

## THE EFFECT OF MARMET MASSAGE TECHNIQUE ON INCREASING BREAST MILK PRODUCTION IN BREASTFEEDING MOTHERS OF INFANTS AGED 0-6 MONTHS

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### Abstract

Breast milk is the most suitable, best and most perfect food for babies. Breast milk contains substances for development, intelligence, immune substances (preventing from various diseases). Many obstacles are faced by breastfeeding mothers for the lactation process, one of which is not producing enough breast milk. This study aims to analyze the effect of marmet technique on breast milk production in breastfeeding mothers aged 0-6 months. This study is a pre-experiment approach one group pre-test post-test design. Data was collected on August 18 - August 31, 2024 from 56 respondents by accidental sampling. Data processing included editing, coding, scoring, and tabulating. Then analyzed with McNemar test because the normality test was not normally distributed. The results of data analysis Breast milk production before the marmet technique was obtained entirely not smooth as many as 56 respondents (100%) and after the marmet technique was obtained almost entirely smooth as many as 51 respondents (91.1%). Translated with DeepL.com (free version) The results of the McNemar statistical test showed P Value = 0.000 < alpha ( $\alpha$ ) = 0.05, meaning that there is an effect of the marmet technique on breast milk production in breastfeeding mothers aged 0-6 months. It is very important for health workers, especially midwives, to provide continuous services regarding the marmet technique in increasing breast milk production. A midwife is responsible for carrying out services as optimally as possible based on professional ethics. The role of midwives is more dominant in the management of successful breastfeeding and the provision of non-pharmacological therapy.

Keywords: Breast milk, Breastfeeding, Marmet Massage Technique

### 1. INTRODUCTION

Breast milk is the most suitable, best and most perfect food for babies. Breast milk contains substances for development, intelligence, immune substances (preventing from various diseases) and can establish love between mother and baby, delay pregnancy, reduce the risk of breast cancer, and is a special happiness for the mother. The growth and development of the baby is largely determined by the amount of breast milk obtained including energy and other nutrients contained in breast milk. (1). The process of giving breast milk to the baby can be done by the mother through breastfeeding. The process of breastfeeding can be done as soon as the newborn is born through imd (early breastfeeding initiation), then the process of milk ejection begins or is stimulated by the suction of the baby's mouth on the nipple of the mother's breast. (2)

Based on 2020 Word Health Organization (WHO) data on exclusive breastfeeding coverage in the world is only 38%. This achievement is still below the exclusive breastfeeding coverage target set by WHO which is 50%. According to Riskesdas data taken from 2014-2018, exclusive breastfeeding coverage in Indonesia in 2017 was 37.3%, 2018 was 55.7%, 2019 was 54%, 2020 was 61.33%, and in 2021 there was a significant decrease of 37.3%. When compared to the target set by the Indonesian Ministry of Health, which is 80%, the achievement of exclusive breastfeeding at the Indonesian level

still does not meet the target (Indonesian Ministry of Health, 2020). According to the Ministry of Health Profile data, the national exclusive breastfeeding coverage in 2021 was 67.74% and in 2022 the exclusive breastfeeding coverage increased to 69.7% (Directorate General of Public Health, Ministry of Health, 2023). The East Java Central Bureau of Statistics (BPS) noted that in 2022 the percentage of infants aged up to 6 months who received exclusive breastfeeding amounted to 69.72% (3). Exclusive breastfeeding coverage in Situbondo District in 2020 based on monthly reports was 74.2%, i.e. 758 babies out of 1022 babies examined. Coverage of 6-month-old babies receiving exclusive breastfeeding in 2020, and increased in 2021 by 76.3%, namely 839 babies out of 1,638 babies examined, and continued to increase in 2022 by 77.8%, namely 5,094 babies out of 6,550 babies examined (4)

Minister of Health Regulation No. 39 of 2013 on Infant Formula and Other Baby Products which states that the government is responsible for increasing public knowledge and awareness of the importance of fulfilling nutrition in infants by providing exclusive breastfeeding (5). When infants are not exclusively breastfed, there are adverse effects for infants. Infants have a 3.94 times greater risk of dying from diarrhea than exclusively breastfed infants (6). In addition, infants who are not exclusively breastfed will be given formula milk by their parents. Infant formula feeding can also increase the risk of urinary tract, airway and ear infections. Infants also experience colic, food allergies, asthma, diabetes and chronic gastrointestinal diseases. (7).

Breastfed babies are healthier than formula-fed babies. Breastfeeding provides many benefits for the baby and mother including in terms of the baby's growth and development and the mother's health. There are many obstacles faced by breastfeeding mothers for the lactation process, one of which is that the mother does not produce enough breast milk (8). Ways that can be done to facilitate breast milk production are pharmacological therapy by giving donperidone, metoclopramide and non-pharmacological therapy. One way of non-pharmacological therapy to facilitate breast milk is the marmet technique (9). The marmet technique is a technique of expressing breast milk using fingers. This technique is quite practical and hassle-free to prepare equipment, just provide clean hands and a container for expressing breast milk. By massaging the areola area, it can stimulate the release of prolactin. The release of the prolactin hormone will stimulate the mammary alveoli to produce breast milk, so when the alveoli are stimulated, the cells will produce breast milk into the milk let-down reflex (LDR) duct system with this technique, the milk will come out of the mother's breast smoothly (8).

Based on the explanation above, it is very important for health workers, especially midwives, to provide continuous services regarding the marmet technique in increasing breast milk production because it is the patient's right to get the best service and the family's right to know the therapy in handling complaints of breastfeeding mothers. A midwife is responsible for carrying out services as optimally as possible based on professional ethics. The role of midwives is more dominant in the management of successful breastfeeding and the provision of non-pharmacological therapy. The results of preliminary studies conducted on postpartum mothers at TPMB Isti Kec. Asembagus on June 28 - July 08, 2024 to 10 respondents obtained data 8 respondents (80%) said their milk production was smooth after 2-3 days of routine marmet technique and 2 respondents (20%) said their milk came out but still not much because the mother had just given birth 1 day ago and the marmet technique had only been done for 1 day.

## 2. METHODOLOGY

The design in this study is pre experimental design with one group pre test - post test design. The independent variable in this study is marmet massage technique. The dependent variable in this study was breast milk production. The measuring instrument used sop and questionnaire sheets. The population was 65 respondents. The sampling method in this study used non probability sampling with accidental sampling technique. The sample in this study were breastfeeding mothers 0-6 months who were calculated using the slovin formula. Data collection method with editing, coding, entry, tabulating and cleaning. Data analysis included univariate and bivariate analysis.

### 3.RESULTS

#### 3.1.1. General Data (Respondent Characteristics)

##### a. Characteristics of Respondents by Age

Table 5.1 Frequency distribution of respondents based on age in the Asembagus Health Center Working Area on August 18 - August 31, 2024

Age	Frekuensi (f)	Prosentase (%)
≤ 20 age	1	1.8
21-30 age	38	67.9
31-40 age	17	30.3
<b>Total</b>	56	100 %

Source: Primary research data 2024

Based on table 5.1, it can be seen that the age distribution of respondents was mostly aged 21-30 years as many as 38 respondents (67.9%) and a small proportion aged ≤ 20 years as many as 1 respondent (1.8%).

##### b. Characteristics of Respondents based on Education

Table 5.2 Distribution of respondents based on education in the Asembagus Health Center Working Area on August 18 - August 31, 2024

Education	Frekuensi (f)	Prosentase (%)
Basic (SD/ SMP)	6	10,7
Medium (SMA)	30	53,6
College	20	35,7
<b>Total</b>	56	100 %

Source: Primary research data 2024

Based on table 5.2, it can be seen that the distribution of respondents' education is mostly secondary (high school) as many as 30 respondents (53.6%) and a small portion of basic education (elementary / junior high school), namely 6 respondents (10.7%).

##### c. Characteristics of Respondents by Occupation

Table 5.3 Distribution of respondents based on occupation in the Asembagus Health Center Working Area on August 18 - August 31, 2024

Jobs	Frekuensi (f)	Prosentase (%)
Working	32	57,1
Not Working	24	42,9
<b>Total</b>	56	100 %

Source: Primary research data 2024

Based on table 5.3, it can be seen that the distribution of respondents' jobs is mostly working, namely 32 respondents (57.1%). Wiknjastro (10) explains that a healthy reproductive age range is between 20-35 years old. This period is the best period for pregnancy, childbirth and breastfeeding. In the period of healthy reproduction, breast milk production will be sufficient because the function of the reproductive organs can still work optimally. Based on table 5.1, it can be seen that the age distribution of respondents was mostly aged 21-30 years as many as 38 respondents (67.9%) and a small proportion aged ≤ 20 years as many as 1 respondent (1.8%). In this case, breastfeeding mothers are

able to interpret and apply the marmet massage technique demonstrated by health workers so that it affects the milk production of breastfeeding mothers.

Education is the process of changing people's behavior and attitudes in an effort to mature through training and teaching, this is related to coping strategies, namely the consequences of each individual to assess a situation. Based on table 5.2, it can be seen that the distribution of respondents' education is mostly secondary (high school) as many as 30 respondents (53.6%) and a small portion of basic education (elementary / junior high school), namely 6 respondents (10.7%). The research data also mentioned that mothers have secondary and higher education, this will affect the mother's knowledge about breast milk production where mothers who have knowledge about breast milk will try to increase breast milk production by consuming nutritious foods so that their milk production becomes more.

The production of breast milk is also influenced by the mother's work where mothers who work and experience fatigue will affect breast milk production, this is in accordance with the theory put forward (11). Breast milk production is strongly influenced by psychological factors because maternal feelings can inhibit or increase oxytocin production, if the mother is depressed, sad, lack of confidence and various forms of emotional tension can reduce milk production. Based on table 5.3, it can be seen that the distribution of respondents' jobs is mostly working, namely 32 respondents (57.1%). Mothers who are breastfeeding should not be too much burdened by household chores, office affairs, and others. The task of a housewife is very much including cooking, washing, taking care of children and husbands. This results in fatigue or tiredness in the mother which triggers a decrease in milk production. Mothers who experience stress will experience a blockade of the letdown reflex. This is due to the release of adrenaline (epinephrine) which causes vasoconstriction of the alveoli blood vessels so that it will prevent oxytocin from reaching the target myoepithelium organ. An incomplete letdown reflex will cause a buildup of milk in the alveoli which clinically appears as enlarged breasts.

### 3.1.2. Specialized Data

a. Implementation of the Marmet Massage Technique in the Asembagus Health Center Working Area

Table 5.4 Distribution of respondents based on the implementation of the marmet massage technique in the Asembagus Health Center Working Area on August 18 - August 31, 2024

Marmet Massage Technique	Frekuensi (f)	Prosentase (%)
Often	30	53,6
Rare	26	46,4
Not done	0	0
<b>Total</b>	<b>56</b>	<b>100 %</b>

*Source: Primary research data 2024*

Based on table 5.4 of the results of data analysis of marmet massage techniques, most of them were often done as many as 30 respondents (53.6%) and a small proportion rarely performed marmet massage techniques as many as 26 respondents (46.4%).

b. Breast milk production before Marmet Massage Technique in Asembagus Health Center Working Area

Table 5.5 Distribution of respondents based on breast milk production before the marmet massage technique in the Asembagus Health Center Working Area on August 18 - August 31, 2024

Milk Production Before Marmet Technique	Frekuensi (f)	Prosentase (%)
Current	0	0
Not Current	56	100
<b>Total</b>	<b>56</b>	<b>100 %</b>

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*Source: Primary research data 2024*

Based on table 5.5 of the results of data analysis of breast milk production before the marmet massage technique was obtained entirely not smooth as many as 56 respondents (100%).

c. Breast milk production after Marmet Massage Technique in Asembagus Health Center Working Area

Table 5.6 Distribution of respondents based on breast milk production after the marmet massage technique in the Asembagus Health Center Working Area on August 18 - August 31, 2024

Milk Production After Marmet Technique	Frekuensi (f)	Prosentase (%)
Current	51	91,1
Not Current	5	8,9
<b>Total</b>	<b>56</b>	<b>100 %</b>

*Source: Primary research data 2024*

Based on table 5.6 of the results of data analysis of breast milk production after the marmet massage technique was obtained almost entirely smoothly as many as 51 respondents (91.1%).

d. Normality Test

Normality test is used to determine whether the sample group is normally distributed or not. Normality testing was carried out using the Shapiro Wilk method with the help of the SPSS program with a significance level of 0.05.

Table 5.7 Normality test results of respondents' milk production before and after Marmet Massage Technique

Breast milk production	Shapiro Wilk	
	Statistik	Sign
Breast milk production of respondents before Marmet Technique	0.553	0.000
Milk production of respondents after Marmet Technique	0.594	0.000

*Source: Primary research data 2024*

Based on table 5.7, the results of the analysis test using Shapiro Wilk obtained a P value = 0.000 on the respondent's breast milk production before the marmet massage technique and a P value = 0.000 on the respondent's breast milk production after the marmet technique, which means that the P value < alpha = 0.05 so it can be concluded that this study is not normally distributed so that it uses a non-probability analysis test with the McNemar test.

The marmet technique is a method of massaging and stimulating so that breast milk is released optimally. If done effectively and appropriately, there will be no problems with damage to the milk production network or milk production. Expressing breast milk using the Marmet technique was originally created by a mother who had to express her breast milk for medical reasons. Initially, she had difficulty expressing breastmilk with reflexes that did not match the reflexes when the baby suckled. Eventually, she found a method of massaging and stimulating to optimize the milk release reflex. The key to success of this technique is the combination of pumping and massaging. If this technique is done effectively and appropriately, then there should be no problem in milk production. The more often a mother practices expressing with this marmet technique, the smoother she will be able to express milk. This technique can be easily learned according to the instructions so that mothers will not encounter problems in practicing it (12).

Expressing breastmilk by hand is highly recommended. Hand milking produces a tactile stimulus that stimulates lactation hormones and allows the mother to select specific areas of the breast for



blocked ducts. If hand expressing is the only way to empty the breasts, the mother should be encouraged to express at least 8 times a day, including at night when prolactin levels are high (13).

Based on table 5.4 of the results of data analysis of the marmet massage technique, it was found that most of them were often done as many as 30 respondents (53.6%) and a small proportion rarely performed the marmet massage technique as many as 26 respondents (46.4%). According to the researcher's assumption, based on the results of the research, the marmet technique can increase breast milk production in postpartum mothers because it is a combination of expressing breast milk and massaging the breasts so that the reflex of milk release can be optimized. The technique of expressing breast milk using the marmet method aims to empty breast milk from the lactiferous sinus located under the areola so that it is hoped that emptying breast milk in the lactiferous sinus will stimulate prolactin production. The release of prolactin hormone is expected to stimulate the mammary alveoli to produce breast milk.

### 3.1.3. Data Analysis

#### a. Cross Tabulation of Metabolic Massage Technique on Milk Production

Table 5.8 Distribution of respondents based on the Marmet Massage Technique on Breast Milk Production in the Asembagus Health Center Working Area on August 18 - August 31, 2024

Marmet Technique	Breast milk production					
	Current		Not Current		Total	
	F	(%)	F	(%)	F	(%)
Often	30	53,6	0	0	30	53,6
Rarely	21	37,5	5	8,9	26	46,4
Not Done	0	0	0	0	0	0
<b>Total</b>	<b>51</b>	<b>91,1</b>	<b>5</b>	<b>8,9</b>	<b>56</b>	<b>100</b>

Source: Primary research data 2024

Based on table 5.8 from the results of data analysis of cross tabulation of marmet massage techniques on breast milk production, it was found that most of the marmet massage techniques were often done and breast milk production was smooth as many as 30 respondents (53.6%). Breast milk is an emulsion of fat in a solution of protein, lactose, and organic salts secreted by both sides of the mother's breast glands, and is useful as baby food (14). Breast milk production is a very complex interaction between mechanical stimuli, nerves and various hormones. There are two hormones that produce breast milk, prolactin and oxytocin. Both hormones are produced in an organ in the brain called the pituitary. In a breastfeeding mother, there are 2 reflexes that each play a role in the formation and release of milk, namely the prolactin reflex and the oxytocin reflex or "let down reflex" (14).

Based on table 5.5 from the results of data analysis of breast milk production before the marmet massage technique was obtained, all of them were not smooth as many as 56 respondents (100%). Based on table 5.6 of the results of data analysis of breast milk production after the marmet massage technique was obtained almost entirely smooth as many as 51 respondents (91.1%). Based on the results of interviews with several respondents conducted by researchers while conducting research, it was stated that by doing the marmet massage technique every day, breast milk production was getting more and more and could meet the nutritional needs of the baby which was marked by the baby's weight gain, the amount of milk expressed was increasing in volume, which was around 700-800 ml per day, sometimes the breasts looked hard and seeped out.

#### b. Statistical Test Analysis Results

Table 5.9 McNemar test results of the Marmet Massage Technique on Breast Milk Production in the Asembagus Health Center Working Area on August 18 - August 31, 2024

Chi-Square <sup>a</sup>	N	Asymp. Sig.
49.020	56	.000

Based on table 5.9, the results of the McNemar statistical test with a sample of 56 respondents showed a  $p$  value = 0.000 < the alpha value ( $\alpha$ ) = 0.05, which means that there is an effect of the Marmet Massage Technique on Breast Milk Production in the Asembagus Health Center Working Area. There are several techniques to express breast milk, one of which is the marmet massage technique. The marmet massage technique combines massaging and expressing the breasts (milk-making cells and milk ducts) to increase the hormone oxytocin (15). The Marmet technique is a manual way of expressing breast milk and prioritizes the let down reflex (LDR). The marmet technique stimulates LDR at the beginning of the milking process and can produce 2-3 times more milk than without using this LDR technique. Let down reflex (LDR) is the same as the stimulation that occurs if the nipple is sucked by the baby and after a while the breast will suddenly tighten and the milk will come out profusely so that the baby has to speed up the rhythm of sucking the milk, more or less like that if we get the LDR effect (8).

The marmet massage technique releases milk manually and helps the milk ejection reflex. Stimulating the let down reflex at the beginning of the milking process can produce 2-3 times more milk than without using this technique. The marmet technique develops massage and stimulation methods to help key the milk ejection reflex. The success of this technique is the combination of massage and milk release. This technique is effective and does not cause any problems (16). If these techniques are done effectively and correctly then there should be no more problems with milk production or expressing milk. This technique can be easily learned according to the instructions. Of course, the more often you practice pumping with the Marmet technique, the more accustomed you will be and you will not encounter any problems.

Based on table 5.8, from the results of the cross tabulation data analysis of the marmet massage technique on breast milk production, it was found that most of the marmet massage techniques were often done and breast milk production was smooth as many as 30 respondents (53.6%). Based on table 5.9, the results of the McNemar statistical test with a sample of 56 respondents showed a  $p$  value = 0.011 < from the alpha value ( $\alpha$ ) = 0.05, which means that there is an effect of the Marmet Massage Technique on Breast Milk Production in the Asembagus Health Center Working Area. The marmet technique can be used for breast milk production that can be practically applied by mothers. The marmet technique is a technique used to express breast milk. This technique provides a relaxing effect and also reactivates the milk ejection reflex (MER) so that milk begins to drip. With the MER activated, breast milk will often spray out by itself. The marmet technique is a massage using two fingers. This method is often referred to as back to nature because it is simple and does not require money. The marmet technique is one of the safe ways that can be done to stimulate the breasts to produce more breast milk (17).

From the results of research on breast milk production of post partum mothers, it was found that there was a change in the fluency of breast milk before and after the marmet technique. This is in accordance with the research results of (15) that the recommended breast milk pumping technique is to use hands and fingers because it is practical, effective and efficient compared to using a pump. The way to express breast milk using the Cloe Marmet method is called the Marmet Technique which is a combination of expressing and massaging techniques. Expressing milk using hands and fingers has the advantage of being able to adjust the negative pressure, being more practical and economical because it is enough to wash your hands and fingers before expressing breast milk. Based on the analysis of the control group, there were several problems such as the occurrence of breast milk dams or breast milk blockage, breast milk blockage can occur because the milk in the duct is not immediately released, resulting in swelling and becoming a problem in breastfeeding. This can interfere with milk production because it can cause breast emptying to not occur, where breast emptying can increase milk production. The more milk is removed or emptied from the breast, the more milk will be produced. In addition, efforts to stimulate prolactin and oxytocin hormones in mothers after childbirth in addition to expressing breast milk, can also be done by taking care or massaging the breasts, cleaning the nipples, frequently breastfeeding the baby even though the milk has not come out, early and regular breastfeeding and oxytocin massage.

#### 4.CONCLUSIONS

Based on the results of research conducted in the asempagus health center working area on august 18 - august 31, 2024, it can be concluded: breast milk production before the marmet massage technique was obtained entirely not smooth as many as 56 respondents (100%), breast milk production after the marmet massage technique was obtained almost entirely smooth as many as 51 respondents (91.1%) and there was an effect of marmet massage technique on breast milk production in the asempagus health center working area with a p value of 0.000 thus it can be concluded that there is a significant increase in breast milk production so that it can increase the coverage of exclusive breastfeeding. the limitation of the study is that it needs repeated explanations to respondents so that the research time is longer.

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