

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

Ewith Widya Mareta*, Ari Suwondo, Imam Djamaluddin

Health Polytechnic of the Ministry of Health, Semarang, Indonesia

* ewithwidya28@gmail.com

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 Sience Direct with the design criteria of this study, namely randomized controlled trial, cross sectional design, and quasy 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

Received August 5, 2020; Revised August 30, 2020; Accepted October 20, 2020



STRADA Jurnal Ilmiah Kesehatan, its website, and the articles published there in are licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

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 mudrawatan 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 scales⁹⁶. To obtain the effect size can be seen in the following table:

Table. 1 Effect Size

No.	Author	Intervention Of	Mean		Standard Deviation		Effect size
			Experiment	Control	Experiment	Control	
1	Ryzky Diah Anggraini	Effectiveness of papaya extract (n E: 44; n K: 44)	9.8	5.3	5.1	2.7	1.05
2	Foong SC	Comparison of oral Galactagogue with placebo (n E 66;; n K: 46)	12.4	7.7	5.3	3.34	1.02
3	Iklsasiah	Juz of papaya (n E: 40; n K: 20)	6.4	3.2	3.5	1.33	1.07
4	Susilawati	Comparison of birth weight (n E: 35 n K: 35)	9.25	6.87	2.67	1.15	1.1
5	Rahayuningsih T, Mudigdo A, Murthi B.	Effectiveness of breast care and oxytocin massage (n: 46 nK: 44)	9.57	6.70	3.58	1.68	1.0
6	Asztlos EV. Kiss A, Dasilva OP, Campbell-Yeo M, Ito S, Knoppertd.	Comparison of breast care for postpartum mothers in the 8-14 day group and> 14 days (n 45 n K: 45)	6.2	3.4	3.76	2.03	0.9
7	Yu J, Wells J, Wei Z Fewtrell M.	Home visit 2 times the intervention (n: 41 Nk: 41)	13.5	11.0	5.7	4.9	0.47
8	Sari LP, Salimo H, Budihastuti UR.	Combined oxytocin massage and hypnobreastfeeding (n: 30 nK: 30)	11.39	7.00	6.93	1.56	0.8

DISCUSSION

Young papaya contains carbohydrates, proteins, amino acids, cardiac glycosides, saponin 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. Galactagogues are special foods, drinks, or ingredients that are believed to aid initiation, to maintain, and to increase the excretion of breast milk. Some galactagogues 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 colostrum 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.

REFERENCES

- Kharisma Y, Ariyoga A, Sastramihardja HS. (2011). Extra Water Effects of Young Papaya (*Carica Papaya* L.) Fruit Against Histology of Lactating Mice Mamma Glands: MKB. 43 (4): 160-165
- Y. Sariati, VY Prastyaningrum, P. Kurniasari, and Mustarina. (2017). Factors Affecting the Success of Asi, J. Issues Midwifery, vol. Vol. 1, no. No. 1, pp. 1–18,
- Fikawati. Shafiq. (2010). Study of Implementation and Policy of Exclusive Breastfeeding

- and initiation of early breastfeeding. Health magazine. Vol. 14, No.1, pp. 17-24
- Ministry of Health. Ministry of Health Strategic Plan 2015-2019. Jakarta: Indonesian Ministry of Health
- Isnaini N, Rama D (2015). The relationship of oxytocin massage in postpartum mothers to breastfeeding expenditure in the work area of the Raja Basa Indah Community Health Center in Bandung in 2015. Journal of Obstetrics 1 (2). July 2015.
- Natari, D. Oktiarini, S. (2015). Increased production of breast milk by consuming papaya fruit, increasing production of breast milk with the papaya fruit consumption. Vol. 9, No. 1, pp. 7–10.
- Yadav D, et al. (2011). Novel Approach: Herbal Remedies And Natural Products In Pharmaceutical Science As Nano Drug Delivery Systems. International Journal of Pharmacy and Technology. Vol 3 (3): 3092-3116
- Saraf and Ajazuddin. (2010). Applications Of Novel Drug Delivery System For Herbal Formulations. Phytoterapia. Vol 81 (7). 680-689
- F. Ummah. (2014). "Oxytocin massage to accelerate the release of breast milk in normal postpartum mothers," *Sun*, vol. 02, no. Xviii, p. 1
- Atikah E. (2010). Capita Selecta Breastfeeding and Breastfeeding. Yogyakarta: Nuha Medika .. 20-25p
- Rayhana and Sufriani. (2017). "Factors Affecting Breast Milk Production With Adequacy of Breast Milk," *J. Ilm. Mhs. - Unsyiah*, pp. 1–11
- Muchtadi, Deddy. (2010). Nutrition for Infants: Breastmilk, Formula Milk, and Supplementary Food. Jakarta: Pustaka Sinar Harapan
- R. Suradi, (2016) "Biological Specificity of Mother's Milk," *Sari Pediatr.*, vol. 3, no. 3, p. 134.
- Nguyen, TT et al.(2016). Infant Formula Feeding at Birth Is Common and Inversely Associated with Subsequent Breastfeeding Behavior in Vietnam , The Journal of Nutrition, 146 (10), pp. 2102–2108. doi: 10.3945 / jn.116.235077.
- Putriningrum, E. (2016). Lactation Management Exclusive Breastfeeding: A Qualitative Study of Working Mothers in Kalibawang Kulon Progo District, Yogyakarta. [Thesis] Public Health Studies Program Postgraduate Program UNS.
- Smith, Paige H, et al. (2012) Early Breastfeeding Experience of Adolescent Mother: A Qualitative Prospective Study. USA
- W. Jedrychowski *et al.* (2012). "Effect of exclusive breastfeeding on the development of children's cognitive function in the Krakow prospective birth cohort study," *Eur. J. Pediatr.*, Vol. 171, no. 1, pp. 151–158
- Dawiyah I, Harahap JR. (2020). Health Education on Expressing Techniques and Oxytocin Massage Techniques for Third Trimester Pregnant Women in the Sidomulyo Health Center Area of Hospitalization of Sidomulyo Barat Village, Tampan District, Pekanbaru City. *Ebima Journal* Vol 1 (1).
- O. Satria, Y. Yanwirasti, and A. Amir. (2018). "The Effect of Water Extraction of Young Papaya Fruit (*Carica papaya*.L) on Ovary Histology of Female Rats (*Rattus norvegicus*)," *J. Ilm. Univ. Batanghari Jambi*, vol. 18, no. 3, p. 589
- JA Teixeira *et al.* (2007). "Papaya (*Carica papaya* L.) Biology and Biotechnology," *Africa (Lond)*.
- Yanti AD, Anggraeni L. (2015). The Relationship between Breast Care and Smooth Breastfeeding for Post Partum Women in Wonorejo Village, Trowulan District, Mojokerto Regency.
- Soleha SN, Sucipto E, Izah N. 2019. The Effect of Breast Care on Breast Milk Production

- of Postpartum Mother. *Midwifery Scientific Journal*, Vol. 6, No. 2, August 2019: 98-106.
- R. Graharti *et al.* (2018). "The Effect of Papaya Fruit (*Carica Papaya* L.) on the Smoothness of Breastfeeding Production in Breastfeeding Mothers The Effect of Papaya (*Carica Papaya* L.) Towards Breast Milk Production in Breastfeeding Mothers," *Medula*, vol. 8, no. April, pp. 39–43
- F. Istiqomah, *et al.* (2015). The Effect of Papaya Fruit on the Smoothness of Breastfeeding Production in Nursing Mothers. *Edu Health Journal*. Vol. 5, No. 2
- TE Pratiwi and A. Suwondo. (2018). "Exclusive Breastfeeding Improvement Program Using *Carica Papaya* Leaf Extract on the Levels of Prolactin Hormones," *Int. J. Sci. Res.*, vol. 7, no. 9, pp. 2016–2019
- I. Gbadamosi and O. Okolosi. (2013). "Botanical galactogogues: nutritional values and therapeutic potentials," *J. Appl. Biosci.*, vol. 61, no. 0, p. 4460
- Ms. Lilia Tena Suck. (2015). Srijela-an Herbal Preparation with Galactogenic Property. *Am. J. Clin. Exp. Med.*, vol. 3, no. 2, p. 59
- FS Setyono, AC Adi, and R. Ismawati. (2016). Galactogogue Instant Powder Combination of Papaya Leaves and Red Ginger for Breastfeeding Mother. *Int. J. Prev. Public Heal. Sci.*, vol. 2, no. 4, pp. 32–36
- Okoli. (2015). A Guide to Conducting Systematic Literature Riview. *Communications of the Associations for information System* (37:43), November 2015, pp. 879-910. <http://aisel.aisnet.org/cais/vol37/iss1/43>
- IC Kusuma, O. Setiani, U. Umaroh, N. Pramono, MN Widyawati, and S. Kumorowulan. (2017). Sweet Potato (*Ipomoea Batatas* L.) Leaf: Its Effect on Prolactin and Production of Breast Milk in Postpartum Mothers. *Belitung Nurs. J.*, vol. 3, no. 2, pp. 95–101
- L. Turlina And R. Wijayanti. (2015). The Influence of Giving Papaya Leaf Powder to the Smoothness of Breastfeeding in Postpartum Mother in Kedungpring, Lamongan Regency. *Journal Surya*, Vol. 07, No. 01, Pp. 1–9
- S. Susilawati and NC Chotimah. (2019). Difference of Weight Gain in Baby Mother Given Boiled Of Papaya Fruit. *J. Health.*, vol. 5, no. 1, pp. 34–39
- Anggraini RD. (2019). Young Papaya Fruit Extract as an Alternative to Midwifery Services in Primipara Postpartum Mothers for Breastfeeding Adequacy. *Midwifery Applied Masters Study Program*.
- Kharisma Y, Andriane Y. (2018). Acute Toxicity Test of Unripe Oapaya (*Carica Papaya* L) Aqueous Extract (UPAE) on The Blood Urea and Creatinine Concentration. *Global Medical & Health Communication*. Vol. 6 No 2. pp. 138-142
- Susilawati, Khotimah NC. (2017). Difference of Weight in Baby Mother Given Boiled of Papaya Fruit. *Journal of Health* Vol. 5 No. 1 2354-5852
- Agustiani D, Kharisma Y, Nurul Romadhona. (2017). Antibacterial effect of young Papaya fruit sir extract (*Carica Papaya* L) against *Lactobacillus acidophilus*. *Bandung Meeting on Global MEDICINE & Health (BaMGMH) v0L 1 No 1*
- Iekshmi NM, Sindhu G, Raghuc GK, Rameshkumara KB. (2018). Chemical Composition and Cytotoxicity of *Garcinia Rubroechinata*, E Western Bhats Endemic Species. *Natural Product Communications* Vol 12 (11).
- James PB, Bah AJ, Tommy MS, Wardle J, Steel A. (2019). Herbal Medicines use During Pregnancy in Sierra Leone: An Exploratory cross-sectional Study. *Women and Birth* 31 (5) pp 302-309.
- Setyono FS, Adi AC, Ismawati R. (2016). Galactogogue Instant Powder Combination of

- Papaya Leaves and Red Ginger for Breastfeeding Mother. *International Journal of Preventive Public Health Sciences*. Vol 2 (4)
- Airaodion AI, Ekenjoku JA, Ogbuagu EO, Okoroukwu CN, Ognuagu U. (2019). Carica Papaya Leaves Might Cause Miscarriage. *Asian Research of Gynecology and Obstetrics*. 2 (2): 1-9.
- Makoya RP. (2018). Effects of Carica papaya Seed Linn meal on health and Performance of Jersey Calves. .
- Jarisarapurin W, Sanrattana W, Chularojmontri, Kunchana K, Wattanapitayakayul SK (2019). Antioxidant Properties of Unripe Carica Papaya Fruit Extract and Its Protective Effects against Endothelial Oxidative Stress. *Evidence-Based Complementary and Alternative Medicine*.
- Zhang and Chen W. (2017). The Candida Albicans Inhibitory Activity of the Extract from Papaya (Carica papaya L.) Seed Relates to Mitochondria Dysfunction. *International Journal of Molecular Sciences*. Mol.Sci 18,1858
- Syafiuddin A, Salmiati, Hadibarata T, Salim MR, Kueh ABH, Sari AA. (2017). A Purely Green Synthesis of Silver Nanoparticles Using Carica Papaya, Manihot Esculenta, and Morinda Citifolia: synthesis and Antibacterial Evaluations. *Bioprocess Biosyst Eng*.
- Ghaffarilaleh V, Fisher D, Henkel R. (2019). Carica Papaya Seed EXTRACT Slows Human Sperm. *Journal of Ethnopharmacology* 241.
- Foong SC, Tan ML, Foong WC, Marasco LA, Ho JJ, Ong JH. (2020). Oral Galactagogues (Natural Therapies of Drugs) For Increasing Breast Milk Production in Mother of non-hospitalized Term Infants. *Trusted Evidence Informed Decisions Better Health*.
- Iskandar Y and Mustarichie R. (2018). Chemical Compounds' Content Determination and a Pharmacognostic Parameter of Papaya (Carica Papaya, Linn.) Leaves Ethanol Extract. *International Journal of Pharmaceutical Research & Allied Sciences* 7 (3): 1-9.
- Rodriguez GM, Sibaja JC, Paula JP, Espita, Otoni CG. (2019). Antioxidant Active Packaging Based on Papaya Edible Films Incorporated with Moringa oleifera and Ascorbic acid for Food Preservation. *Pre-Proof Journal*.
- Wijayanti K, Subagio HW, Nugraheni SA. (2019). Saponin Maintaining and Dose Determining in Carica Papaya Leaf Cookies as a Breast Milk Booster (galactagogue). *Indian Journal of Public Health Research & Development* 10 (9) 730-734.
- El-Nekeety AA, Abdel-Wahhab KG, Abdel-Aziem SH, Manna FA, Hassan NS, Abdel-Wahhab MA. (2017). Papaya Fruits Extract Enhance the Antioxidant Capacity and modulate the Genotoxicity and Oxidative stress in Kidney of Rats fed ochratoxin A-contaminated Diet. *Journal of Applied Pharmaceutical Science* Vol 7 (07) pp 111-121.
- Jafari S, Goh YM, Rajion MA, Jahromi MF, Ahmda YH, Ebrahimi M. (2016). Papaya (Carica Papaya) Leaf Methanolic Extract modulates in vitro rumen Methanogenesis and rumen Biohydrogenation. *Animal Science Journal*.
- Handayani EW, Qomar UL. (2019). Provision of Papaya Leaf Instant Sweet Powder for the Smoothness of Breastfeeding in Post-partum Mothers. *Proceeding of The URECOL*, 551-556.
- Dziendzikowska K, Krawczyńska A, Oczkowski M, Krolkowski T, Brzoska K, Lanoff A, Stepkowski T, Kruszewski M, Gromadzka-Ostrowska J. (2016). Progressive

- effects of silver nanoparticles on hormonal regulation of reproduction in male rats. *Toxicology and Applied Pharmacology* 313 35-46.
- Khan TM, Wu DB, Dolzhenko AV. (2017). Effectiveness of fenugreek as a galactagogue: A network meta-analysis. *Phytotherapy Reseach*. 1-11
- Kristiyanti R, Khuzaiyah1 S, Chabibah N, Khanifah M. (2019). Effectiveness of Moringa Oleifera Extract to Increase Breastmilk Production in Postpartum Mother with Food Restriction. *Advances in Social Science, Education and Humanities Research*, volume 436.
- Haryono R, Setianingsih, S. (2014). Exclusive breastfeeding benefits for your little ones. Yogyakarta: Goshen Publication.
- Marlies SRM, Ellen WRN, Joke LRN, Annick BRM. (2019). The Supporting role of the midwife the first 14 days of Breastfeeding in ng: A descriptive qualitative quality wards and primary healthcare. *Midwifery*.
- Bryant AG, Lysterly AD, Devane-Johnson S, Kistler CE, Stuebe AM. (2019). Hormonal Contraception, breastfeeding and bedside advocacy: the case for patient-centered care. *Contraception* (99) 73-76.
- Cooper M and Cameron S. (2018). Postpartum Contraception. *Obstetrics, Gynecology and Reproductive Medicine* 28: 6.
- Rahmawati A, Prayogi B. (2017). Analysis of factors affecting the production of breast milk in working breastfeeding mothers. *Journal of Nurses and Midwifery*. 4 (2).
- Paranajaya Rudiyaniti N. (2013). Determinants of Breast Milk Production in Nursing Mothers. *Journal of Nursing IX* (2).
- Rahayuningsih T, Mudigdo A, Murti B. (2016). Effect of Breast Care and Oxytocin Massage on Breast Milk Production: A study in Sukoharjo Provincial Hospital. *Journal of Maternal and Child Health* (2016), 1 (2): 101-109 <https://doi.org/10.26911/thejmch.2016.01.02.05>.
- Asztlos EV, Kiss A, Dasilva OP, Campbell-Yeo M, Ito S, Knoppertd. (2019). Role of days postdelivery on breast milk production: a secondary analysis from the EMPOWER trial. *International Breastfeeding Journal*.
- Anderson L, Kynoch K, 2 Kildea S, Lee M. (2019). Effectiveness of breast massage for the treatment of women with breastfeeding problems: a systematic review. *JBIC Database System Rev Implement Rep* 2019; 17 (8): 1668–1694.
- Yu J, Wells J, Wei Z, Fewtrell M (2019). Effects of relaxation therapy on maternal psychological state, infant growth and gut microbiome: protocol for a randomized controlled trial of investigating mother-infant signaling during lactation following late preterm and early term delivery. *International Breastfeeding Journal*.
- Sari LP, Salimo H, Budihastuti UR. (2017). Optimizing the Combination of Oxytocin Massage and Hypnobreastfeeding for Breast Milk Production among Post-Partum Mothers. *Journal of Maternal and Child Health* (2017), 1 (1): 20-29 <https://doi.org/10.26911/thejmch.2017.02.01.03>
- Rahnemaie FA, Zare E, Zaheri F and Abdi F. (2019). Effects of Complementary Medicine on Successful Breastfeeding and its Associated Issues in the Postpartum Period. *Iran J Pediatr* 29 (1): 80180. doi: 10.5812 / ijp.80180.
- RDAAS Supriyana, ; (2015). Unripe Carica Papaya L. Extract as an Alternative for Midwifery Services in Primipara Postpartum Mothers for Breast Milk Adequacy. *Int. J. Sci. Res.*, Vol. 8, no. 1, pp. 1431–1433.
- MI Ikhlasiah and LM Winarni, (2020). Giving Papaya Leaf Juice To Breastfeeding Mothers That Work To Increase Prolactin Levels And Baby Weight, *J. Midwifery*

Malahayati, vol. 6, no. 1, pp. 89–94,