



## Scoping Review of Breastfeeding Mothers' Efforts to Increase Breast Milk Production

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## **ABSTRACT**

*Breast milk is a natural nutrition passed down from the mother to the infant that benefits both the breastfeeding mother and the baby. Scientific research on the benefits of nursing for mothers and newborns has heightened the importance of exclusive breastfeeding for the first six months of life. However, coverage of exclusively breastfed newborns in some Indonesian regions remains below the objective of 40%. This shows that hurdles to exclusive breastfeeding remain unresolved. According to community polls, a lack of confidence in producing enough breast milk can undermine the success of exclusive breastfeeding. As a result, efforts should be undertaken to boost breast milk production. As a result, the purpose of this article is to identify the available information on initiatives to boost breastmilk supply in breastfeeding women.*

*Keywords: Breastfeeding, increased milk production, mother, review*

## **ABSTRAK**

*ASI merupakan nutrisi alami dari ibu bersalin untuk bayi baru lahir yang dapat memberikan keuntungan pada ibu menyusui maupun bayi. Temuan ilmiah menyebutkan pentingnya pemberian ASI untuk ibu dan bayi meningkatkan urgensi dari pemberian ASI eksklusif selama enam bulan pertama kehidupan. Akan tetapi, cakupan bayi mendapat ASI eksklusif pada beberapa provinsi di Indonesia masih berada di bawah target, yaitu 40%. Hal ini menunjukkan bahwa masih terdapat hambatan yang belum terselesaikan dalam pemberian ASI eksklusif. Menurut survey pada masyarakat, kurangnya rasa percaya terhadap produksi ASI yang cukup dapat menurunkan keberhasilan pemberian ASI eksklusif. Untuk itu, perlu diberikan upaya-upaya untuk dalam meningkatkan produksi ASI. Oleh karena itu, artikel ini berfokus mengidentifikasi bukti yang tersedia tentang upaya peningkatan produksi asi pada ibu menyusui.*

*Kata kunci: ibu, menyusui, peningkatan, produksi ASI, review*

## **INTRODUCTION**

Breast milk (ASI) is defined by the Indonesian government as the liquid secreted by the mother's breast glands (Kemenkumham, 2012). Breast milk is a natural source of sustenance for infants produced by their mothers, and breastfeeding is beneficial for both the mothers and the infants involved. There are several benefits for mothers, including the promotion of uterine involution, a reduction in cholesterol levels, a reduction in the risk of anemia, a minimization of puerperal hemorrhage, and an extension of lactational amenorrhea (Sattari et al., 2019). According to Lyons et al.'s research from 2020, the ideal way to nourish a baby is through the consumption of breast milk because the substances that make up breast milk are able to provide appropriate nutrition in addition to a wide array of bioactive health factors (Lyons et al., 2020). Research indicates that in the short run, infants aged 0-5 months who are breastfed have a protection level that is 14 times higher than infants who do not receive breast milk (Horta, 2019). Horta (2019) and Lyons et al. (2020) found that breastfeeding was connected with improved immunological development as well as superior performance on intellectual assessments in children (Horta, 2019; Lyons et al., 2020).

It has been shown via research that breastfeeding is beneficial for both mothers and their infants, and that for the first six months of a baby's existence, they should only receive nutrition from their mother's breast milk. However, the percentage of newborns in some Indonesian provinces who are still being fed only by their mothers through exclusive breastfeeding remains below the aim of 40%. Riau, North Sulawesi, West Papua, Gorontalo, Papua, and Maluku are among these provinces (Kemenkes RI, 2022). This demonstrates that there are still unresolved issues with exclusive breastfeeding.

There are a number of elements that influence sole breastfeeding. A prominent example is breastfeeding women who feel their milk production is insufficient for their baby's needs. The mother's emotional state may be affected as a result of her inability to produce enough milk. A recent study indicate that a lack of belief in adequate breast milk production can reduce the success of

exclusive breastfeeding by 93-98% each month (Dwinanda et al., 2018). It is essential to make efforts to increase milk production in order to promote one's self-confidence; this is especially true for breastfeeding mothers.

Milk production can be increased by recommending certain foods, activities, and activities, as well as by stimulating endorphins and oxytocin. According to Foong et al.'s research from 2020, several efforts have been made in the past to promote the intake of foods from their respective places of origin that contain galactagogue chemicals, also known as components that can boost increased milk production (Foong et al., 2020). This literature review will investigate the many different approaches that can be taken to raise milk output.

## METHOD

This article is a scoping review that was prepared on the basis of a systematic review in accordance with the objective of writing, which focuses on identifying available evidence in accordance with the issue that was covered, namely Efforts to Increase Breast Milk Production in Breastfeeding Mothers. The primary objective of the investigation is to conduct a systematic review, which involves assembling significant pieces of literature using electronic data. The found literature will then be evaluated, with particular attention paid to the sampling technique, factors, and research results presented in each individual article. According to Widiasih et al.'s definition (Widiasih et al., 2020), a scoping review is a method that is utilized in the in-depth and thorough identification of literature gathered from diverse sources that still have an attachment to the issue taken in the study. Manufacturing stages scoping review this consists of 1) identifying research questions that are tailored to research objectives, 2) identifying relevant literature sources, 3) selecting literature according to the research topic, 4) mapping the literature to be used, and 5) compiling, summarizing, and reporting results (Arksey & O'Malley, 2005).

### 1. Identify Research Questions

At this point, the research questions need to be specified in great detail, and in most cases, the responses to research questions should be rather comprehensive (Utami et al., 2021). The publications that are being looked for will be referred to using this research topic as a reference. The objective of the research, or the unanswered question that it aims to answer, is represented by the research question. According to Hulley et al (2013), research questions typically begin with overarching concerns that need to be parsed down into more specific issues before moving on to the investigation stage (Hulley et al., 2013).

The scoping review should place an emphasis on the previous research. Because this is qualitative research, a search strategy literature is being conducted utilizing the PEO (Population, Exposure, Outcome) Framework (Heaslip et al., 2017). PEO is a tool that is used in the process of doing literature searches on qualitative and quantitative research methodologies (Widiasih et al., 2020). The tool is used to determine keywords. The subject that will be investigated in this review as a result of this is "What kinds of efforts can be made to increase milk production in breastfeeding mothers?"

Population	Exposure	Outcome
Mother	Breastfeeding OR Lactating OR Postpartum	Increased production of breast milk

Table 1. PEO Framework

## 2. Identification Of Relevant Literature Sources

The source literature was collected using a number of different internet databases, including PubMed, ScienceDirect, the Cochrane Library, and SCOPUS. The PEO Framework's keywords are used to search for articles, as they are in the PEO Framework. The efforts that are being made to improve milk production in breastfeeding women are the subject of this research. Articles from the search were chosen based on whether or not they met inclusion and exclusion criteria. material that can be used as a reference is indicated by the inclusion criteria, whereas material that cannot be used as a reference source is indicated by the exclusion criteria (Utami et al., 2021). The following are the criteria for including and excluding certain pieces of literature in this investigation:

Inclusion Criteria		Exclusion Criteria	
1.	Published in the last five years (2018-2023)	1.	Published more than the last five years
2.	In English language	2.	Books, theses, letters, theses, <i>review</i>
3.	Research articles	3.	Not fully accessible
4.	Review articles		
5.	Open access		
6.	Qualitative and quantitative articles		

Table 2. Inclusion and Exclusion Criteria

### Literature Selection

At this point, we narrow down our reading material to a chosen few pieces of literature by using the numerous databases and search engines we discussed before. A search of the literature was performed by entering keywords, and the results were modified according to certain inclusion and exclusion criteria. On the basis of this information, a search conducted on PubMed for articles that have been published in 2019 or later found 4.225 articles, Science Direct 223 articles, Cochrane Library 119 articles, and SCOPUS 11 articles.

Preferred Reporting Items for Systematic Reviews and Meta-Analyzes (PRISMA) recommendations were used as the basis for the next step, which is the documentation of the search literature. The PRISM flowchart is a tool that was developed to track the sequence of information during a procedure that is known as a systematic review. The identification, screening, eligibility, and inclusion stages make up each section of the PRISM flowchart, respectively (Rethlefsen & Page, 2022). The box labeled "Part identification" is used for documenting the number of records that were found by searching the database, the number of records that were found from external sources, and the number of entries that were found after deduplication. The term "stage screening" refers to a checkbox that, when checked, indicates that the literature sources have been screened in accordance with the research question, inclusion-exclusion criteria, and keywords. Level eligibility is a box that contains articles that fulfill the standards necessary to be eligible. For instance, the article must have a journal number, volume, and an ISSN in order to be eligible. Included is the box that contains all of the literature that has previously been screened, which will afterwards be put through additional evaluation (Utami et al., 2021).

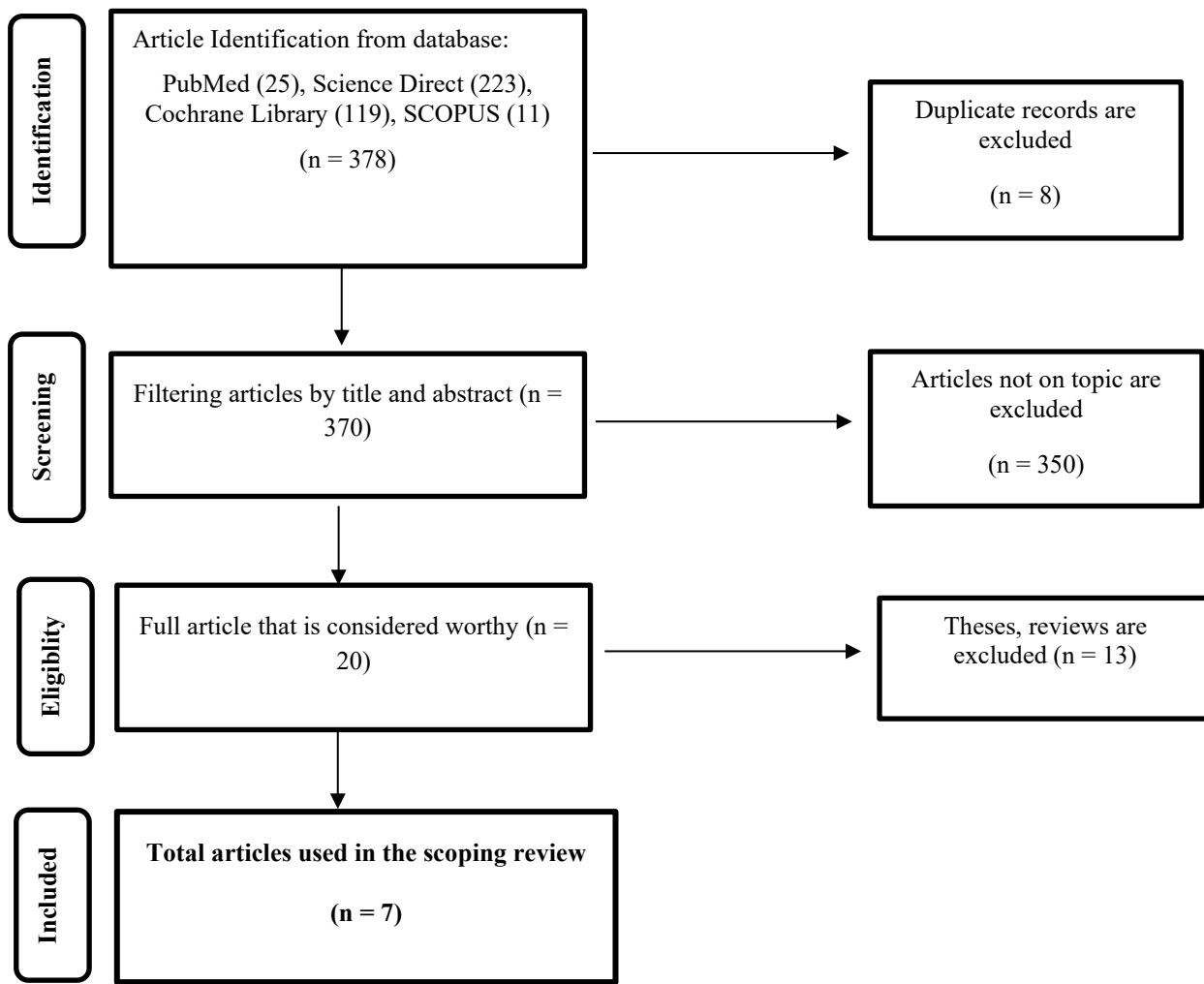


Figure 1. PRISMA *Flowchart*

## Charting Data

No	Author(S)/Year/Title	Country	Purpose	Research Design and Methode	Result
1	Ade Triansyah, et. Al. (2021) <i>The effect of oxytocin massage and breast care on the increased production of breast milk of breastfeeding mothers in the working area of the public health center of Lawanga of Poso District</i>	Lawanga, Poso, Indonesia	To determine the effect of oxytocin massage and breast care on breast milk production.	The One Group Pretest-Posttest design was used for pre-experimental research. 30 samples were obtained by non-probability sampling and purposeful sampling. The information was gathered through the use of a questionnaire, which was then examined using the Mc Nemar test.	It was known that the secretion of breast milk prior to intervention was inadequate in 18 respondents and adequate in 12 others. During the post-intervention period, the breast milk production of seven of the 18 respondents whose previous production was inadequate improved to an adequate level, while the remaining 11 respondents continued to produce less breast milk. The statistical test yielded a P value of 0.016, which is less than 0.05, indicating that P is less than 0.05. Oxytocin massage and breast care impacted the increase of breast milk production in Lawanga Public Health Center, Poso District, based on the frequency and duration of breastfeeding as well as the infants' weight.
2	Rachel A. Ryan, PhD, CLC; Allison Doub Hepworth, PhD; Audrey Lyndon, PhD, FAAN; Jessica Dauz Bihuniak, PhD, RDN (2023) <i>Use of Galactagogues to Increase Milk Production Among Breastfeeding Mothers in the United States: A Descriptive Study.</i>	United States	Describe the prevalence of galactagogues' use and perceived effects, and compare galactactagogue use by maternal features.	Design sectional survey. Cross-online	More than half of the individuals (57.5%) used galactagogues, 55.4% consumed foods or beverages, and 27.7% used herbal supplements. Only 1.4 percent of those polled reported using medications.  Participants indicated that different galactagogues had different impacts on milk production. Participants who reported first-time breastfeeding (yes: 66.7% vs no: 49.3%; P 0.001), breastfeeding pumped milk (yes: 63.1% vs no: 50.4%; P 0.001), formula supplementation (yes: 66.8% vs no: 50.4%; P 0.001), and perceived insufficient milk (yes: 78.8% vs no: 53.8%; P 0.001) used galactagogue more frequently.  The study found that breastfeeding moms in the United States frequently used galactagogues to increase milk production, underlining the need for more research on the safety and efficacy of galactagogues, as well as improved breastfeeding assistance.

3	Emilda., Juliastuti (2020) <i>The Effectiveness of Oxytocin and Marmet Massage on Increased Prolactin Hormone for Smooth Breastfeeding in Postpartum Mothers in Langsa City Health Office, Indonesia</i>	Aceh, Indonesia	To compare the effects of Oxytocin and Marble Massage on Prolactin Hormone levels for smooth breast milk in postpartum mothers in Langsa City Health Centre working regions.	A method of quasi-experimental design A prospective cohort design with no control group was adopted.	The highest prolactin hormone level in the Massage technique was 1178.0 g/ml, while the highest prolactin hormone level was 357.9 g/ml. The mean prolactin hormone level in the oxytocin massage group was 195.694 g/ml, while it was 538.195 g/ml in the Mamet group. The average prolactin hormone level by the oxytocin massage method was 195.6 g/ml with a standard deviation of 106.8 g/ml, but the average method for Mamet massage is 538.9 g/ml with a standard deviation of 269.6 g/ml. The Independent T-test findings obtained Prolactin Hormone Levels for the Smooth ASI value of $p = 0.000$ , implying that there are substantial differences between the oxytocin and Mamet massage treatments.
4	Siraphat Fungtammasan., Vorapong Phupong (2022) <i>The effect of Moringa oleifera capsule in increasing breast milk volume in early postpartum patients: A double-blind, randomized controlled trial</i>	Bangkok, Thailand	To determine the effectiveness of Moringa oleifera leaves in raising breast milk volume in early postpartum moms.	A randomized, double-blind, placebo-controlled study was carried out. Eighty-eight postpartum women were randomly assigned to either the study group, which received Moringa oleifera capsules or the control group, which received dummy capsules.	On the third postpartum day, there was no difference in median breast milk volume between the Moringa oleifera leaf group and the control group (73.5 vs 50 ml, $p = 0.19$ ). The amount of breast milk in the Moringa oleifera group, on the other hand, was 47% higher than in the control group. The exclusive breastfeeding rate at 6 months in this trial was 52.3% in the Moringa oleifera group, meeting World Health Organization goals.
5	Shukri, Nurul., Jonathan Wells <i>et al</i> (2019) <i>Randomized controlled trial investigating the effects of a breastfeeding relaxation intervention on maternal psychological state, breast milk outcomes, and infant behavior and growth</i>	United States	To assess the effects of a relaxation intervention on maternal psychological state, breast milk intake, milk cortisol levels, and infant behavior and growth during breastfeeding in order to investigate physiological and psychological aspects of mother-infant signaling during breastfeeding.	Randomized Controlled Trial	There were a total of 244 expectant women approached, of which 88 were eligible for the first phase of the study. After a second examination, 64 mothers were eligible to be randomly assigned to the RG or CG prior to HV1.  Mothers who received relaxation therapy had reduced stress scores ( $P0.05$ ) and lower levels of cortisol in their breast milk by 34% compared to those who did not.  In contrast, infants whose mothers received the intervention slept longer (856 99 minutes) and had greater weight gain and body mass index ( $P 0.05$ ) because their average milk intake was higher ( $P = 0.031$ ) than infants whose mothers did not receive the intervention.

6	Coşkun and Ulviye (2020) <i>The Effects of Kangaroo Care Applied by Turkish Mothers who Have Premature Babies and Cannot Breastfeed on Their Stress Levels and Amount of Milk Production</i>	United Kingdom	To investigate the effects of kangaroo care on the stress levels and milk production of Turkish mothers with premature infants who are unable to breastfeed.	Randomised Controlled Trial	In all measurements, the mothers in the kangaroo care group produced more breast milk than those in the conventional care group. The mothers in the kangaroo care group had lower mean scores on the Parental Stressor Scale's dimensions, subdimensions, and total scale than those in the conventional care group.
7	Palacios, Ana., Michelle <i>et al.</i> (2023) <i>Effectiveness of lactation cookies on human milk production rates: a randomized controlled trial</i>	United States	Evaluating the efficacy of a one-month daily ingestion of LCs (Lactation Cookies) containing commercially available oatmeal, yeast, flaxseed, and fenugreek on objective and subjective changes in milk production and breastfeeding self-efficacy.	Prospective Randomized Controlled Trial	All 176 participants were designated at random.  Lactation cookies containing oatmeal, brewer's yeast, flaxseed, and fenugreek had no significant effect on milk production (P= 0.948), perceived milk supply (P=0.775), or breastfeeding self-efficacy (P= 0.888) among 135 participants who consumed one packet of cookies daily for one month.  This study utilized a specific brand of LC, but researchers were unable to conclude that there were no other LCs that had an effect on increasing milk production. Respondents were instructed to consume 1 full bag of cookies every day for 30 days; however, some participants may not have consumed the entire bag each day or may have shared some cookies.

Table 3. Charting Data

## RESULTS AND DISCUSSION

### RESULTS

Seven international articles with the following characteristics were located in the database.

#### 1. Demographic Attributes

In Figure 1, it is shown that three of the seven articles are from the United States, two from Indonesia, and one from the United Kingdom.

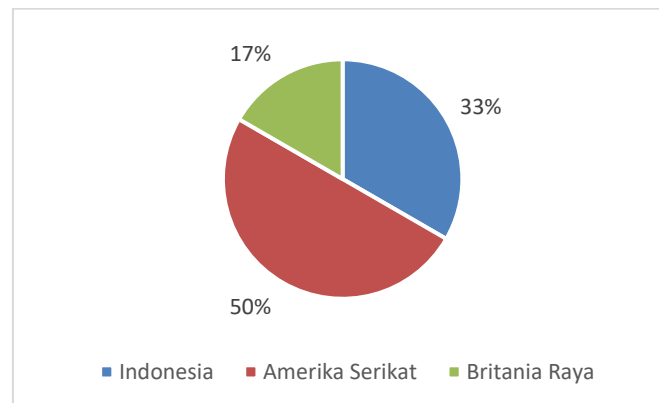


Figure 2. Characteristics of articles by country

#### 2. Characteristics Of Research Design

According to the findings of the article analysis, the majority of the papers had a study design Randomized Controlled Trial (RCT), consisting of four articles, one with a pre-experimental design, one with cross-sectional research, and one with a quasi experiment.

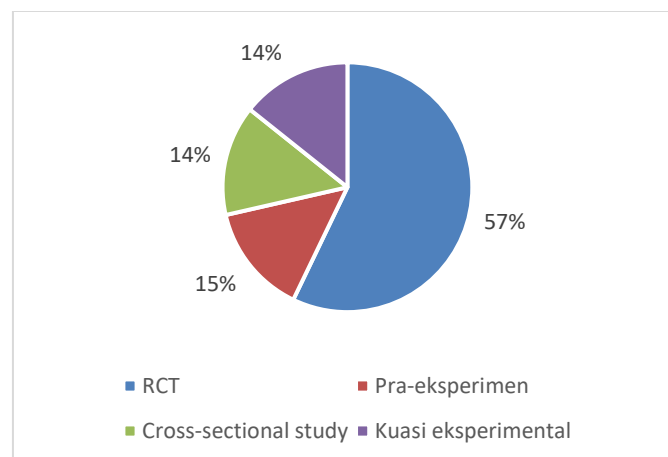


Figure 3. Characteristics of Articles Based on Research Design

#### 3. Article Theme

Table 4 contains a description of the features of the articles as determined by the findings of the topic analysis.

No.	Theme	Sub Theme
1.	The oxytocin massage effect	1.1 Milk production has increased [1, 3] 1.2 Increased frequency of breastfeeding [1] 1.3 Increase in baby weight [1, 5] 1.4 Hormon prolactin [3]
2.	Use of galactogues	1.1 Increased milk production [2] 1.2 Galactogogue safety [2]
3.	Marble massage	Hormone prolactin [3]
4.	Moringa Leaf	Breast Milk [4]
5.	Relaxation therapy	Low stress score [5]
6.	Kangaroo Care	1.1 Milk production [6] 1.2 Low stress level [6]
7.	Cookies for Lactation	1.1 Increased production of breast milk [7] 1.2 Milk supply [7] 1.3 Self efficacy [7]

Table 4. Themes

## DISCUSSION

### 1. Effect of Oxytocin Massage on Increasing Breast Milk Production and Frequency

In order for breast milk to be produced, there are two distinct processes that must first take place: the production of breast milk and the release of breast milk. The hormone oxytocin will be released either when the mother's nipples are stimulated by the baby's mouth or when the mother's back is massaged. The goal of an oxytocin massage is to make the mother feel calm and relaxed so that she is better able to express affection for her child and to encourage the release of oxytocin, which can speed up the process of milk production in breastfeeding moms. In the meantime, taking care of your breasts will stimulate lactiferous, which is the hormone responsible for speeding up milk production. Through the stimulation of touches on the mother's breasts and back, which will stimulate oxytocin production, which will result in contraction of myoepithelial cells, and increased prolactin, the combination of these two ways leads in increased milk production. This is accomplished through the stimulation of touches on the mother's breasts and back.

According to the findings of the study that was carried out by Triansyah A, et al (2021) there was an increase in milk production in 18 respondents who had previously been deficient to become adequate. The P value statistical test yielded a result of 0.016, which indicates that there is a connection between the interventions that were provided and the production of breast milk by the subject. The impact that oxytocin massage and other forms of breast care have on the rate and duration of breastfeeding as well as the amount of milk that is produced. It was discovered that the rise in milk production in the group that received breast care and oxytocin (mean = 17.37, SD = 9.70) was much higher than in the group that received control (mean = 1.58, SD = 1.69), and the difference was statistically significant (p 0.001) (Triansyah et al., 2021).

### 2. Utilization of Galactogogues to Boost Breast Milk Production

Research on certain commonly consumed foods and beverages as galactagogues is currently limited. The results of a 1-month randomized controlled trial showed no effect of lactation cookies on milk production and breastfeeding self-efficacy in US adults who exclusively breastfed. However, in contrast to the study by Ryan et al (2023) which the results showed that many of the mothers considered selected galactagogues, including lactation cookies and lactation tea, to be effective in increasing breast milk production, the results of the study showed that there was no effect on breast milk production. According to the findings of research conducted by Buntuchai, et al (2017), the consumption of traditional foods (such as banana blossom, lemon basil, thai basil, bottle gourd, and

pumpkin) contains galactagogue, which is substantially associated with breast milk volume. This study demonstrated a substantial association between the consumption of dietary galactagogues and the amount of breast milk produced, even after accounting for factors such as the infant's birth weight, the mother's energy intake, and the amount of carbohydrates consumed (Buntuchai et al., 2017). The diet consists of things like floral plantains, lemon basil, Thai basil, bottle gourd, squash, and a few other foods that are high in protein. The plant that belongs to the genus *Musa* and is known as the banana is rather abundant in Southeast Asian countries. In the north of Thailand, a dish known as keng-pli is prepared by cooking banana flower with a variety of spices and pork. This is a dish that has been served for years to nursing moms in the hope of increasing their milk production. According to the findings of this research, the consumption of banana flowers had the strongest link with the volume of breast milk ( $p < 0.001$ ). According to the findings of Mahmood, Umar, Ngah, and Yahaya (2012), water extracted from banana flowers enhanced the amount of milk produced by albino rats by 25% compared to the group that served as the control (Mahmood et al., 2012). Flavonoids and saponins are the two primary phytochemicals found in banana blossoms. These phytochemicals function as dopamine antagonists, which in turn stimulates milk production (Foong et al., 2020). In a total of nine investigations, pharmacological galactagogues such as domperidone, metoclopramide, sulpiride, and thyrotropin-releasing hormone were compared to a placebo or to no treatment at all. The primary result was that there was no mention of the percentage of breastfeeding moms who were still doing so at 3, 4, and 6 months. Only one study (using metoclopramide) documented its findings on the effects of the medication on baby weight and found that there was either very little or no difference (mean difference (MD) 23.0 g, 95% confidence interval (CI) -47.71 to 93.71; 1 study; 20 participants; evidence for low certainty). Metoclopramide, domperidone, and sulpiride were the three studies that reported milk volume, and they discovered that a pharmaceutical galactagogue was able to enhance milk volume (mean difference = 63, 82 mL, 95% confidence interval = 25.91 to 101.72;  $I^2 = 34\%$ ; 3 studies, 151 participants; evidence for low certainty). The subgroup analysis suggested that there may be a rise in milk volume with each medication, albeit with variable confidence intervals (CI). There were very few reports of unfavorable side effects, and none of them could be included into a meta-analysis. In the cases where they were documented, the symptoms were restricted to moderate complaints, such as weariness, nausea, headache, and dry mouth (evidence of extremely low certainty). There were no reports of newborns experiencing any adverse events. In a total of twenty-seven investigations, natural oral galactagogues (such as banana blossom, fennel, fenugreek, ginger, ixbut, cotton levant, moringa, date, pork, shatavari, silymarin, torbangun leaf, or other natural mixes) were compared to a placebo or to no treatment at all. According to one study (Mother's Milk Tea), breastfeeding rates at six months were reported with a concluding remark of "no significant difference" (no statistics and no measure of significance were supplied; there were 60 participants; the evidence had a very low level of certainty). It was not possible to conduct a meta-analysis on the three trials that reported baby weight (one each on fennel, fenugreek, moringa, and a botanical tea blend), as there was a large amount of clinical and statistical heterogeneity ( $I^2 = 60\%$ , 275 participants, evidence with low certainty). According to the results of the subgroup analysis, we were not at all sure if it was fennel or fenugreek. Milk volume was reported in thirteen studies (Bu Xue Sheng Ru, Chanbao, Cui Ru, banana flower, fenugreek, ginger, moringa, fenugreek, ginger and turmeric mixture, ixbut, botanical tea mixture, Sheng Ru He Ji, silymarin, Xian Tong Ru, and date palm; 962 participants), but a meta-analysis was not possible due to substantial heterogeneity ( $I^2 = 99\%$ ). Subgroup analyses for each intervention revealed either a benefit or very little or no difference (evidence with a very low degree of certainty). There have been very few reports of adverse effects, and none were available for inclusion in the meta-analysis. Where they were documented, the symptoms were restricted to modest complaints, such as the mother's urine smelling like maple syrup and the newborn developing urticaria (the evidence for certainty was quite low).

### 3. Differential Effects of Oxytocin and Marble Massage on the Effectiveness of Smooth Breast Milk

The decrease in milk production encountered by mothers who breastfeed is a contributing factor to the difficulty in achieving exclusive breastfeeding. It is believed that the hormone prolactin and the mother's perception of breast milk are inadequate. Massage techniques are one method used to increase the prolactin hormone. Numerous individuals around the globe have utilized this method for both treatment and health care. Emilda & Juliastuti (2020) in Langsa City, Aceh, Indonesia, she analyzed differences in the efficacy of Oxytocin and Marble Massage on Prolactin Hormone levels for the ease of lactation in postpartum mothers at the Langsa City Health Center. The highest level of prolactin hormone in the massage method was 1178.0 g/ml, and the maximum level of prolactin hormone was 357.9 g/ml. The average prolactin hormone level was 195.694 g/ml in the oxytocin massage group and 538.195 g/ml in the marble massage group. Differential Effects of Oxytocin and Marble Massage on the Effectiveness of Smooth Breast Milk (Emilda & Juliastuti, 2020).

The average prolactin hormone level with oxytocin massage was 195.6 g/ml with a standard deviation of 106.8 g/ml, whereas the average prolactin hormone level with marble massage was 538.9 g/ml with a standard deviation of 266.6 g/ml. Independent T-test statistical test results obtained Prolactin Hormone Levels for Current ASI value  $p = 0.000$ , it can be concluded that there is a significant difference between oxytocin massage and marble massage for increasing prolactin hormone levels in postpartum mothers.

The mamet technique is superior for emulsifying breast milk. The marble massage technique is superior to breast pumps. At the outset of breastfeeding, marble massage more effectively stimulates the pituitary and secretes the hormones prolactin and oxytocin. The marble massage technique will affect the vegetative nerves and subcutaneous tissue, thereby relaxing the tissue and promoting blood flow in the ducts. At the beginning of lactation, marble massage is more effective at stimulating the anterior and posterior pituitary to secrete the hormones prolactin and oxytocin. During lactation, oxytocin and prolactin stimulate milk production.

### 4. Effect of Moringa Leaves on Breast Milk Production in Postpartum Women

The World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) encourage exclusive breastfeeding for the first six months of a baby's life, beginning within the first hour of existence. *Moringa oleifera* is one of the galactagogues used by lactating mothers with breastfeeding difficulties to increase milk volume. *Moringa oleifera* is commonly used in traditional medicine, and both its leaves and immature seed pods are consumed as sustenance.

Fungtammasan & Phupong, 2022 in Bangkok, Thailand, found that 52.3% of the *Moringa oleifera* group exclusively breastfed for six months. This incidence of exclusive breastfeeding has met the WHO goal (at least 50 percent exclusive breastfeeding for the first six months by 2025) (Fungtammasan & Phupong, 2022). Women who plan to breastfeed exclusively for six months can benefit from *Moringa oleifera*. *Moringa* leaves increase breast milk production by increasing prolactin levels and providing essential nutrients.

This study assessed the efficacy of *Moringa* leaves in boosting the quantity of breast milk in mothers in the early postpartum period. The median milk volume on the third postpartum day did not differ between the *Moringa* leaf group and the control group (73.5 vs. 50 ml,  $p = 0.19$ ). However, the *Moringa oleifera* group produced 47% more breast milk than the control group. In this study, the exclusive breastfeeding rate at six months was 52.3% in the *Moringa oleifera* group, which met the World Health Organization's target.

## 5. Effect of relaxation therapy on the Production of Breast Milk

A study in the United States tests the effects of relaxation interventions on maternal psychology, milk intake, milk cortisol levels, as well as infant behavior and growth. 135 of the 176 participants who consumed one packet of lactation cookies daily for one month did not experience any significant changes in milk production rate ( $P=0.948$ ), perceived milk supply ( $P=0.775$ ), or breastfeeding self-efficacy ( $P=0.888$ ).

This study utilized a specific brand of LC, but researchers were unable to conclude that there were no other LCs that had an effect on increasing milk production. Although participants were instructed to consume 1 full bag of cookies every day for 30 days, some participants may not have consumed the entire bag each day or may have shared some cookies.

## 6. Kangaroo Care's Impact on Breast Milk Production

In this study, the influence of the kangaroo method on milk production and stress levels in premature mothers was examined. According to the findings of the study, kangaroo care administered to mothers with premature infants who were unable to breastfeed was effective at increasing milk production (Coşkun & Günay, 2020). Multiple studies concur that mothers of premature infants who practice kangaroo care generate more milk than those who do not. In this investigation, the daily quantity of breast milk was measured and recorded. Compared to mothers in the standard care group (not using the kangaroo method), the average quantity of breast milk increased in all weeks for mothers treated with the kangaroo method. In the literature, kangaroo care has been shown to encourage mothers to initiate breastfeeding sooner and to subconsciously comprehend their position as mothers (Blomqvist et al., 2013). Furthermore, kangaroo care has been shown to reduce maternal depression. (Athanasopoulou & Fox, 2014). It is believed that the kangaroo care group produced more milk because kangaroo care can positively affect the mother's emotions of motherhood, reduce stress, and foster a bond between mother and child. In contrast, there was a difference in the average quantity of breast milk produced by mothers in the standard care group (no kangaroo method was used), such that it did not increase substantially and decreased gradually. This is due to the dearth of skin-to-skin contact between mother and infant, which hinders mother-infant bonding and causes a gradual decrease in the mother's milk supply. In the PSS: NICU posttest results to measure the mother's stress level, it was discovered that the average sub dimensional score and total scale of mothers who were included in the kangaroo method of care had significantly lower stress levels than mothers who received standard care (but not kangaroo method care). It is believed that these results occurred because mothers in the kangaroo method care group were able to handle the equipment in the NICU, become accustomed to the sounds of the NICU, and touch and hold their babies on a daily basis. In addition, mothers can develop their motherly role by participating in the care of their infants during the kangaroo method treatment and reduce their stress levels, whereas in the standard care mother group, differences were observed only in the baby's appearance and behavior sub-dimensions. This is due to the fact that mothers using standard care methods only visit their infants and only see their infants when they are being fed through a nasogastric tube. Some research also indicates that when mothers provide kangaroo care to premature infants, their levels of depression, stress, and anxiety diminish, the connection and interaction between mother and infant strengthen, and the mother's skills increase (Athanasopoulou & Fox, 2014).

In a study by Lee & Bang, et al (2011), mothers who practiced kangaroo care had a stronger relationship with their premature infants, and their levels of stress and depression were lower than those of the control group (Lee & Bang, 2011). Shrivastava et al. (2013) also discovered that kangaroo care reduced maternal stress and melancholy and had a positive impact on the mother-child relationship and interaction (Shrivastava et al., 2013). Cooper et al. (2014), discovered that

administering kangaroo care to premature infants younger than 28 weeks improves mother-infant communication and boosts maternal confidence (Cooper et al., 2014). The quantity of milk produced by mothers in the kangaroo care group increased gradually from the first to the last measurement, and there was a significant difference between all measurements within the categories. The kangaroo method resulted in a significant reduction in the mother's tension compared to standard care. These findings indicate that kangaroo care is a crucial intervention for enhancing connection between mothers and premature infants, increasing mother's milk production for infants, and reducing mother's stress.

## 7. How Lactation Cookies Influence Breast Milk Production

In this study, there was no evidence of the effect or efficacy of Lactation Cookies (LC) on milk production among 176 exclusively breastfeeding mothers of 2-month-old healthy infants in the United States. The data showed no strong evidence for the effect of LC prepared with oatmeal, brewer's yeast, flaxseed, and fenugreek on increasing milk production rates, perceived milk supply, or breastfeeding self-efficacy in exclusively breastfeeding mothers at 2 months postpartum in the United States, so it can be concluded that the cookies used in this study were not effective for increasing milk production in nursing mothers with an adequate overall milk supply. The research was conducted in a hospital where it was improbable that monitoring of breast milk production, milk supply, and self-efficacy would occur during the Covid-19 pandemic, as was explained in the study. Several errors in data entry during study completion were also mentioned, and it was possible that some participants did not purchase or ingest Lactation Cookies (LC) as recommended by the researchers (Palacios et al., 2023).

### **LIMITATION OF THE STUDY**

Researchers only utilize English-language articles, limiting the exploration of hypotheses that can enrich review and the results of review itself.

### **CONCLUSIONS AND SUGGESTIONS**

Oxytocin massage affects the myoepithelial cells that encircle the mammary alveoli, causing the alveoli to contract and secrete milk from the mammary glands. One way to maintain the oxytocin hormone is to massage the mother's back, which can make her feel comfortable and at ease. Recent research indicates that oxytocin massage and breast care increase milk production based on the frequency and duration of lactation as well as the weight of the infant. It was also found that oxytocin and mamet differed in their ability to reduce prolactin levels and regulate milk production. The effectiveness of mamet massage in increasing the silkiness of breast milk is enhanced. Even 900 mg per day of Moringa leaves did not substantially increase the volume of breast milk in early postpartum mothers, but the Moringa oleifera group produced 47% more milk than the control group. In addition, kangaroo care is a crucial intervention for enhancing connection between mothers and premature infants and enhancing the mother's milk production for the infant. Therefore, additional breastfeeding education and support regarding the best practices for increasing milk production may be necessary to assist breastfeeding mothers in achieving their objectives. In addition, it is anticipated that health care professionals, such as physicians, midwives, and nurses, can provide counseling on how to administer oxytocin massage and breast care. So that individuals, particularly breastfeeding mothers, can independently perform oxytocin massage and breast care to increase breast milk.

### **ETHICAL CONSIDERATIONS**

None

## Funding Statement

This article's author did not receive any financial support for its research, writing, or publication.

## Conflict of Interest Declaration

The author declares that there are no prospective conflicts of interest in the writing or publication of this article.

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