMB Snt Selotinatah) in the period March-August 2021. The sample in each group was 30 respondents, so the sample size was 60 respondents. From March to August 2021, 211 mothers gave birth to 3 PMB and only 60 postpartum mothers were selected through systematic random sampling involved in this study. Inclusion criteria in this study include; (1) Mothers postpartum on days 1-7 and their babies, (2) Mothers with their babies are not given formula milk, (3) Baby's sucking reflex is good, (4) Baby's weight was > 2500 grams, and (5) Mother is not suffering psychological disorder. While the exclusion criteria include; (1) Mothers who experience labor complications (eg postpartum hemorrhagic, and postpartum infection), (2) postpartum mothers with anatomical breast disorders (sink/flat nipples), and (3) mothers who smoke or drink alcohol.

Data Collection Tools and Methods

Data taken directly from respondents (postpartum mothers and their babies) at PMB Ny.W Magetan, RB Bunda Panekan, PMB Sr in Jabung, and PMB Snt in Selotinatah. Methods of data collection are:

1. The combination of back massage frirage and acupressure was conducted by researchers assisted by 6 enumerators. This action was carried out + 30 minutes-1 hour on days 1-3 postpartum and 7th postpartum day then continued once every 1 week.
2. The timing of the release of breastmilk used a measuring instrument in the form of hours which were calculated from the first time the breastmilk comes out after the mother gives birth and an interview sheet.
3. The adequacy of breastfeeding used an interview sheet measuring instrument which contains an evaluation checklist (15 question points) on the 3rd and 7th postpartum days. The midwife has also measured the baby's weight using special baby scales on the 1st, 3rd, and 7th days which aims to determine the adequacy of breastfeeding by increasing the baby's weight.

This research was conducted through the following stages of data collection:

1. Preparation
 - a. Researchers prepared the materials needed. The characteristics of the respondents were prepared according to the criteria of the research sample.

- b. Enumerators, researchers involved 6 enumerators as implementers and observers who had been exposed to the combination of back massage frirage and acupressure technique.
 - c. Administrative procedure: the researcher submitted an ethical review at the institution and submitted a research permit at the research site.
2. Implementation:
- a. Determine the research subject, namely the population taken and the determination of the research sample.
 - b. Respondents who entered the inclusion criteria have explained the objectives and procedures of the study and were asked for their consent to become research subjects.
 - c. Respondents expressed their consent to participate in the study by signing an informed consent form.
 - d. Provide back massage frirage treatment with acupressure combination.
 - e. Posttest data retrieval was carried out after the implementation of treatment in each treatment group and control group using a checklist. The time of breastfeeding production was observed 12 hours after treatment. Adequacy of breast milk was observed on the third and seventh days postpartum.

Data Analysis

The analysis in this research used descriptive and inferential analysis. Descriptive analysis for numerical data on the timing of breastmilk and the adequacy of breastmilk for infants by calculating the statistical mean, standard deviation, median, and range. Analysis of this study was done to know the difference between the intervention groups in the form of combination back massage frirage and acupressure compared with the control group using Mann Witney test and Independent samples t-test.

RESULTS

Characteristics of Respondents

Characteristics of respondents in the intervention group: age 21-35 years, work as a housewife (IRT) with high school education, and parity of 2 children. While the control group: age 21-35 years old, housewife, high school education, and parity of 2 children.

Table 2. Characteristics of respondents based on age, occupation, education, and parity and equality test results

No.	Characteristics of respondents	Intervention group		Control group		Equality
		n	%	n	%	
1	Age (years)					0.575
	21-35 years old	22	73.33	20	66.67	
	> 35 years old	8	26.67	10	33.33	
2	Profession					0.184
	Housewife	10	33.33	12	40	
	Trader	2	6.67	4	13.33	
	Farmer	3	10	3	10	
	Civil servant	9	30	5	16.67	
	Private	6	20	6	20	
3	Education					0.237
	Elementary school	3	10	0	0	
	Junior high school	0	0	10	33.33	
	Senior High School	16	53.33	19	63.34	
	Associate's Degree/ Bachelor Degree/ Master Degree	11	36.67	1	3.33	
4	Parity					0.551
	1 st	11	36.67	7	23.33	
	2 nd	13	43.33	14	46.67	
	3 rd	5	16.67	9	30	
	4 th	1	3.33	0	0	

The equality test on 60 respondents based on age, education, occupation, and parity was declared homogeneous > 0.05.

Description of Breastfeeding Time and Adequacy of Breastmilk for Babies

Table 3. Time of expenditure of breastmilk and adequacy of breastmilk for infants in the intervention group and control group

Variable	Group	Mean	SD	Min-Max
Breastfeeding time production	Intervention	5.26	4,699	1-24
	Control	24.63	10,280	8-48
Adequacy of breast milk on day 3	Intervention	13.83	1,205	10-15
	Control	6.96	2,399	3-11
Adequacy of breast milk on the 7th day	Intervention	14.80	0.550	13-15
	Control	12.23	0.727	10-13
Baby's weight day 3	Intervention	3158.67	56.17	2700-3900
	Control	3099.23	70.92	2480-3880
Baby's weight day 7	Intervention	3350.33	58.67	2800-4100
	Control	3169	65.89	2550-3880
Baby's weight gain on day 3	Intervention	32.67	47,701	-50-170
	Control	3.73	59,453	140-150
7 days of baby weight gain	Intervention	224.33	130,269	-20-500
	Control	73.50	64.019	-20-250

The results of descriptive statistics in this study showed that the average time of the expulsion of breastmilk in the intervention group was 5.26 hours with a minimum production time of between 1 and 24 hours, while in the control group the expulsion of breast milk was 24.63 hours with a minimum production time of 8 to 48 hours. The adequacy of breastmilk in the intervention group on the 3rd day averaged 13.83 criteria, while on the 7th day the average increased to 14.80 criteria. Adequacy of breastmilk in the control group on the 3rd day averaged 6.96 criteria, while on the 7th day the average was 12.23 criteria. The average weight of infants in the intervention group on the 3rd day was 3158.67 grams, while on the 7th day the average was 3350.33 grams. The average weight of the control group babies on the 3rd day was 3099.23 grams, while on the 7th day the average was 3169 grams. The weight gain of infants in the intervention group on the 3rd day was an average of 32.67 grams, while on the 7th day the baby's weight gain increased by an average of 224.33 grams. For the control group, the average weight gain on the 3rd day was 3.73 grams, while on the 7th day increased by an average of 73.50 grams.

Analysis of Differences in Breast Milk Expenditure and Adequacy of Breast Milk for Babies

The results of the normality test in this study used the Shapiro-Wilk data on the timing of breastmilk production and the adequacy of breastmilk for infants in the intervention group and control group showed <0.05 or the data was not normally distributed. Meanwhile, the weight of the babies on the 7th day of the intervention group and the control group showed > 0.05 (normally distributed). There are differences in the results of the normality test for each variable, so the difference in the effectiveness of the time variable for breastmilk production and the adequacy of breastmilk in infants was using Mann-Whitney U, while the baby's weight is using the independent sample t-test.

Table 4. The effectiveness of the back massage frirage combination of acupressure on the time of breastfeeding and the adequacy of breast milk for babies

Variable	Group	Mean±SD	Min-Max	Delta	p-value
Breastfeeding time production	Intervention	5.26±4.699	1-24	-	0.041
	Control	24.63±10,280	8-48	-	
Adequacy of breast milk	Intervention	14.80±0.550	13-15	0.96	0.047
	Control	12.23±0.727	10-13	5.26	
Baby weight	Intervention	3350.33±58.67	2800-4100	191.67	0.044
	Control	3169±65,89	2550-3880	69.76	

The table above shows that the timing of breastmilk production, the adequacy of breastmilk for infants, and the increase in infant weight in the intervention group and the control group showed significant differences ($p < 0.05$). This result means that the combination of back massage frirage and acupressure was effective in accelerating the time of the expulsion of breastmilk and increasing the adequacy of breastmilk for the baby.

DISCUSSION

In this study, it was found that a complementary technique in the form of the back massage frirage method combined with Acupressure was effective in accelerating the time of the expulsion of breast milk immediately after the mother gave birth. On average, it takes a mother 5.26 hours for her breasts to produce breastmilk on the first day after giving birth. This breastmilk production was characterized by the release of breastmilk either dripping alone or with the help of pressing on the areola and nipple. The volume of the first breastmilk discharge this time is not too much, which is about 10 drops.

There have been many actions to accelerate milk production, one of which was conveyed by Dhanio, Rafika, & Batjo who found that the combination of neck massage and oxytocin was able to accelerate the release of breastmilk by an average of 3.35 hours, while oxytocin massage alone was able to accelerate the time of the expulsion of breastmilk by an average of 6.86 hours (p -value < 0.05)². The same thing was also conveyed by Manning, Fibrila, & Fairus who stated that endorphin massage given to postpartum mothers was able to accelerate the release of breast milk in an average of 2 days when compared to the control group which was only able to express milk in an average of 4.53 days ($p < 0.000$)⁶.

Massage in the back area at the meridian points along the spine can reduce the level of muscle tension in the mother after giving birth. Massage in the form of a light and soft touch can provide comfort to the mother because the endorphin hormone released reduces pain during the puerperium. The basis of the effleurage massage movement, which is to provide a gentle touch with a slight emphasis on the skin surface until it reaches the peripheral blood vessels, can increase the stretching of the superficial muscles, thereby increasing the flow of superficial veins from the capillaries. Rubbing directly on the skin intensely raises the temperature in the area around the massage because the blood vessels dilate. Pressure even if given gently can soften the stiff muscle tissue due to the myoglosis process.

In addition to the basic effleurage movement, the basic friction movement as part of the back massage frirage also has a lot of good effects on postpartum mothers. The frictional motion of varying degrees of pressure in the back area plays a major role in creating the structural effect of massage. Swiping is the best type of massage for stretching muscles, widening muscles, reducing fascial restriction, and increasing collagen remodeling. This stretching action helps it in restoring the general flexibility of the body and relieves the body from pain as it stimulates the release of endorphins. When the comfort of the body is obtained by the mother.

In acupressure, slow breastmilk production is caused by 2 things, namely Qi stagnation and lack of blood. After giving birth, mothers experience mild to severe Qi stagnation and lack of blood due to bleeding during labor. As a result of Qi stagnation, relaxation and the letdown reflex are inhibited by muscle tension in the shoulders, back, and shoulder blades. Strong pressure on the nerves of several meridian points in the back, shoulder blades, and shoulders can break the nervous tension and increase the production of oxytocin instantly. The speed to stimulate the release of oxytocin also affects the timing of breastfeeding because prolactin also decreases when stimulated.

In this study, it was found that the combination of back massage frirage and acupressure was more effective in increasing the adequacy of breastmilk for infants. The assessment of the adequacy of breastfeeding was obtained from the findings of the number of criteria that appeared in the intervention group, namely an average of 14.80 criteria. Almost all mothers and babies on the 3rd and 7th days were found to have sufficient breast milk. Infant weight as one of the criteria for breast milk adequacy was also found to increase. The baby's weight ranges from 3,350 grams with an average increase during the first week after the birth of 224.33 grams.

Babies with adequate breastmilk must meet the 15 requirements for adequate breastfeeding, namely; changes in the mother's breasts since the first day (breasts are tense, increase in size, weight and feel warm), the production of breast milk has started since the first day after giving birth with the characteristics of milk coming out dripping/seeping on its own or through light pressure on the areola and nipples, milk production abundant breast milk on the 2nd to 4th day, the baby suckles 8-12 times a day and the baby sucks on the mother's nipple when feeding regularly for at least 10 minutes per breast. Study³ showed a significant difference in breastmilk production among mothers who received a combination of breast care and oxytocin massage compared to the control group (p -value < 0.05). The average breastmilk production in the intervention group was 34.67 ml while in the control group it was only 19.33 ml. An increase in breastmilk production is influenced by breast care, where massage around the mammary corpus and papillae directly stimulates the release of the hormone oxytocin. This

hormone then stimulates the contraction of myoepithelial cells and causes the milk to come out smoothly. Oxytocin massage along the 5-6 costal spine stimulates the hormones prolactin and oxytocin so that breast milk is produced properly.

Study⁷ stated that the average increase in prolactin hormone production after the combined action of Woolwich massage and endorphins was 196.02 ng/ml, while the control group averaged an increase in prolactin hormone production of 146.50 ng/ml (p-value <0.05). Still, in the same study, it was found that the average increase in breastmilk volume in the intervention group was 19.30 ml, while the control group increased breastmilk volume only by 2.40 ml (p-value <0.05). Back massage frirage that takes the basic techniques of effleurage and friction has the effect of stimulating the production of endorphin hormones. The effect of stimulating endorphins to be released by the body is obtained from a soft touch with a force of pressure that is adjusted to the comfort level of the mother after giving birth. Pressure on the surface of the skin to touch the muscles of the back area, shoulder blades, and shoulder intensely not only increases the ambient temperature but also increases blood flow to the heart. Acupressure on the area around the shoulder blades at points BL42, BL44, and shoulder acupressure at the SI15, SI14, TB14, TB13, and TB12 meridians will stimulate the production of endorphins. At the beginning of the emphasis, the mother felt a little pain but after a while, the mother felt comfortable.

The requirements for the adequacy of breastmilk for other babies are; frequency of urination 5-7 times in 24 hours with clear urine color, not yellow and no reddish fine granules, frequency of defecation more than 4 times a day with a volume of 1 tablespoon, on the 2nd day the stool is yellowish with milky white granules, the baby's weight loss should not exceed 10% of the baby's birth weight and there is a slight increase in the baby's weight in the first 14 days, after feeding the baby will sleep soundly for 3-4 hours and the baby looks satisfied. Study⁴ stated that there was a difference (p-value <0.05) in the increase in the baby's weight after the mother received endorphins massage and warm compresses compared to the control group. The average increase in infant weight in the intervention group was 20.97 grams, while in the control group the average increase in infant weight was 12.03 grams. This study also found differences in the length of sleep of infants in the intervention group compared to the control group (p-value <0.05) with an average sleep duration of infants in the intervention group of 20.72 minutes while the average length of sleep of infants in the control group was 11.28 minutes.

The combination of back massage frirage and acupressure ensures that mothers can produce milk immediately after delivery. This condition benefits the baby because immediately after birth the baby looks for food sources and starts to suckle from his mother. Sufficient milk production for infants has a major impact on their growth and development. A baby's weight was one indicator of the adequacy of breastmilk for babies. In early birth, weight loss can occur but should not exceed 10% of the baby's birth weight. Efforts to stabilize and increase the baby's weight were to increase milk production as soon as possible.

Acupressure was a type of non-pharmacological treatment that relies on emphasis on certain meridian points in the body to stimulate the healing process and is believed to improve psychological health. After giving birth, mothers experience fatigue both physically and psychologically. Acupressure performed on the mother through stimulation of acupoints in the back, shoulder, and shoulder area is believed to strengthen and weaken Qi energy to increase the vitality of the body's organs. Stimulation at the meridian points can increase the production of serotonin as a neurotransmitter and stimulate the myelin nerves found in the midbrain, hypothalamus, and spinal cord to increase blood flow so that endorphins in the blood increase¹⁰. The combination of back massage frirage and acupressure utilizes myelin nerve stimulation in the hypothalamus so that it also has an impact on the production of the hormone prolactin and the hormone oxytocin. This means that the combination of back massage frirage and acupressure was effective in accelerating the time of the expulsion of breastmilk and increasing the adequacy of breastmilk for the baby.

CONCLUSION

The combination of back massage frirage and acupressure was effective in accelerating the time of the expulsion of breastmilk and increasing the adequacy of breastmilk for babies. Recommendations for health workers, especially midwives, to apply a combination of back massage frirage and acupressure to every mother immediately after giving birth so that the time to express breastmilk is faster and the breastmilk production was adequate.

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