

The Effect of Back Massage on Increasing Breast Milk Production: Scoping Review

Sri Putriani Sinaga^{1*}, Mufdlilah¹

¹ University of 'Aisyiyah Yogyakarta, Yogyakarta, Indonesia

(Correspondence author's email, putrisinaga222@gmail.com / 0812-6943-735)

ABSTRACT

Exclusive breastfeeding begins within one hour after birth until the baby is six months old. Early initiation of breastfeeding and exclusive breastfeeding can help children survive and have antibodies to protect against common diseases, such as diarrhea and pneumonia. Breastfed children perform better on intelligence tests and are less likely to develop obesity and diabetes. This scoping review aims to review the evidence base regarding the effect of back massage on increasing milk production. Inclusion criteria: the criteria included in this review were Indonesian or English articles published within the last five years. These articles focused on the effect of back massage on increasing milk production. The method that will be used in this review is the scoping review technique, which is a systematic exploratory method by mapping the available literature in an article, topics, theories, and sources that have been obtained. The results of the study show that back massage can increase milk production. The most dominant factor in increasing milk production was in the group that did back massage, while the control group did not experience smooth milk production due to a lack of increase in milk production. Increased milk production can also be influenced by nutrition, rest, baby sucking, and breast care performed by the mother.

Keywords: *Back Massage, Breast Milk Production, Scoping Review.*

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INTRODUCTION

Exclusive breastfeeding begins within one hour after birth until the baby is six months old¹. Initiation of early breastfeeding or exclusive breastfeeding can help children survive and have the antibodies needed to protect against common diseases, such as diarrhea and pneumonia². Breastfed children show better results on intelligence tests and are less likely to experience obesity and diabetes³. In addition, breastfeeding also provides health, nutritional and emotional benefits for children and mothers⁴.

Increasing the rate of exclusive breastfeeding (EBF) in the first six months of life to 50% is one of the six main global targets set by the United Nations (UN) Decade of Nutrition, and increasing the rate of exclusive and sustainable breastfeeding is critical to

achieving development goals⁵. (SDGs) to eradicate hunger and end malnutrition by 2030. If implemented globally at near-universal levels (>90%), optimal breastfeeding practices could reduce child deaths globally by more than 800,000, making breastfeeding a most effective preventive intervention to increase infant mortality⁶.

In South Africa (SA), the EBF rate among infants under six months was 31.6% in the latest Health and Demographics survey conducted in 2016. Results showed a substantial increase from the previous estimate of 7% in 2003. However, early cessation of breastfeeding, mixed feeding, and the addition of complementary foods in the first six months remain the norm among mothers in South Africa. There is few valid estimates of age-specific breastfeeding rates⁷.

Babies who get exclusive breastfeeding

(ASI) are 14 times less likely to die than babies who are not breastfed. Optimal breastfeeding is so crucial that it can save the lives of more than 820,000 children under the age of 5 every year. Data from the World Health Organization (WHO) in 2019 showed that around 41% of babies get exclusive breastfeeding, while WHO targets at least 50% of babies to get exclusive breastfeeding in 2025 ⁸.

Based on the 2018 Riskesdas, the proportion of breastfeeding patterns for infants aged 0-6 months in Indonesia is 37.3% exclusive, 9.3% partial, and 3.3% predominant breastfeeding ⁹. Based on the 2018 Riskesdas report, the prevalence of IMD in Indonesia was 58.2%, and exclusive breastfeeding was 37.3% ¹⁰.

Based on the background above, it is necessary to do topic scoping using the Scoping Review Protocol, which specifically discusses the effect of back massage on increasing exclusive breast milk production ¹¹. The purpose of this Scoping Review is to find out the impact of back massage compared to not massaging on increasing milk production by including relevant sources of evidence from each article found ¹².

Back massage is a back massage that starts from the lower part of the neck, 5-6th rib to the scapula along both sides of the spine, both circularly with an emphasis using both thumbs, which can provide a somatic sensory stimulation through afferent pathways, thereby stimulating the posterior pituitary to release the hormone oxytocin which is a hormone that plays a role in the process of removing breast milk, where oxytocin will produce the letdown reflex so that the milk ejection process occurs from the alveoli and lactiferous ducts which automatically milk comes out ¹³. In addition, back massage can also increase relaxation, thereby preventing stress and depression in postpartum women, which can result in lowering serum prolactin levels ¹⁴.

METHOD

The method that will be used in this review is the scoping review technique, which is a systematic exploratory method by mapping the available literature in an article, topic, theory, and sources that have been obtained.

Doing this scoping review will use a grouping method according to Arksey and O'Malley, which has several stages as follows:

1. Identify scoping review questions.
2. Identify relevant articles.
3. Choose and determine the pieces to be used.
4. Perform data charting.
5. Compile and summarize and report the results that have been obtained ¹⁵.

Inclusion and Exclusion Criteria

1. The inclusion criteria used in this scoping review are original articles with articles that were published five years after publication, using Indonesian or English, discussing the effect of back massage on increasing breast milk production.
2. Exclusion criteria on these criteria that cannot be used in reviews such as opinion papers.

Database Selection

Step 2 is to create inclusion and exclusion criteria for an article using step 3, such as determining the database of article search websites. In searching for essays through the website, researchers will look for pieces that affect back massage and increase breast milk production by using PubMed ScienceDirect and Wiley Online Library.

Article Selection

In this scoping review, 253 articles were found from the database of 7 papers from PubMed, two pieces from the Wiley Online Library, and 1 article was obtained from ScienceDirect.

The researcher conducted this search on January 4, 2023; evidence of the investigation is already in Table 3. The next step is that all 253 articles were obtained, entered into the Zotero software, and found 61 duplicate reports. After the same articles were discarded, the paper will begin to select to determine pieces that follow the title to be examined for use in this review.

Table 1. PICO framework

P	I	C	O
Breastfeeding mothers	Back Massage	Comparison	There is an effect of back massage on increasing milk production

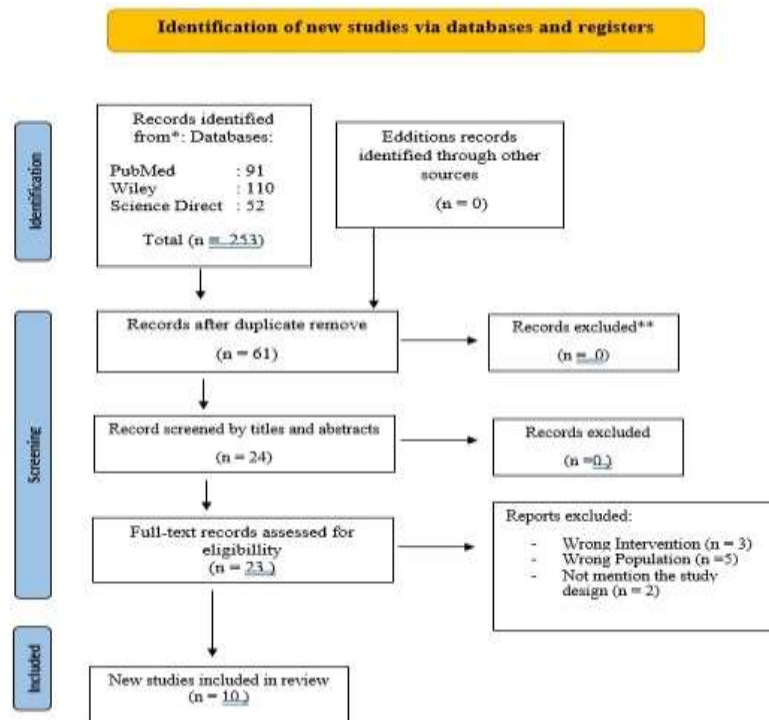


Figure 1. PRISMA flow chart (Page et al., 2021)

Selected Articles

After checking the eligibility level, 23 articles were found that could be used as sources. Still, after the author read all the articles one by one, it turned out that only ten articles could be used based on eligibility. Then the piece is entered into the charting data table, which is arranged starting from the article number, title, author's name, country, purpose, method, and results, which have been attached in Table 4.

Table 2. Data Charting

No	Title/Author/Year	Country	Research purposes	Method	Results
1	Oral galactagogues (natural therapies or drugs) for increasing breast milk production in mothers of non-hospitalized term infants ¹⁰	Malaysia	The focus of the current review is on lactation-inducing substances that are absorbed via the gastrointestinal tract. We have excluded galactagogues absorbed exclusively in the oral mucosa, such as the sublingual or buccal route. In general, oral galactagogues can be divided into	We included randomized controlled trials (RCTs) and quasi-RCTs (including published abstracts) that compared oral galactagogues with placebo, no treatment, or other oral galactagogues in healthy nursing mothers of term infants. We also	There is low-certainty evidence that pharmacological galactagogues can increase milk volume. There is some evidence from subgroup analyses that natural galactagogues may benefit infant weight and milk volume in mothers with healthy-term

			pharmacological and natural. No drugs have been produced to stimulate lactation; all off-label uses.	included cluster randomized trials but excluded cross-trials.	infants. Still, because of the substantial study heterogeneity, measurement imprecision, and incomplete reporting, we are very unsure about the magnitude of the influence.
2	The Impact of Human Milk on Necrotizing Enterocolitis: A Systematic Review and Meta-Analysis ¹²	Italy	<ol style="list-style-type: none"> To update the systematic review and meta-analysis to evaluate the association between feeding and necrotizing enterocolitis (NEC) in low-weight preterm infants; to perform a meta-regression analysis by subgroups; Describe the geographical distribution of milk banks in the world. <p>Method. The papers included in the meta-analysis were updated as of June 2019.</p>	The random effects model was used to explain the various sources of variation between studies.	The results of the subgroup analysis showed that the risk reduction was statistically significant only for studies in which preterm infants were given self- and donated breast milk. Conclusion. The possibility of preserving breast milk and promoting donation ensures improved health of the newborn.
3	Breastfeeding practices and associated factors at the individual, family, health facility, and Environmental levels in China ¹³	China	To inform about breastfeeding practices and factors related to individuals, families, health facilities, and the environment in China.	A stratified cluster sampling approach was used for survey sample selection. We selected 12 counties/counties from the seven regions and included 12 of the 34 provincial-level administrative divisions taking into account population size, executive capacity, and provincial-level CDC collaboration in China. These districts/districts represent three	<p>The results of this study are given. Lactation support in the form of education or counseling about exclusive breastfeeding can increase the prevalence of exclusive breastfeeding.</p> <ol style="list-style-type: none"> Breastfeeding mothers who receive support from their husbands are likelier to continue breastfeeding. Delivery by SC is very

			strata: big cities (four districts/districts), medium and small cities (four districts/districts), and rural areas (two districts/districts that are generally rural and two in poor rural areas). One section in a rural area was deliberately chosen to provide baseline data for CDRF project interventions.	<p>influential in exclusive breastfeeding</p> <ol style="list-style-type: none"> 3. Support for breastfeeding mothers by creating a particular room for breastfeeding in public places is needed by breastfeeding mothers because breastfeeding mothers feel uncomfortable breastfeeding in public places. 4. Support from the workplace, such as paid maternity leave, supports mothers in giving exclusive breastfeeding.
4	Experiences with peer support for breastfeeding in Beirut, Lebanon: A qualitative study ⁷	Lebanon	To explore the experiences of breastfeeding mothers and peer support providers with the breastfeeding support process, and the effect of interventions on social support systems	<p>Using a qualitative methodology, a purposive sample of breastfeeding and supporting mothers was accessed from those who completed their six-month interview in the trial at two hospitals in Beirut, Lebanon. Data were collected from 43 participants using in-depth interviews and following the principle of data saturation. All discussions were audio recorded and transcribed verbatim. Thematic analysis was carried out, guided by grounded theory</p> <ol style="list-style-type: none"> 1. Lactation support is provided by International Board Certified Lactations Consultants (IBCLC). 2. Peer support is considered necessary in encouraging the continuation of breastfeeding, while support from IBCLCs is influential in problem-solving. 3. The forms of support are the following five forms: informative, emotional, face-to-face, instructional,

			principles.	and self-support. 4. The form of support from IBCLCs is by providing instructional support through education through home visits, telephone calls, and text messages to breastfeeding mothers about exclusive breastfeeding. In contrast, the state of support provided by peers is emotional support by telling personal experiences about exclusive breastfeeding.	
5	A multi-component intervention to support cold Lebanese breastfeeding: Randomized linear trial ⁵	Lebanon	To investigate the effect of multi-component breastfeeding support interventions provided at the hospital and home visits on exclusive breastfeeding	This was a parallel-group, randomized clinical trial in which 362 healthy pregnant women with singleton pregnancies were randomized to a multi-component intervention that included antenatal, professional, and peer support breastfeeding education delivered in hospital and home settings for six months (experimental), n = 174, or standard care (control, n = 188). The primary outcome is the six-month EBF rate. Secondary outcomes were rates of exclusive and any	The results of this study are 1. Support in the form of education about breastfeeding provided during pregnancy can increase the mother's knowledge about breastfeeding. 2. Health worker support provided in the postnatal period can increase the mother's knowledge about correct breastfeeding techniques and increase the mother's self-efficacy. 3. Peer support can provide

			breastfeeding at one and three months, mothers' breastfeeding knowledge, attitudes, and behavior at six months, and satisfaction with the intervention.	emotional support to breastfeeding mothers.
6	Effect of a baby-friendly workplace support intervention on exclusive breastfeeding in Kenya ⁸	Kenya	It aims to assess the effectiveness of a baby-friendly workplace support intervention on exclusive breastfeeding in Kenya.	<p>The study involved 270 and 146 mother-child pairs in the no-treatment (pre-intervention) and treatment (intervention) groups. The prevalence of EBF was higher in the treated group (80.8%) than in the untreated group (20.2%), corresponding to a four-fold increased likelihood of EBF [risk ratio (RR) 3.90; Confidence interval (CI) 95% 2.95-5.15]. The effect of the intervention was more potent in children aged 3-5 months (RR 8.13; 95% CI 4.23-15.64) than in children aged <3 Months (RR 2.79; 95% CI 2.09-3.73). Infant-friendly workplace support interventions promote EBF, especially after three months in this setting.</p> <p>From the research results, the forms of support in exclusive breastfeeding are:</p> <ol style="list-style-type: none"> 1. There is workplace support and program interventions, including providing flexible time for breastfeeding and rest for breastfeeding mothers; 2. There is a daycare center for babies near the workplace and a lactation center with facilities for expressing and storing breastmilk. 3. Create awareness about the workplace support available for breastfeeding 4. There is nutritional counseling for pregnant and lactating women
7	Determinants of exclusive breastfeeding practice among mothers in the Sheka Zone, Southwest	Ethiopia	To identify the determinants of exclusive breastfeeding practices in the Ethiopian Sheka zone	The prevalence of exclusive breastfeeding decreases with the baby's age, so health workers' support at health

	Ethiopia: A cross-sectional study ³			unit) as the cluster. Data were collected using a questionnaire administered by interviewers between June and July 2017. Descriptive statistics were used to assess the prevalence of EBF. A multivariable logistic regression model was used to identify the determinants of EBF practices.	centers and hospitals is to provide optimal counseling about exclusive breastfeeding at Post Natal Care (PNC) and immunization visits to infants.
8	Individualized versus standard diet fortification for growth and development in preterm infants receiving human milk ⁶	United States of America	Aim To determine whether individual fortification of breastfeeding in response to infant blood urea nitrogen (adjustable fortification) or macronutrient content of breast milk as measured by a milk analyzer (targeted fortification) reduces mortality and morbidity and improves growth and development compared with standard, fortified non-individual for premature infants receiving breast milk at <37 weeks of gestation or with birth weight <2500 grams.	Selection criteria We considered randomized, quasi-randomized, and cohort randomized controlled trials of exclusively breastfed preterm infants comparing standard non-individual fortification strategies with individual fortification using targeted or customized plans.	We found moderate to low certainty evidence showing that individualized (either targeted or adapted) enteral feeding fortification in deficient birth weight infants increased the growth rate in weight, length, and head circumference during the intervention compared with nonstandard.
9	Effects of Dairy Product Consumption on Height and Bone Mineral Content in Children: A Systematic Review of Controlled Trials ¹³	English	This study aimed to evaluate the effect of a mother's milk and milk consumption on pregnancy and lactation outcomes in healthy women. This report mainly focuses on the impact of intake of mother's milk products on birth weight and length,	articles were analyzed individually. The risk of bias was classified as high, uncertain, or low depending on random ordering (selection bias), allocation concealment (selection bias),	The effect of the consumption of dairy products on health has received significant attention in the last decade. However, several prospective cohort studies have shown conflicting results, leading to uncertainty about

			fetal femur length, head circumference, weight gain during pregnancy, preterm birth, spontaneous abortion, consumption of breast milk, and nutritional value of breast milk	participant and personnel blinding (performance bias), and blinding of assessment results (detection bias). , incomplete outcome data (attrition bias), and selective reporting (reporting bias)	the health effects of dairy products. We performed an overview of existing systematic reviews and meta-analyses to examine the association between the consumption of dairy products and the all-cause risk of death.
10	Metoclopramide for Milk Production in Lactating Women: A Systematic Review and Meta-Analysis ⁵	Korea	This study assesses metoclopramide's effectiveness in increasing milk production in lactating women.	We searched the Cochrane Central Register of Controlled Trials and MEDLINE for randomized controlled trials comparing metoclopramide with a placebo, no treatment, or other galactagogue drugs. We included breastfeeding women with full-term or premature infants.	We retrieved 164 records from our search of electronic databases and 20 papers from other sources. After assessing eligibility criteria, eight trials involving 342 breastfeeding women using metoclopramide were included in this review. A meta-analysis of these trials revealed that metoclopramide did not increase milk volume in the intervention group compared to the control group. There was a significant increase in serum prolactin concentrations when the mother was given metoclopramide. No significant side effects were reported.

Critical Appraisal

Critical appraisal in the scoping review uses the Joanna Briggs Institute (JBI) for all research study designs used in the ten predetermined articles. It makes the total value for each piece to be obtained based on the critical appraisal results.

In determining the value above, the author uses the matter by:

Grade A = Good

Grade B = Fairly good.

Grade C = Not good.

Each assessment is carried out, starting with numbers 1-4, with the following qualifications:

1= Not applicable

2= Not stated

3 = Stated but unclear

4= Clearly stated ¹⁶.

Table 3. Critical Appraisal

No	Method	Assessment Instrument	Grads'e
A1	Randomized controlled trials	JBI	A
A2	Randomized controlled trials	JBI	A
A3	Cross-sectional studies	JBI	A
A4	Qualitative research	JBI	A
A5	Randomized controlled trials	JBI	A
A6	Quasi-experimental studies	JBI	B
A7	Randomized controlled trials	JBI	A
A8	Randomized controlled trials	JBI	A
A9	Randomized controlled trials	JBI	A
A10	Randomized controlled trials	JBI	A

RESULTS

The data obtained from the article is organized into several themes, where the pieces of the report include: the effect of back massage and factors increasing milk production ¹⁷. The sub-themes regarding the outcome of back massage are age, knowledge, and work. The sub-theme for increasing milk production is nutrition, mother's rest, baby suckling, and breast care.

Article characteristics

In the articles that have been found, the reports are obtained chiefly from developed countries and developing countries such as developed countries (n = 5; A2, A7, A8, A9, A10); in developing countries, it consists of (n = 5; A1, A3, A4, A5, A6). In the method, seven articles use a randomized controlled trials design and 1 article uses a cross-sectional

design, and 1 article uses a quasi-experimental studies design.

Article Assessment Results

According to the assessment carried out on each article using the JBI and MMAT instruments, there were nine articles with grade A grades or good grades such as (A1, A2, A3, A4, A5, A7, A8, A9, A10) and there was 1 article with grade B or good enough, namely in article (A6), with the highest score obtained 39 (A) included in the excellent category, namely in article A1, the lowest score was 24 (B) in article A6.

Article A1 has advantages. Apart from the points, the questions raised following the critical appraisal, this article has also been well structured, such writing; the questionnaires are made following the protocols of each state, making data on respondents who do not answer questions thoroughly, and providing benefits to respondents by holding a lottery.

Meanwhile, article A2 has a drawback where the article's writing is not well structured and does not have inclusion and exclusion criteria; there are some missing data, so the results found in the research are coincidental.

Below are some characteristics of the ten selected articles, such as country characteristics, research methods, data collection, and article grade.

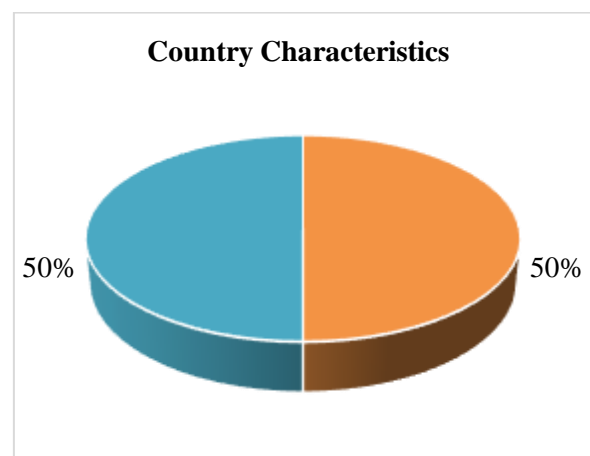


Figure 2. Country Characteristics Diagram

In the picture above, the country-based characteristics of the ten articles include five developed countries, such as the United Kingdom, the United States, Korea, and Ethiopia, and five developing countries, namely Malaysia, China, Lebanon, Kenya, and Lebanon.

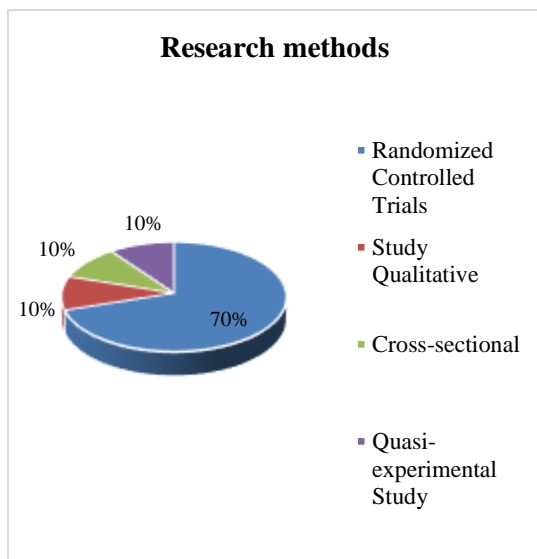


Figure 3. Research Methods Diagram

Characteristics based on research methods in 10 articles, seven articles used the design or form of the randomized controlled trial, 1 article used the qualitative study method, 1 article used cross-sectional, and 1 article used the quasi-experimental study method.

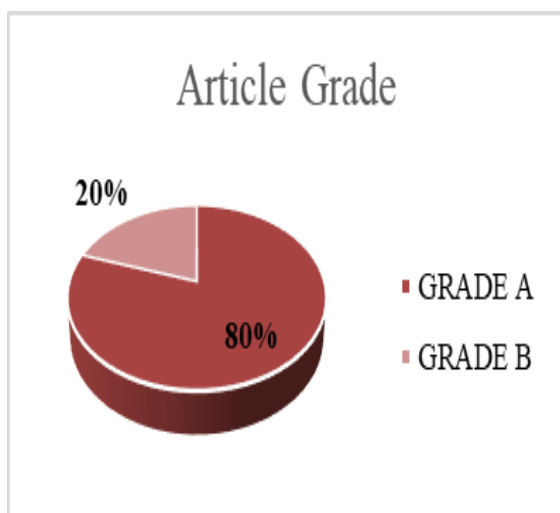


Figure 4. Grade Characteristics Diagram

Based on the characteristics according to the grade of the article, it is known that out of 10 pieces, there are nine articles with a grade of A (good value) and one writing with a grade of B (reasonably good).

Theme Analysis

In this scoping review, researchers used ten articles that fit their purpose with the scoping study. The ten articles found some of the effects of back massage on the increase in milk production. As in the theme of the impact

of back massage, there are sub-themes of age, knowledge, and work¹⁸. At the same time, the factors affecting the increase in milk production are in the sub-themes of nutrition, mother's rest, baby sucking, and breast care.

RESULTS AND DISCUSSION

In this scoping review, researchers used ten articles that fit the purpose of the scoping study. Based on the ten articles that have been obtained, some of the themes that the researcher has determined are as follows:

Effects of Back Massage

In the review, several articles discussed the effect of back massage on increasing milk production, such as age, knowledge, and work.

1. Age

Age will also be able to affect an increase in breast milk production; where if a person's age has not yet reached the age of maturity and the information obtained will affect a person's mental and physical readiness to prepare well knowing pregnancy, childbirth, the puerperium that is being lived as well as caring for the baby as an effort to fulfill Breast milk for babies.¹⁹

2. Knowledge

In fulfilling breast milk for babies, mothers need to know the benefits and importance of breast milk for the baby's needs. With good knowledge about the use of breast milk, the mother's efforts to increase milk production are significant and exclusive breastfeeding for six months. Breastfeeding also reduces the risk of gastrointestinal infections, obesity, otitis media, respiratory infections, and diabetes²⁰.

3. Jobs

Breastfeeding for infants will be disrupted if the mother is a worker, especially in exclusive breastfeeding for six months so that the baby does not get exclusive breastfeeding. However, work can also hinder the adequacy of breast milk because mothers do not have time to rest, and there is no effort to increase milk production in line with research conducted by Emmott, who said that working mothers affected breastfeeding and less time to increase milk production caused by mothers' work being too busy²¹.

Breast Milk Production Increase Factor

1. Nutrition

After giving birth, the mother will carry out the postpartum period. During the postpartum period, the mother must consume a balanced diet with adequate nutrition to restore energy, and milk production can increase²². Food significantly affects the increase in milk production during breastfeeding. In families with an economy that does not meet the mother's nutrition while breastfeeding, it will affect the baby's breast milk so that the baby's needs are insufficient^{19,23}.

2. Rest Mother

During the breastfeeding period, the mother needs a good sleep pattern and sufficient sleep time to restore energy and be able to carry out everyday activities⁴. Adequate rest and good sleep patterns can increase milk production where; when the mother rests and sleeps, the body will experience relaxation by relaxing all the body's organs, and there is an increase in energy, so breast milk will increase if you have enough sleep⁵. Sleep patterns are the same as an essential need for growth and a mother's thinking, mental stability, and emotional stability¹⁶.

3. Baby Suction

Baby suction dramatically affects the mother's health, especially in preventing breast cancer. The frequent sucking of the baby will help the mother recover the uterus and trigger milk production, increasing the amount of milk². In line with Arumsari's, et al., (2018) research, baby sucking affects milk production and helps mothers avoid breast cancer and breast milk, which is very beneficial and nutritional for the babies needs²⁴.

4. Breast Care

Even before giving birth and during the postpartum period, taking care of the mother's breasts is necessary. This aims to maintain the mother's breast's cleanliness and milk volume and detect abnormalities in the breast²⁵. In breast care, the mother's knowledge is needed that the mother can do it herself at home²⁶. Breast care affects an increase in milk production; this is also because the treatment or massage performed on a breast will stimulate the hormone prolactin and oxytocin massage, which can increase milk production so that it

can help mothers meet the needs of breast milk in babies²⁷.

CONCLUSION

Based on ten articles that have been reviewed, it was found that back massage can affect increased milk production. The most dominant factor in increasing breast milk production was in the group that did back massage, while the control group did not experience smooth milk production due to a lack of increase in milk production. Increased milk production can also be influenced by nutrition, inu rest, baby sucking, and breast care performed by the mother.

Limitations

The limitations in the scoping of this review are the search for articles; there are not too many studies discussing the effect of back massage on increasing breast milk production, so the author has a little difficulty collecting articles on this topic. Pieces entirely in English only make the scope of articles with a limited language. Another limitation is that most articles come from Western culture, so they cannot describe other cultures that differ from the rules and culture in the study articles. Most of the themes found are in the form of reports. This study had only one qualitative piece, so there was less evidence of their experience in obtaining breast milk production.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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