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Unripe *Carica Papaya L.* Extract as an Alternative for Midwifery Services in Primipara Postpartum Mothers for Breast Milk Adequacy

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Abstract: ***Introduction: Breast milk contributes greatly to infant growth, Exclusive breastfeeding can encourage the number of children who live past the age of five. However, many mothers stop the breastfeeding process for reasons of insufficient breastfeeding. Nonpharmacological efforts can be given with the aim of helping to facilitate breastfeeding. unripe papaya contains saponins and alkaloids which can stimulate the hormone prolactin and oxytocin which play a role in the process of breastfeeding, this fruit can be considered as an alternative material to facilitate the production of breast milk so that the adequacy of breast milk for frequency of defecation in infantsies can be fulfilled. Objectives: Prove the effect of unripe Carica papaya L extract on the adequacy of breast milk in primiparous postpartum mothers. Methods: This study used design for randomized control groupthe pretest-posttest group, a sample of 44 primiparous postpartum mothers divided into two groups; the intervention group was given unripe papaya fruit capsules for 14 days at a dose of 150 mg while the control group was given a placebo. Data analysis using Friedman test, Post Hoc Wilcoxon and Mann Whitney test. Results: indicators of adequacy of breastfeeding experienced an increase in the intervention group; baby's weight gain to 327.3 grams, frequency of urination in infants increased 2 times, frequency of defecation in infants increased 2 times, sleep frequency increased 2.73 hours, frequency of breastfeeding increased 4 times compared to the control group that experienced an increase in the indicator of normal breastfeeding adequacy. Conclusion: Unripe papaya extract has potential as an alternative material for the adequacy of breast milk for primiparous postpartum mothers that can be applied to postpartum care in midwifery services.***

Keywords: Unripe Papaya, Adequacy of Breast Milk, Breastfeeding, Primipara Postpartum

1. Introduction

Maternal and Child Health determines the creation of a quality generation. Exclusive breastfeeding is provided to encourage children to live above the age of five. breast milk contributes to child growth and endurance. "*The Lancet Breastfeeding Series, 2016"* proved that breastfeeding can reduce mortality in infants.Nutrition monitoring results in 2016 stated that the coverage of breastfeeding in Indonesia for infants aged 0-5 months was only 54% while infants who received exclusive breastfeeding for up to 6 months were only 29.5%.

Insufficient breastfeeding is the reason for the mother to stop the breastfeeding process. Mother feels that the milk given is not able to meet nutrition and increase body weight for the frequency of defecation in infantsy. One nonpharmacological effort that can be given to mothers to help produce breast milk is by consuming unripe papaya. Unripe papaya contains alkaloids and saponins that work causing myoepithelial cell contraction so that milk will be pushed towards the milk ducts.[1]

2. Literature Survey

Postpartum is a six-week period from the time the baby is born until the reproductive organs return to their normal state before becoming pregnant. [2] Breast milk is a fat emulsion in a solution of protein, glucose and organic salts secreted by the two halves of the mother's breast gland, as the main food for the baby.[3] Adequacy of breastfeeding is indicated by an increase in infant weight of 125 grams per week, frequency of infant urination 6-8 times per day, and increased frequency of length of sleep.[4]

The influence of *carica papaya L* for breast milk, in mammary glands of mice, saponins increase the activity of alkaline phosphatase. This enzyme is found in most parts of the mammalian plasma membrane. Alkaline phosphatase has the most membrane membrane, the basement membrane and the lateral membrane of the secretory epithelium. The enzyme regulates oxytocin mediated ejection [5]

3. Methods/Approach

This study used a *randomized control group pretest-posttest design,* with a sample of 44 primiparous postpartum mothers divided into 2 grous, the intervention group was given a capsule containing extract of unripe papaya which was consumed at a dose of 150 mg, taken 2 times a day for 14 days, while the control group was given a placebo capsule. Measurements of breastfeeding adequacy indicators included baby's weight gain, frequency of urination in baby, the frequency of baby sleep duration, performed before the intervention, after intervention on day 7 and after intervention on day 14.

4. Results & Discussion

4.1 Changes in the indicator of adequacy of breast milk given unripe *carica papaya L* extract in primipara postpartum mothers (Intervention group)

The results of data analysis on infant weight showed *p*-Value <0.05, this means that there was a difference in mean between baby's weight gain before intervention, after day intervention 7th and after intervention on the 14th day.

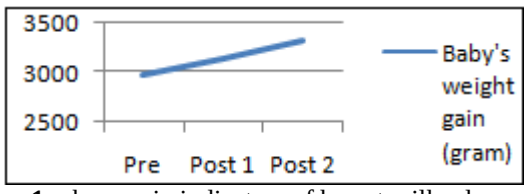

Figure 1: changes in indicators of breast milk adequacy in the form of baby's weight gain

The results of data analysis on frequency of urination in baby showed *P*- Value <0.05, this means that there was a mean difference beforethe intervention, after the 7th day intervention and after the 14th day's intervention.

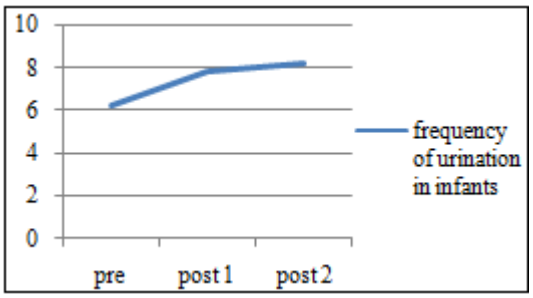

Figure 2: Changes in indicators of breast milk adequacy in the form of frequency urination in baby

The results of data analysis regarding the frequency of baby sleep duration showed *p*-Value <0.05, this means that there was a mean difference between the length of sleep before the intervention, after the 7th day intervention ,and after the 14th day intervention.

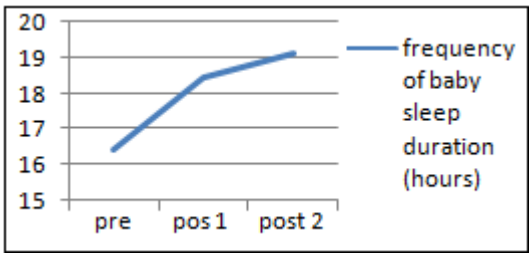

Figure 3: Changes in indicators of breast milk adequacy in the form of frequency length of sleep

Unripe papaya contains saponins and alkaloids which can have the effect of increase breast milk the amount of mammary gland diameter due to secretory cell activity. Both of these substances can increase the hormone prolactin simultaneously. Alkaloids have the function of working directly on all smooth muscles. If smooth muscle contracts, breast milk will be released. [6] adequacy of breast milk is indicated by baby's weight gain, frequency of baby urination ,and frequency of sleep duration. Breast milk containslactose which can be absorbed perfectly by the lactose enzyme in the digestion of baby. Then the lactose will be converted into calories which affect the frequency of defecation in baby's weight. [7]

Frequency changes of urination in infants; the difference in protein and electrolyte content in breast milk affects the excretion of the kidneys to regulate the disposal of substances in the urine.Breast milk contains tryptophan which plays a role in neurotranmitters and lifestyle regulators where one of its functions is regulating the frequency of defecation in infantsy's sleep patterns. Therefore enough breast milk will affect the length of sleep of the frequency of defecation in infantsy[7]

4.2 Changes in the indicator of adequacy of breast milk given placebo capsules in primipara postpartum mothers (control group)

The results of weight gain data analysis showed p-Value <0.05, this means that there was an average difference between the baby's weight gain before being given a placebo, after the 7th day and after the 14th day

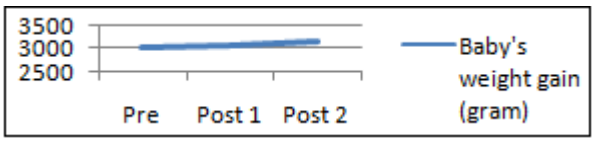

Figure 4: changes in indicators of breast milk adequacy in the form of baby's weight gain (control group)

The results of the frequency of urination in baby showed a P-Value <0.05, this was the difference before being given a placebo, after the 7th day and after the 14th day. (control group)

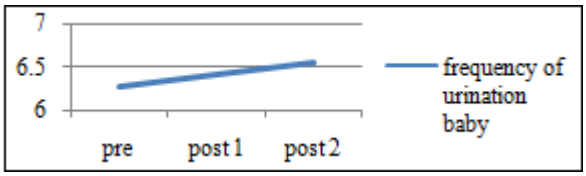

Figure 5: changes in indicators of breast milk adequacy in the form of frequency urination in baby (control group)

The results of data analysis on the frequency of infant sleep showed p-Value <0.05, this means that there was an average difference between the length of sleep before being given a placebo, after the 7th day, and after the 14th day.

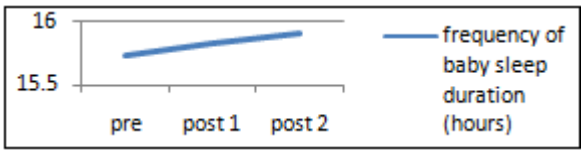

Figure 3: Changes in indicators of breast milk adequacy in the form of frequency length of sleep (control group)

The results showed that the average increase in the indicator of weight gain of infants given placebo underwent normal changes. Likewise with the frequency of baby urination and the frequency of the baby's sleep.

Some studies show that primiparous mothers have a tendency to have difficulty breastfeeding. [8] lack of breast milk volume due to lack of stimulation of the hormone prolactin and oxytocin. [9]an increase in breast milk can be influenced by several factors such as food consumed, the

psychological condition of the mother, contraception and the frequency of defecation in the baby's suction factor. [10]

4.3 Differences in changes in breast milk adequacy indicators in primiparous postpartum mothers between the intervention group and the control group

Analysis of differences in changes in breastfeeding adequacy in the intervention group and the control group resulted in the increase in breastfeeding adequacy in the intervention group where baby's weight gain to 327.3 gram, frequency of urination in baby increased to 2 times, the frequency of infantsy's sleep duration increased to 2.73 hours,The difference in changes in indicators of breast milk adequacy (baby/s weight gain, frequency of urination in baby, and frequency of baby sleep duration) between the intervention group and control group was due to the unripe *carica papaya L extract* consumed by the intervention group containing saponins and alkaloids. Saponins and alkaloids are substances that can simultaneously increase the hormone prolactin and the hormone. oxytocin, and increase secretory cell activity. Both of these substances work through a mechanism of inhibition of dopamine. The work of dopamine itself is to inhibit the release of prolactin, with the inhibition of dopamine there will be release of prolactin.

5. Conclusion

Unripe *Caricapapaya L* extract has the potential as an alternative material to increase the adequacy of breast milk in primiparous postpartum mothers who will breastfeeding.

6. Future Scope

Adequacy of breastfeeding is influenced by nutritional intake and the length of the suckling frequency of defecation in infantsy. In this study both factors were not measured.

7. Other Recommendation

The results of this study are expected to be a reference source for improving postpartum care services, especially for mothers and unripe *carica papaya L*can be used as an alternative material to overcome breast milk problems in primipara postpartum mothers

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