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EDAMAME AND OXYTOCIN MASSAGE TO IMPROVE PRODUCTION OF BREAST MILK

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ABSTRACT

Background: Poor milk production is one of the causes contributing to limited exclusive breastfeeding. Edamame and Oxytocin Massage is a non-pharmacological pain management technique that is anticipated to boost the production of breast milk.**Objective:** to ascertain the impact of oxytocin and edamame massage on postpartum women's production of breast milk at Karanganyar Health Center. **Methods:** There is only one group used for the pretest and posttest in this quantitative, pre-experimental study methodology. This study included 32 respondents who were all postpartum mothers on days 2–8 at Puskesmas Karanganyar, Demak Regency, from August 23 to September 3, 2024. Twenty responders made up the research sample. Purposive sampling was the method used for sampling in this investigation. Wilcoxon is used for both univariate and bivariate data analysis.**Results:** The median amount of breast milk produced at Puskesmas Karanganyar prior to receiving an oxytocin and edamame massage was 22.4 milliliters. The median amount of breast milk produced at Puskesmas Karanganyar following an oxytocin and edamame massage was 41.9 milliliters. At Karanganyar Health Center, postpartum women's breast milk supply is impacted by oxytocin and edamame massage (0.0001 <0.05).**Conclusion :** At Karanganyar Health Center, postpartum women's breast milk production is impacted by oxytocin massage and edamame feeding. According to the study's findings, midwives can massage postpartum ladies using edamame and oxytocin to boost their supply of breast milk.

Keywords: Breast Milk Production; Edamame; Oxytocin Massage.

INTRODUCTION

The World Health Organization (WHO) recommends that exclusive breastfeeding must be given for up to 6 months and then continued with complementary feeding. This is because of the many nutrients and nutrients contained in breast milk so that it can improve children's health. Unfortunately, there are still quite a lot of mothers who do not provide exclusive breastfeeding. WHO again provided data in 2020 in the form of global exclusive breastfeeding figures, and while there has been an increase, it has not increased substantially. Specifically, 44% of babies aged 0–6 months globally received exclusive breastfeeding between 2015 and 2020, compared to 50% of the WHO target for exclusive breastfeeding. Breastfeeding is vital to a child's health and survival.Breast milk is a safe, natural, nutritious, and sustainable food for babies. Breast milk contains antibodies that help protect against many common childhood illnesses, such as diarrhoea and respiratory diseases. Insufficient breastfeeding is thought to be the cause of 16% of infant fatalities annually. In addition to doing better on IQ tests, breastfed kids are less likely to grow up to be overweight or obese. Breastfeeding women are also less likely to develop type II diabetes and cancer. (WHO, 2024). Indonesia had a 66.06% coverage rate for exclusive breastfeeding in 2020. This number is higher than the 40% goal set in the 2020 Strategic Plan. But more has to be done to promote breastfeeding. (Kemenkes RI., 2021). Exclusive breastfeeding coverage in Central Java in 2020 is 81.4%. Exclusive breastfeeding coverage in Demak District is 76.73%. The main

obstacle is that breast milk production is not smooth (DinKes Jawa Tengah, 2021). Many factors contribute to the low rate of exclusive breastfeeding, including low nutritional intake and breastfeeding mothers feeling that the amount of milk produced is not enough to fulfil the baby's demand, in addition to the promotion of breastmilk substitutes (Marliandiani & Ningrum, 2015). Because it includes the nutrients and energy a baby needs throughout the first six months of life, breast milk is the greatest natural diet for babies.But in reality, some mothers experience problems in breastfeeding. The primary barrier is the irregularity of breast milk production.Efforts are made to overcome breastfeeding problems in postpartum mothers by providing pharmacological therapy with breast milk slowers and non-pharmacological therapy. One of the non-pharmacological therapies that can be done with massage or utilising plants that can stimulate breast milk production (Maryuni et al., 2024).

Because the mother bleeds a lot after childbirth and the fetus gets half of its iron needs from the mother, breastfeeding moms must consume enough nutrients.The food intake of breastfeeding mothers also determines the quality of their breast milk. Vegetable soybean (Glycine max L. Merill), known as Edamame in Japan and Mau Doudi in China, is a type of legume that belongs to the category of green soybean vegetable. This plant is one of the important vegetables in Japan, Taiwan, China, and Korea. Edamame is a tropical plant and is used as a vegetable and health food. Edamame has a fairly high nutritional value of 582 Kcal, 11.5 g protein; 7.4 g carbohydrate; 6.5 g fat; 100 mg vitamin A; 0.26 mg B1; 0.15 mg B2; 1 mg B3; and 27% vitamin C; as well as minerals such as phosphorus 150 mg; calcium 70 mg; iron 1.7 mg; and potassium 145 mg in 100 g edamame (Fultz, 2015). Because they contain phytosterol substances that stimulate and facilitate the production of breast milk (a phenomenon known as the lactagogum effect), edamame plants are native foods that may be nutritious for nursing moms. Sterols are among the substances that, in theory, produce lactagogum effects. Sterols are substances in the steroid class. (Fatahillah et al., 2019). In addition, the high vitamin A content in edamame 95 SI or 100 mg can increase breast milk production. Vitamin A needs to be given and is important for mothers during the postpartum period. Vitamin A for postpartum mothers can increase the volume of breast milk (Konovsky et al., 2020). Soybeans are known to contain isoflavones, especially genistein and daidzein, which are known to play a role in inducing the prolactin hormone so as to increase breast milk production (Djanta et al., 2020).

Two hormones control the production of breastmilk: oxytocin influences the process of milk release, while prolactin affects the quantity of milk produced. Numerous factors, including both mother and infant circumstances, might affect the release of the hormones prolactin and oxytocin in postpartum women.Maternal factors include maternal psychology, oxytocin massage, maternal nutrition and infant factors such as the frequency of infant suckling (Ulya et al., 2021).

The production of oxytocin hormone to facilitate milk production is influenced by the let-down reflex. This let-down reflex can be stimulated by various things such as oxytocin massage. Oxytocin massage is a massage performed on the back that can stimulate the release of endorphin hormone, In order for the massage to relieve muscle tension, this hormone works to promote feelings of peace and relaxation, that will provide comfort to the back area and increase milk production (Ulya et al., 2021).

Based on a preliminary survey conducted on May 2022, exclusive breastfeeding coverage at Puskesmas Karanganyar was 60% of 45 mothers under five, many postpartum mothers during postpartum control said that the mother's breast milk was small so that it was still lacking and the child was given formula milk. The results of interviews with 8 postpartum mothers at the 6-day postpartum visit, 2 mothers said their breast milk was smooth. The mother always breastfed her baby and her mother-in-law gave her nuts and green vegetables. 6 other mothers said they had little breast milk and sometimes gave formula milk, and did not like to consume nuts and green vegetables. Mothers in the Puskesmas area do not all know about the use of edamame to increase breast milk production. What the health centre is

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currently doing to increase breast milk production is health education about exclusive breastfeeding and nutrition such as consumption of green vegetables and breast care but breast milk production is not yet optimal. Mothers' knowledge about the use of edamame as one of the nutrients to increase breast milk production is also lacking.
This study sought to ascertain how postpartum mothers at Karanganyar Health Center produced breast milk in response to oxytocin massage and edamame feeding.

METHOD

This type of research is quantitative. The method is quasi experiment. The design uses a one group pretest posttest design. The population of this study were all postpartum women on days 2-8 at Puskesmas Karanganyar, Demak Regency on 23 August to 3 September 2022, the total population was 32 respondents. The sample size was 20 respondents. The sampling technique was purposive sampling. Inclusion criteria: normal post partum mothers on days 2-8, primipara and multipara, not allergic and like edamame, mothers without abstinence. Research data collection was assisted by enumerators at the Karanganyar Community Health Centre, Demak Regency. Enumerators in this study collected 20% of research data and before collecting research data, apperception was carried out with enumerators. Giving edamame as much as 65 grams / day and oxytocin massage for 5 days on days 3-7. Pre test was done on day 2 and post test on day 8. The instrument of this study was an observation sheet to measure the volume of breast milk produced by mothers measured before and after the action for 24 hours. This research instrument is an observation sheet to measure the volume of breast milk produced by mothers measured before and after the action for 24 hours. Univariate analysis in this study using the central tendency of mean, median, minimum, maximum and standard deviation values. Bivariate analysis using Wilcoxon, because the normality test is not normally distributed with a ρ-value <0.05 (α). Ethical testing was carried out at the Ethics Commission of Karya Husada University Semarang with Number : 59/KEP/UNKAHA/SLE/VIII/2022.

RESULTS

Analisa Univariat

Table 1 : Breast milk production before edamame and oxytocin massage

Breastmilk production	N	Min	Max	Median	Standar Deviasi
Before given Edamame and Oxytocin Massage	20	20	29.17	22.4	2.21

Table 1 shows that out of 20 respondents, breast milk production before Edamame and Oxytocin Massage had a median of 22.4 and a standard deviation of 2.21. The minimum milk production was 20 ml and the maximum milk production was 29.17 ml.

Table 2 : Breast milk production after edamame and oxytocin massage

Breastmilk production	N	Min	Max	Median	Standar Deviasi
After given Edamame and Oxytocin Massage	20	30.56	50.00	41.9	4.31

Table 2 shows that out of 20 respondents, breast milk production after Edamame and Oxytocin Massage had a median of 41.9 and a standard deviation of 4.31. The minimum milk production was 30.56 ml and the maximum milk production was 50.00 ml.

Analisa Bivariat

Table 3 : Results of Analysis of the Effect of Edamame and Oxytocin Massage on Breast Milk Production of Postpartum Women at Karanganyar Health Centre

a	N	Median	Std. Deviation	p-value
Before given Edamame and Oxytocin Massage	20	22.4	2.21	0.0001
After given Edamame and Oxytocin	20	41.9	4.31	

Massage	

Based on table 3 of 20 respondents who were given oxytocin massage, the results of the Wilcoxon analysis with α = 0.05, obtained a p-value of 0.0001 where 0.0001 <0.05, this means that Ho is rejected and Ha is accepted where there is an effect of Edamame and Oxytocin Massage on breast milk production of postpartum women at Karanganyar Health Centre.

DISCUSSION

1. Breast milk production before Edamame and Oxytocin Massage at Puskesmas Karanganyar.

The results of this study at Puskesmas Karanganyar showed that the median breast milk production was 22.4 ml on the 2nd post partum day, this is actually sufficient for the needs of the baby in theory, namely Day 2 of birth: 14-20 ml of breast milk in one drink. Breast milk production in mothers at Puskesmas Karanganyar in this study was influenced by the mother's peace of mind and her belief that she could breastfeed her baby well. This study showed that some mothers were less confident that they could breastfeed their babies well because they produced little milk.

According to earlier research by Ika Nur Saputri, Desideria Yosepha Ginting, and Ilusi Ceria (2019), the average amount of breast milk produced on the first day prior to oxytocin massage was 9.90, which was adequate. Babies require breast milk (ASI), particularly in the early stages of life. Babies benefit from breast milk since it is a wonderful source of nutrients and can naturally boost immunity.The mother's milk production in the study was affected by several things such as the mother feeling tired and exhausted due to the birth process and the new role as a mother (Saputri et al., 2019). Research on back rolling massage (oxytocin massage) by Mayangsari and Hidayati Research on the supply of breast milk in postpartum mothers before and after receiving rolling back massages showed that the pre-intervention group's mean score was 57.49.(Mayangsari & Hidayati, 2020). Theory reveals that breastmilk production is influenced by 2 hormones, prolactin to affect the amount of milk production, and oxytocin to affect the process of milk release. The release of prolactin and oxytocin hormones in postpartum mothers can be influenced by several factors ranging from maternal factors and infant factors. Maternal factors include maternal psychology, oxytocin massage, maternal nutrition and infant factors, namely the frequency of infant breastfeeding (Ulya et al., 2021).

2. Breast milk production after Edamame and Oxytocin Massage at Puskesmas Karanganyar.

According to the findings of this study conducted at Puskesmas Karanganyar, breast milk production increased following an oxytocin and edamame massage.This is because after the oxytocin massage the mother said she felt more relaxed and calm, the mother also experienced breast emptying which would stimulate milk production. Oxytocin massage performed on mothers will help mothers increase breast milk production according to the needs of their babies. While edamamae that has been consumed by the mother provides adequate nutrition because at the time of childbirth so that it fulfils the needs of breastfeeding mothers. The findings of the present investigation align with earlier research conducted by Ika Nur Saputri, Desideria Yosepha Ginting, and Ilusi Ceria (2019), which demonstrated that the average amount of breast milk produced prior to oxytocin massage was 9.90. The average amount of breast milk produced following an oxytocin massage was 13.50(Saputri et al., 2019). In a study by Mayangsari and Hidayati on back rolling massage (oxytocin massage), the post-intervention group's mean score for breast milk production before and after receiving rolling back massage was 147.84.(Mayangsari & Hidayati, 2020).

Theory reveals that oxytocin will make the muscle cells in the olveoli contract so that milk is pushed towards the nipple. The let-down reflex is easily influenced by physical and psychological conditions. Calmness and confidence in the mother encourage the let-down reflex and ensure successful breastfeeding and a close relationship between mother and baby (Ulya et al., 2021)(Shurtleff & Aoyagi, 2021). According to Mayangsari, Dewi et al's research on Back Rolling Massage (oxytocin massage) that there is an

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influence before and after the Back Rolling Massage intervention on breast milk production of postpartum women (Mayangsari & Rahma, 2019).

Isoflavones contained in Edamame are amino acids that have vitamins and nutrients in soya beans that form flavonoids. Flavonoids are pigments, such as leafy green substances that usually have an odour. The health benefits of leafy green compounds are numerous. In general, the benefits of the isoflavones found in edamame include raising the body's metabolism, which is a vitamin that the body needs. (Konovsky et al., 2020)(Djanta et al., 2020).

Edammae or plant-based soybean mainly differs from grain soybean in terms of its large seed size with higher sugar content (3.0%), protein (11.4%), minerals (calcium-70 mg/100 g, potassium-140 mg/100 g and phosphorus-140 mg/100 g), vitamins (carotene 100 mg/100 g, ascorbic acid-27 mg/100 g and alpha tocopherol-12 µg/seed). Edamame also has more seeds, grey in colour, pods and bright green seed coat, beneficial for reducing nutritional insecurity (Khan et al., 2023).

3. The effect of Edamame and Oxytocin Massage on breast milk production in postpartum women at Karanganyar Health Centre

The findings also demonstrated that postpartum moms' supply of breast milk can be increased by edemame and oxytocin massage. According to this study, oxytocin massage helps moms feel at ease or relaxed, which facilitates the body's release of the hormone oxytocin and increases the production of breast milk. Added with edamame consumed by mothers that contains high vitamin A which is important for postpartum mothers to increase breast milk production.

The results of previous research showed that there was an effect of giving Edamame to breast milk production in primiparous postpartum mothers on days 3-7 at PMB Dillah Sobirin Pakis, Malang Regency. Giving edamame as much as 65 grams / day for 5 days. According to the investigation, the administration of edamame has an impact on the production of breast milk in primiparous postpartum moms from days three through seven. Edamame, also known as vegetable soybeans (Glycine max L. Merill), has the ability to increase prolactin and oxytoxin levels. The amount of steroids, alkaloids, polyphenols, flavonoids, and other compounds that effectively boost and facilitate the production of breast milk (Safitri, 2018). This is supported by past research on the Effectiveness of Soy Milk and Mung Bean Juice on Breast Milk Production, the results show that soy milk and mung bean juice both have an effect in increasing breast milk production (Dini et al., 2023). Another study on the provision of soy milk and mung bean juice revealed that respondents 1 and 2 who received the intervention of soy milk and mung bean juice increased their production of breast milk by 445 ml and 380 ml, respectively.(Hanun et al., 2024).

The mean amount of breast milk produced before to oxytocin massage was 9.90, according to research on the topic. Following an oxytocin massage, the average amount of breast milk produced was 13.50. At the Pratama Nining Pelawati Clinic in 2019, postpartum moms' breast milk supply was significantly impacted both before and after receiving an oxytocin massage (p-value = 0.008; $p < 0.05$) . (Saputri et al., 2019). There was no difference in the fluency of breast milk production between the two intervention groups, according to the results, which indicated that the mean value of breast milk fluency in the oxytocin massage intervention group was 661.20 and in the endorphin massage intervention group was 598.60. This suggests that both the oxytocin massage and the endorphin massage interventions have an impact on increasing the fluency of breast milk production.(Wulandari & Mayangsari, 2019).

This supports the idea that the posterior hypophysial gland produces the hormone oxytocin. After it is created, oxytocin enters the bloodstream and activates the meopithelial cells that surround the lactiferous duct and mammary alveolus. Milk is forced from the mammary alveolus into the lactiferous duct and into the lactiferous sinus, where it is stored, by the contraction of the meopithelial cells. The breast milk that is kept in the lactiferous sinus will be forced out into the baby's mouth when they suck the nipple.(Ulya et al., 2021).

The high vitamin A content in edamame 95 SI or 100 mg can increase breast milk production.

Vitamin A needs to be given and is important for mothers during the postpartum period. Vitamin A for postpartum mothers can increase the volume of breast milk. The results showed that vitamin A sufficiency of postpartum mothers was categorised as adequate (58%) and insufficient (42%). A total of 68% of infants had experienced illness during the past month. The types of illnesses suffered by infants during the past month were Upper Respiratory Tract Infection (URTI), fever, and diarrhoea. The better the vitamin A sufficiency of the postpartum mothers, the shorter the period of sickness of the infants because they get good breast milk due to smooth milk production. Meanwhile, the practice of exclusive breastfeeding of infants tends to reduce the frequency of illness and shorten the period of infant illness (Mastin & Roosita, 2015).

Soybeans are known to contain isoflavones, particularly genistein and daidzein, which are known to contribute to the production of more breast milk by triggering the prolactin hormone. (Pramitasari, 2017).

CONCLUSION

Postpartum women at Puskesmas Karanganyar produced more breast milk both before and after receiving an oxytocin and edamame massage.

Mothers can utilize oxytocin and edamame massage in tandem to boost breast milk supply in postpartum women.The results of this study can be used by health institutions, especially Puskesmas Karanganyar Demak, as a reference in making operating procedures (SOPs) that involve the application of a combination intervention of Edamame and Oxytocin Massage to increase breast milk production.

Future research can be conducted with different methods, such as qualitative research, for example, Phenomenological Studies on Breast Milk Production in Mothers with Special Conditions (for example, working mothers, mothers with pregnancy complications).

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