Comparison Of Effectiveness Benefits Of Providing Young Papaya Fruit Extract And Breast Care For Normal Postpartum Mother's Breast Milk Production: Systematic Review

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ABSTRACT
The consumption of breast milk in Indonesia is still very concerning, the household health survey (SKRT) explains that in 2014 there was only 4-12% of breast milk coverage in urban areas. Meanwhile, in rural areas, the attainment of breastfeeding coverage is 4-5%. According to the demographic and health survey data in Indonesia (IDHS), the coverage of exclusive breastfeeding in 2014 was 39.5%, then in 2015 it decreased to 38%. In 2015, the amount of formula feeding to babies aged 0-6 months was 16.7%, then increased in 2017 to 27.9%. Exclusive breastfeeding that is not optimal until the age of 6 months greatly affects nutritional problems in infants, but this can be overcome by optimizing the quality and quantity of exclusive breastfeeding for up to 6 months.

This study uses the Systematic Review or Systematic Literature Review (SLR) method and uses the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Terk) protocol as data analysis. Search data through online data bases such as MEDLINE ABI / Inform Complete, Academic Search Complete, Elsevier (SCOPUS), Sinta 2, and Science Direct with the design criteria of this study, namely randomized controlled trial, cross sectional design, and quasi experimental design published in 2016-2020 and has been published internationally indexed by Scopus Q1, Q2, Q3 and Q4. The population in this study was 76 articles and the sample size was 25 articles.

Analysis of data on the provision of young papaya fruit extract and breast care to breast milk production showed the results of data analysis on the effectiveness of young papaya fruit extracts were more effective, seen from the lowest effect size values of 1.02 and the highest 1.1 compared to breast care, namely 1.0 and 0.4.

The provision of young papaya fruit extract is more effective against breast milk production.

Keywords : Young Papaya Extract, Breast Care, Breast Milk
BACKGROUND

World Health Organization (WHO) recommends giving breastfeeding exclusively to their babies for the first 6 months and then continuing until the child is 2 years old. Breast milk is very beneficial for babies because breast milk is a natural food that is rich in nutrients, breast milk also contains immunology, and has a better bioavailability when compared to formula 1 milk.

The coverage of breastfeeding in Indonesia is still very concerning, the household health survey (SKRT) explained that in 2015 the amount of formula feeding to infants aged 0-6 months was 16.7%, then increased in 2017 to 27.9%. Exclusive breastfeeding that is not optimal until the age of 6 months greatly affects nutritional problems in infants, but this can be overcome by optimizing the quality and quantity of exclusive breastfeeding for up to 6 months 4.

Breast milk is the best food that contains all the nutritional elements that babies 0-6 months need. Breast milk also contains immune substances that will protect the baby from various infections, bacteria, viruses and fungi. Breast milk can affect the development of a baby including social and emotional development through the attachment formed through breastfeeding. Emotional mental conditions at an early age can affect the period of child development at a later stage 3.

Exclusive breastfeeding is highly recommended, from a health and socioeconomic perspective, breastfeeding can also reduce morbidity and infant mortality. Breastfeeding also provides benefits for the mother, including accelerating the involution of the uterus and also as a natural means of contraception in order to sparse pregnancies. 1

Papaya fruit is one type of plant that contains lactogum and has the potential to stimulate the hormone oxytocin and the hormone prolactin through substances such as alkaloids, saponins, flavonoids, polyphenols and steroids that play a role in increasing breast milk production and breast milk secretion 19.

In a study on young papaya fruit extracts on the histology picture of mammary glands in mother mice, it was explained that the increase in breast milk production that occurred in the water extract group of young papaya fruit was due to the saponins and alkaloids contained in the extract of young papaya fruit. The saponins contained in papaya can increase the activity of the hormone oxytocin in the myoepithelial cells that surround the alveoli and ducts. In addition, alkaloid substances act as receptor agonists α-adrenergic in the mammary gland duct, whose activity is synergistic with the hormone oxytocin in milk secretion 1.

The use of herbal medicine has been practiced for thousands of years and is part of several countries such as Indonesia, China and India. There is an increase in the use of herbal medicines because herbal medicines have fewer side effects compared to synthetic drugs, besides that the presence of dietary and nutraceutical supplements derived from plants also plays a role in improving herbs in the market. 7

In recent times, herbal medicine has been widely used to cure various diseases. Herbal medicine contains hundreds of constituents which all work together to fight disease 8.

METHODS

This study uses a Systematic Review or Systematic Literature Review (SLR) with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) method. Systematic review is a systematic, explicit, comprehensive, and reproducible research method for identifying, evaluating, and synthesizing researchers, scholars and
practitioners.
The population in this study consisted of 6,319 postpartum mothers, 115 white wistars, 4 goats, 24 calves, worms obtained from 78 national and international articles that had gone through the screening period and were included in the established inclusion criteria.
The samples used in this study were articles with SINTA 2 indexed criteria or international journals indexed by DOAJ, Scopus or Web of Science or journals in full text / proceeding form.

RESULT
Of the 25 studies that met the criteria for this systematic review (Table 3.1), the results obtained were 11 randomized control trial (RCT), 6 experimental experimental studies, 2 experimental studies with invitro and invivo, 1 study used cross sectional design, 1 study using quasy experimental design, 2 studies systematic review. 1 non-equivalent control group study design and 1 qualitative descriptive study. Study results are grouped according to the determined variables, namely the effectiveness of papaya fruit extract mudawatan breast, normal postpartum mother's milk production.
The research obtained in this literature study is to determine whether it has an influence between variables known by calculating the effect size. Effect size is a measure of the practical significance of research results in the form of a measure of the magnitude of the correlation or difference, or the effect of a variable on other variables. This measure complements the analysis information provided by the significance test. Information about the effect size can also be used to compare the effects of a variable from studies that use different measurement scales. To obtain the effect size can be seen in the following table:

<table>
<thead>
<tr>
<th>No.</th>
<th>Author</th>
<th>Intervention Of</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Effect size</th>
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<tbody>
<tr>
<td></td>
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<td>Experiment</td>
<td>Control</td>
<td>Experiment</td>
</tr>
<tr>
<td>1</td>
<td>Ryzky Diah Anggraini</td>
<td>Effectiveness of papaya extract (n E: 44; n K: 44)</td>
<td>9.8</td>
<td>5.3</td>
<td>5.1</td>
</tr>
<tr>
<td>2</td>
<td>Foong SC</td>
<td>Comparison of oral Galactagogue with placebo (n E 66:; n K: 46)</td>
<td>12.4</td>
<td>7.7</td>
<td>5.3</td>
</tr>
<tr>
<td>3</td>
<td>Ikslasiah</td>
<td>Juz of papaya (n E: 40; n K: 20)</td>
<td>6.4</td>
<td>3.2</td>
<td>3.5</td>
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<tr>
<td>4</td>
<td>Susilawati</td>
<td>Comparison of birth weight (n E: 35 n K: 35)</td>
<td>9.25</td>
<td>6.87</td>
<td>2.67</td>
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<tr>
<td>5</td>
<td>Rahayuningsih T, Murthi B.</td>
<td>Effectiveness of breast care and oxytocin massage (n: 46 nK: 44)</td>
<td>9.57</td>
<td>6.70</td>
<td>3.58</td>
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<tr>
<td>6</td>
<td>Asztlos EV. Kiss A, Dasilva OP,</td>
<td>Comparison of breast care for postpartum mothers in the 8-14 day group and&gt; 14 days (n 45 n K: 45)</td>
<td>6.2</td>
<td>3.4</td>
<td>3.76</td>
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<tr>
<td>7</td>
<td>Yu J, Wells J, Wei Z Fewtrell</td>
<td>Home visit 2 times the intervention (n: 41 Nk: 41)</td>
<td>13.5</td>
<td>11.0</td>
<td>5.7</td>
</tr>
<tr>
<td>8</td>
<td>Sari LP, Salimo H, Budihastuti</td>
<td>Combined oxytocin massage and hypnobreastfeeding (n: 30 nK: 30)</td>
<td>11.39</td>
<td>7.00</td>
<td>6.93</td>
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DISCUSSION
Young papaya contains carbohydrates, proteins, amino acids, cardiac glycosides, saponyn glycosides, flavonoids, alkaloids, phenolics, and iridoids. The phenolic compounds in papaya extract include protocatechuic acid, coumaric acid, caffeic acid; 5,7-dimethoxycoumarin, kaempferol, and quercetin. Insilico’s approach suggests new targets for breast milk production, 5 phytochemical compounds selected from 157 natural galactagogues molecules, namely Sesamin, Trifoliol, Limonin, Quercetin and Kaempferol and proven to produce more milk production by activating prolactin receptors. The results of research on galactagogue combination of instant powder from papaya leaves and red ginger for breastfeeding mothers stated that papaya leaves contain quercetin compounds which can activate prolactin hormone receptors, thereby increasing milk production. Galactogogues are special foods, drinks, or ingredients that are believed to aid initiation, to maintain, and to increase the excretion of breast milk. Some galactogogues have earned a reputation and recognition by the public and professionals as an alternative approach to increasing breast milk production56.
Saponins are one of the ingredients of papaya fruit. Apart from papaya fruit, saponins are also found in papaya leaves. Research results on Maintenance and determination of saponin dosage in carica papaya leaf cookies as a breast milk enhancer states that saponin content can produce prolactin and oxytocin hormones, in addition to saponins from papaya leaves, namely potassium which has the same function as saponins. The results of this study, namely the results of laboratory tests show that there is 1.6 mg / g of potassium in the carica papaya leaf cookies. Women 19-29 years of age need 470mg of potassium each day. Breastfeeding mothers need an additional 40 mg of potassium per day, thus breastfeeding mother's potassium needs are 510 mg / day. 25g of carica papaya leaf cookies or two slices of cookies contains 80mg of potassium which supplies 15.7% of the potassium requirement for nursing mothers per day. Carica papaya leaves also contain minerals such as manganese where the need for manganese for nursing mothers is 1.8 mg / day during the lactation period, generally women need an additional 0.8 mg of manganese per day. So the need for manganese that is needed for breastfeeding mothers every day is 2.6 mg. In this study 25g of cookies contained 0.50 mg of manganese which contributed to 19.2% of the manganese requirement for nursing mothers70.
The results of the study on the intervention to use papaya leaf extract showed that postpartum mothers who took papaya fruit extract pills had an increase in the adequacy of breastfeeding compared to postpartum mothers who took placebo. In addition there was an increase in the baby's weight, the frequency of urination increased by 2 times, The frequency of defecating in infants increased 2 times, the frequency of sleep increased by 2.73 hours, the frequency of breastfeeding increased 4 times compared to the control group which experienced an increase in indicators of normal breastfeeding adequacy 50. These results are consistent with the research of Susilawati and Khotimah 2017 that boiled water from papaya fruit young people can provide a significant difference in weight gain in mothers who consume compared to the group of mothers who do not consume boiled water of young papaya fruit 52.
The results of the study said that giving instant sweet papaya leaf powder given for 3 consecutive days and evaluated on the third day, making papaya leaf sweet instant powder combined with honey to eliminate the bitter taste in post partum mothers as seen from the frequency of BAK, defecation, length of baby sleep and color of stool baby 73.
Research on the Antibacterial Effects of Young Papaya (Carica papaya L.) Water Extract on Lactobacillus acidophilus was conducted and explained that the water extract of young papaya fruit contains active compounds such as triterpenoids, tannins, flavonoids, saponins, and alkaloids. The five active compounds are known to have antibacterial activity. Triterpenoid activity as antibacterial is by destroying the permeability of the bacterial cell wall. In addition, triterpenoids are thought to react with transmembrane proteins on the outer membrane of the bacterial cell wall, causing the destruction of these transmembrane proteins. Tannin compounds react with bacterial cells causing inactivation of microbial adhesins, enzymes, and protein transport.

Breast care is an act of caring for the breasts during breastfeeding to facilitate the release of milk. Breast care is carried out twice a day in the morning and evening baths. Breast massage and expressing milk can initially increase milk flow by cleaning the sticky first colostral lactiferous sinuses and ducts, then forming a less concentrated colostrum flow. These ducts and sinuses are used to reduce swelling, help the baby to latch on, and collect milk.

Breast milk production refers to the volume of milk released by the breasts. The second intervention of breast care and the principle method of oxytocin massage, aims to make the myocardial muscles contract, calm the mind and facilitate the release of breast milk. Expenditure of breast milk occurs because the smooth muscle cells around the breast glands shrink so that the milk squeezes out. Breast milk can come out of the breast because the shrinking of the muscles can be stimulated by a hormone called oxytocin. Through stimulation of the breast massage or stimulation of the spine to relax tension and relieve stress, assisted by suction of the baby on the nipple as soon as the baby is born with a normal baby condition, The neurotransmitter stimulates the medulla oblongata and then sends a message to the hypothalamus in the posterior pituitary to release oxytocin causing the breasts to produce milk. 58

One of them can breast care by using oxytocin massage, hypnobreastfeeding and others. Research on optimizing the combination of oxytocin massage and hypnobreastfeeding for milk production in postpartum mothers revealed that the combination of oxytocin massage and hypnobreastfeeding was effective in reducing anxiety and was able to increase the production of postpartum mother's milk in the intervention group than those in the control group (not given intervention). The results of several studies have also shown that breast milk can provide support for maternal psychological health protection because it can weaken the stress hormone (cortisol). The more mothers breastfeed their babies, the more prolactin and the hormone oxytocin will produce more breast milk. 62

CONCLUSION
Comparison of the provision of young papaya fruit extract and breast care to normal postpartum mothers, it was found that the provision of young papaya fruit extracts had more effective benefits on breast milk production.

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