



Article

Narrative Review of The Effectiveness of Rolling Massage and Endorphin Massage on ASI Production in Breastfeeding Mothers

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A B S T R A C T

Background: World Health Organization (WHO) in 2020 stated that 149.2 million children under 5 years old are affected by stunting. National Statistics Center of Indonesia (BPS) stated that 5.2% of child under 2 years were in underweight condition and 1.2% of them were very underweight. Based on Indonesian Health Ministry Regulation (No. 23 of 2014), efforts to implement balanced nutrition to overcome chronic nutritional problems can be done through exclusive breastfeeding. Besides that, in 2020, West Sumatra province experienced a decrease in the percentage of breastfeeding from (77.6%) to (69.7%), which was caused dominantly by factor decreased of breast milk production and secretion by 32%. WHO states that there are 10 steps for successful exclusive breastfeeding, one of which is breast care, that can be achieved by giving of rolling massage and endorphin massage, which not many people know about.

Purpose: The aim of this literature study is to present information about the application of rolling massage and endorphin massage as a way to accelerate and increase breast milk production.

Methods: This research method was a literature review study. Journal searches were carried out by applying online database such as Pubmed, Garuda Portal, ScienceDirect and Google scholar. Articles were selected based on inclusion and exclusion criteria.

Results: The analysis was carried out on 22 research articles. It was found that Rolling massage and endorphin massage are non-pharmacological techniques for breast care performed on the mother's back, neck and arms to trigger the excretion of the hormones prolactin and oxytocin.

Conclusion: The influence of rolling massage and endorphin massage is useful in overcoming breast milk production constraints.

Keywords: breastfeeding, breast milk, rolling massage, endorphin massage, breast care.

I. INTRODUCTION

World Health Organization (WHO) in 2020 stated that from all children in the world, 149.2 million of children under 5 years old experienced stunting (which is equivalent to 2/3 of the total child population worldwide), 45.4 million experienced wasting, and 38.9 million of them are obese.¹

Based on collected survey data (targeting households who has a two year old child) in 2021 by the Health Research and Development Agency (Balitbangkes) of the Ministry of Health and the Central Statistics Agency (BPS) through the Indonesian Nutritional Status Study (SSGI), that 5.2% of child under 2 years were underweight and 1.2% of them were very underweight. East Nusa Tenggara is a province with the highest percentage of underweight and very underweight two year old baby, with the lowest percentage province is Bali. Besides that, West Sumatra has 6.3% of total two year old baby are in underweight condition, and 1.3% of them was very underweight.² Besides that, based on information from the Health Service Departement of Padang in 2021, it is known that the number of toddlers with malnutrition is 5,959 (12.1%), short is 3,488 (7.1%), and underweight is 2,728 (5.5%) in Padang.³

Therefore, appropriate treatment is needed. In accordance with Regulation of Health Ministry of Indonesia (No. 23 of 2014), efforts to implement balanced nutrition can be carried out by improving the nutritional quality of individuals and society.

Improving community nutrition can be achieved if each family is able to recognize, prevent, and also overcome the nutritional problems of its family members. One of effort that can be made to overcome nutritional problems in the family is by providing exclusive breastfeeding. Exclusive breastfeeding must be given from the first day of birth (HPL) until 6 months of age with on demand intervals given, according to the baby's needs without adding other food and drink, dependedless on breastfeeding time. Therefore, it is very important for parents to pay attention in the effectiveness of breastfeeding, including in terms of quantity and quality. Because at this period, including the first 1.000 days of life (HPK) or called "*golden years*", health problems can be overcome, and the child's development and growth can continue well until he is 2 years old.²

Data collected by the Ministry of Health of the Republic of Indonesia shows that the coverage rate for babies receiving exclusive breastfeeding in Indonesia in 2021 is 56.9%. The highest percentage of exclusive breastfeeding coverage is in West Nusa Tenggara Province (82.4%), and the lowest is in Maluku Province (13.0%). Meanwhile, West Sumatra Province is in fifth position with exclusive breastfeeding at 69.7%.² Besides that, 4,455 babies (69.9%) received exclusive breastfeeding in Padang, according to data registered in the "2021 exclusive breastfeeding registry". The data also shows that, exclusive breastfeeding has decreased compared to 2020, amounting to 6,977 people (70.3%).³

The Ministry of Health of the Republic of Indonesia in 2018 said that based on data collected from the United Nations International Children's Emergency Fund (UNICEF) and the World Health Assembly (WHA), hampered breast milk production and irregular milk production causing trouble for mothers to provide breast milk to the baby.⁶

Breast milk production and secretion may decreased during postpartum period. This often happens due to the mother's lack of knowledge about breastfeeding techniques and awareness in breast care, resulting in a reduction in the stimulation of the hormones prolactin and oxytocin, which causes disruption in the production and release of breast milk in the early postpartum period.⁷

There are two methods that can be made to ensure that breast milk becomes smooth during the early postpartum period, namely pharmacological and non-pharmacological methods. In fact, nowadays, most people prefer non-pharmacological methods, considering the high cost of treatment and the side effects caused by pharmacological treatment. One of the

non-pharmacological methods commonly used by most people today is massage, like rolling massage and endorphin massage.¹⁰

Related research by Atika, et al, in 2021 proves that at the West Sungai Gebar Village Health Post, there were 10 out of 18 respondents who admitted that their breast milk was not flowing smoothly (55.6%). After carrying out Rolling Massage on these mothers, mothers who experienced problems with breastfeeding decreased to 4 respondents (22.2%).⁶ Apart from that, related research by Tutik and Iis (tahunnya) also found that 27 out of 40 postpartum breastfeeder mothers or (67.5%) were having problems with breast milk production. After being given intervention by Endorphin Massage, it resulted that 26 mothers (65%) can producing breast milk smoothly.⁴

After considering the brief explanation above, the author is interested in conducting a literature study regarding the relationship between the application of rolling massage and endorphin massage to the smooth production of breast milk. Every postpartum mother during pregnancy will experience an increase in the hormone progesterone. This results in the obstruction of the work of the hormone prolactin produced by the placenta and the hormone oxytocin in the production and secretion of breast milk. Therefore, preventive efforts are carried out to overcome the problem of hampered breast milk production. Prevention includes good breast care as the main service in addition to promotional services that can be implemented in the field of midwifery practice.⁹

II. METHODS

The method used in writing this article is narrative literature review. This literature study was conducted from November 2022 to October 2023. Data collection was carried out through four database; PubMed, Google Scholar, Science Direct, and Portal Garuda. The keywords used in the journal search are “rolling massage” OR “endorphin massage” OR “oxytocin massage” OR “nape massage” AND “breastfeeding” AND “breastmilk” in English and Bahasa.

The inclusion criteria for journal searches are full text journals that discuss the topic of the influence of rolling massage and endorphin massage on smooth breast milk production, primary research journals, English language international journals indexed by Scopus, Indonesian language national journals indexed by SINTA 1, 2, 3, & 4 and year of publication 2018-2023. Meanwhile, the inclusion criteria for journal searches are secondary journals or tertiary research journals.

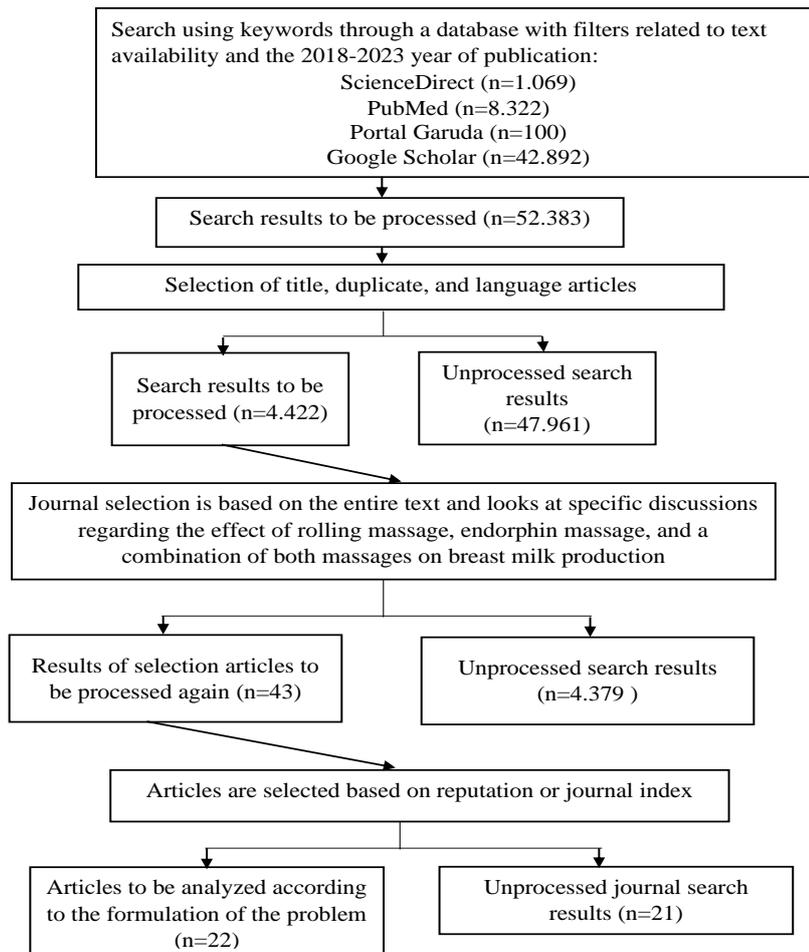


Figure 1. journal selection steps

III. RESULT

Journal searches are carried out through a database by selecting journals based on the criteria for inclusion and exclusion of established literature studies.

Relevant articles based on the inclusion criteria which was found in the four databases is 22 articles in 22 journals. In the analyzed articles, 3 articles discusses giving rolling massage and endorphin massage to breast milk production sourced from the Portal Garuda and Google Scholar. In addition, 10 articles that will be analyzed explain the treatment just rolling massage for breastfeeding mothers sourced from Sciencedirect, Portal Garuda, and Google Scholar as well as 9 other articles illustrate carrying out endorphin massage without combining it with anything else success in providing breast milk to babies.

IV. DISCUSSION

Effectiveness of Rolling Massage on Breast Milk Production

During pregnancy, one of the anatomical changes that occurs in pregnant women is breast enlargement because the cells of the lactiferous ducts and breast milk-forming glands experience proliferation, causing smooth blood circulation in the breasts.

However, the excretion of the hormone prolactin is still an obstacle to the formation of breast milk. It is caused when the levels of the hormone estrogen are higher than the hormones prolactin and oxytocin. Therefore, breast care is needed since pregnancy to help and facilitate the secretion of hormones that play an important role in breast milk formation, which is prolactin and oxytocin hormones.⁵⁴

Efforts to increase breast milk production in breastfeeding mothers can be done by pharmacological and non-pharmacological methods. However, most people currently prefer non-pharmacological therapy because the method can be easily done and affordable required costs. Non-pharmacological therapies commonly used are acupuncture, acupressure, and massage.

Of these three options, most of Indonesian people traditionally do massage therapy, because it is considered as something that has often been heard and done among Indonesian people.⁶⁰ Massage also known as effective and efficient non-pharmacological therapy, and can effort to create a sense of physical and psychological comfort in the mother. This is because the touch given can relieve fatigue in the body, improve blood circulation, stimulate the body to remove toxins, and improve mental health.⁵⁵

Rolling massage is a massage performed on the mother's back area along the spine starting from the seventh cervical to the fifth-sixth costae which can soothe and relax the mother.⁴⁶ The mother's back was chosen as the place for the massage because the breast nerves are innervated by the back or dorsal nerves, which spread along the spine and back are acupressure points to facilitate the production and secretion of breast milk.⁵⁶

Carrying out rolling massage can make the mother feel comfortable, happy, and filled with love and affection, because it can reduce levels of the adrenaline hormone.¹⁰ The adrenaline hormone, also known as the epinephrine hormone, is a hormone that prepares the body to face dangerous or stressful situations, which is secreted by the adrenal glands.⁶¹ Apart from that, giving rolling massage can also reduce engorgement and breast milk blockages, such as agalaksia and oligalaksia, and also maintain breast milk production when the mother and baby are sick.⁵⁶

Rolling massage provides stimulation to the spinal cord, which has functions as a nerve link between the brain and the peripheral nervous system. All communication through the spinal cord is located in the ascending pathways (tracts) that transmit signals from afferent input to the brain. The spinal cord has paired spinal nerves along the cord. The spinal nerves consist of afferent and efferent fibers which function to carry signals to and from the spinal cord. In the middle part of the spinal cord there is also gray matter which contains connections between afferent input and efferent output as well as efferent neuron cell bodies. Between inhibitory neurons and excitatory collimergic neurons, they form synaptic contacts with oxytocin neurons and secretory neurons in the paraventricular and supraoptic nuclei, thereby providing stimulation to the hypothalamus to produce the hormone prolactin which is channeled to the anterior pituitary and leads to the breast to be secreted by the hormone oxytocin.¹⁴

Therefore, prolactin hormones come out to produce breast milk and its release is assisted by the hormone oxytocin with the let down reflex which triggers the alveoli cells to contract and makes the mother's breast milk come out of the ducts. After the baby is breastfed, the mother's breasts will be emptied, which can trigger the release of the prolactin hormones by the anterior pituitary, to produce breast milk again.⁴⁹ In addition, when the rolling massage activity is carried out by the mother's closest family such as her husband or health worker, the mother will get

motivations that increase her sense of well-being and also boost mother's confidence in breastfeeding her baby.⁶²

Rolling massage treatment is given before the mother breastfeeds or expresses breast milk every day for 5-10 minutes. Maximum results will be visible after 6-12 hours later.⁶ Rolling massage is started when the pregnancy is more than 34 weeks, which can be assisted by health workers (nurse or midwife) or the mother's family such as husband or baby's grandmother. So, it could avoid the blockage in the lactiferous duct.⁴⁷

Related research by Malatuzzulfa et al in 2022 shows that rolling massage is more effective for increasing breast milk production compared to endorphin massage. This is because the location of rolling massage is right in the spine so that it can directly stimulate the medulla oblongata and send impulses to the hypothalamus so that the anterior pituitary releases the hormone prolactin which causes breast milk to come out.⁴⁶

Effectiveness of Endorphin Massage on Breast Milk Production

Parry's theory (2001) states that several changes occur after giving birth, such as a decrease in the hormone estrogen can cause postpartum mothers to become depressed. Apart from that, endorphin hormones which can trigger feelings of joy and happiness decrease during childbirth, causing feelings of restlessness and abnormal thyroid hormone levels which result in the mother being less enthusiastic.⁵³

Breast milk secretion occurs due to a complex interaction between nerves, mechanics and hormones. The main hormones that regulate breast milk production are the hormones prolactin and oxytocin. The hormone prolactin will be released if there is stimulation from the hormone oxytocin. Oxytocin will also be secreted if stimulated by the hormone endorphin.⁵⁰ The hormone prolactin is produced by the anterior pituitary and works when breast milk continues to be released (empties the breast). Meanwhile, the hormone oxytocin is produced by the posterior pituitary and influenced by the mother's emotional state. So, if a breastfeeding mother experiences excessive stress or worry, it can disrupt the lactation process.⁴⁸

The hormone oxytocin can be obtained in several ways, such as orally, intramuscularly, intranasally or by direct massage. Most people currently prefer non-pharmacological methods, like a massage, to minimize the side effects they cause.⁶¹ Endorphin massage is a non-pharmacological alternative effort that originally developed by Constance Palinsky by giving light touches or massages to the neck, back and arms for 15-20 minutes, in aims to stimulate the secretion of the hormone oxytocin by the posterior pituitary and trigger the let down reflex.⁴⁸ Endorphin massage needs to be done from a gestational age of >34 weeks to avoid premature labor due to excessive uterine contractions. Endorphin massage aims to prepare the mother physically and mentally, especially the breasts, such as preventing the nipples from becoming inverted and blistered. This also can stimulate breasts to become stronger, so that exclusive breastfeeding can be achieved.⁵² Endorphins are a number of polypeptides consisting of 30 amino acid units as the opioid hormone corticotrophin, cortisol and catecholamines produced by the body to reduce and eliminate stress and pain.⁵⁰

Stimulation of the oxytocin reflex by endorphin massage arises through somatic sensory stimulation of the afferent system which causes a decrease in levels of the hormone adenocorticotropin (ACTH) which will stimulate the production of endorphins as a natural pain reliever by normalizing heart rate and blood pressure thereby creating a relaxed condition in the body which triggers feelings of comfort and Prevents postpartum stress and increases the smooth flow of breast milk. This is can be done through the surface of the skin by stimulating endogenous opiates located in peripheral sensory nerve endings. The formation of endorphins occurs in the descending control system which causes muscle relaxation. The smooth muscle beneath the surface of the skin that attaches to hair follicles is called the erector pili. This muscle reacts to stimulation by the contractor which causes the muscle to pull up the surface hair resulting in an

erection and goosebumps. This state of goosebumps results in the stimulation of endorphins in the brain, thus providing a relaxing and comfortable effect and reducing stress.⁵³

Flowing Endorphins in the bloodstream can causing vasodilation response by increasing the body's blood flow and producing serotonin and dopamine hormones, which can trigger a reduction in discomfort, fatigue, stress and depression. So, the mother becomes relaxed and calm. Therefore, there is a secretion of the hormone oxytocin or love hormone which triggers let down reflex and the secretion of prolactin hormone.⁵⁰

Based on the results of research conducted by Saudia et al, endorphin massage has a higher level of effectiveness than warm water compresses in the production and secretion of breast milk. This is because the spinal nerves that are stimulated directly trigger the oxytocin reflex, resulting in contraction of the myoepithelial cells which will encourage the release of breast milk. Apart from that, it increases blood circulation in the breast area so that it can reduce muscle tension and eliminate blood blockages.⁵³

V. CONCLUSION

Based on the discussion from this literature study, it can be concluded that carrying out rolling massage and endorphin massage has a greater chance of increasing breast milk production, compared to other types of breast care such as breast massage or warm breast compresses. Meanwhile, rolling massage is more effective than endorphin massage. Rolling massage is carried out precisely on the mother's back, because the breast nerves are innervated by the back or dorsal nerves which spread along the spine. The back also known as acupressure point to facilitate the production and secretion of breast milk. However, the combination of rolling massage and endorphin massage has a greater chance of smoothing breast milk production 0.2 times more than one type of massage treatment without combination.

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BIOGRAPHY

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