

DOI: <http://dx.doi.org/10.33846/hn60107>  
<http://heanoti.com/index.php/hn>



## RESEARCH ARTICLE

URL of this article: <http://heanoti.com/index.php/hn/article/view/hn60107>

# Combination Early Initiation of Breastfeeding and Oxytocin Massage Increase Prolactin Levels

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## ABSTRACT

**Introduction:** Breastmilk (ASI) is the best food for babies up to 2 years of age or older. By providing breast milk (ASI) reduces the risk of various infections and other diseases. The study aimed to identify the effect of the combination of IMD and Oxytocin Massage on Prolactin Hormone Levels in Post-partum Women. **Methods:** This research design was quasy experimental with post test only control group design. The sample of this research was taken by simple random sampling of 40 postpartum who were then divided into 4 groups (each group 10 postpartum) consisting of 1 control group and 3 treatment groups. The dependent variable was early breastfeeding initiation and oxytocin massage, while the dependent variable was the level of hormone prolactin. Our treatment was oxytocin massage which given for 3 days from the first until the third day of puerperium. Oxytocin massage given two times a day at 08.00 and 16.00 for 3 minutes every treatment. Measurement of prolactin hormonelevels through serum taken on day 3 post partum. Prolactin hormone levels were examined at the Kedungdoro Laboratory using the ELFA method. **Results:** Anova test results in the four groups resulted in a p-value of 0.000, which means that there was a significant difference in the mean prolactin levels between the control group and the treatment group. **Conclusion:** All normal postpartum mothers are given a combinationof IMD and oxytocin massage so that it can increase prolactin hormoneand the success of exclusive breastfeeding.

**Keywords:** early initiation of breastfeeding; oxytocin massage; prolactin hormone

## INTRODUCTION

### Background

Breastmilk (ASI) is the best food for babies, breast milk can be given until the child is 2 years old or older. Breastfeeding is proven to have advantages that cannot be replaced by any food and drink because breast milk contains the most appropriate, complete, and always adjusts to the baby's needs <sup>(1)</sup>. Based on the commitments contained in UU Republic of Indonesia No. 25/Th. 2000 concerning the national development program (Propenas), the coverage of the achievement of exclusive breastfeeding for babies must reach 80%. The coverage of exclusive breastfeeding is still low, amounting to 64.99% in the city of Surabaya in 2015. When compared to the previous year, the number of infants who received exclusive breastfeeding in 2015 increased by 0.66%. However, this figure is still far from the target set. <sup>(2)</sup>. One of the causes of the low coverage of exclusive breastfeeding is the mother's feeling about her low milk production so that most mothers stop the breastfeeding process and change to formula milk.

Early Initiation of Breastfeeding (IMD) is one of the policies to suppress infant mortality rate. Research has shown that Early Initiation of Breastfeeding reduces the risk of infant mortality by 22% when given within the first hour postpartum <sup>(3)</sup>. Oxytocin massage is one of the effective solutions to overcome the improper production of breast milk. Based on the results of research conducted by Safitri, et al. <sup>(4)</sup>. back massage can accelerate breastfeeding in postpartum mothers because the basis of the back massage technique is to stimulate the oxytocin reflex.

In the process of lactation it is influenced by the hormone oxytocin and the hormone prolactin, and alsoby the prolactin reflex and let down reflex. The stimulation of touch to the mother's breast, which is when the baby sucks, will stimulate the production of prolactin hormonewhich will stimulate the glandular cells to produce breast

milk, so that the more often the baby breastfeeds the more prolactin that is produced, the more milk production will be. The baby's suction also stimulates the production of the hormone oxytocin. This hormone causes the contraction of myoepithelial cells so that it will push the milk out of the alveoli through the lactiferous ducts into the lactiferous sinuses. The work of these hormones and reflexes is also influenced by the mother's emotional state. If the mother's emotional state is not good, feeling afraid, tired, and embarrassed will hinder the production of breast milk<sup>(5)</sup>.

Early Initiation of Breastfeeding is an opportunity for newborns to breastfeed themselves to the mother within the first hour of birth<sup>(6)</sup>. IMD provides benefits for mothers and babies both physiologically and psychologically. The benefits that are felt when the baby is in contact with the mother is to provide warmth, calmness so that the baby's breathing and heart rate become regular. The baby gets colostrome which contains antibodies and is the first immunization. In addition, colostrome also contains growth factors that help the baby's intestines function effectively, making it more difficult for microorganisms and other allergens to enter the baby's body<sup>(7)</sup>.

Oxytocin massage is a massage along both sides of the spine. This massage is done to stimulate the oxytocin reflex or the breast milk reflex. Mothers who receive this oxytocin massage will feel more relaxed<sup>(8)</sup>. This massage is done to stimulate the oxytocin reflex or let down reflex. The massage is carried out along the spine (vertebrae) to the fifth-sixth costae. Neck and back massage makes a big contribution to breastfeeding mothers<sup>(9)</sup>. The comfort that mother feel will help release endorphine, which is a soothing compound. The role of the pituitary is to remove endorphins that come from the body and their effects resemble those of morphins. The next role is to release prolactin which will trigger and maintain the secretion of milk from the mammary glands. While the role of the hypothalamus will release oxytocin which is useful for stimulating the smooth muscle cells of the uterus and causing the release of milk from the mammary glands in nursing mothers by stimulating the myoepithelial (contractile) cells around the alveoli of the mammary gland. Oxytocin stimulation makes myoepithelial cells around the alveoli in the breast glands to contract. The contraction of these muscle-like cells causes milk to pass through the ducts and into the lactiferous sinuses and expelled through the nipple.

## Purpose

The study aimed to identify the effect of the combination of IMD and Oxytocin Massage on Prolactin Hormone Levels in Post-partum Women.

## METHODS

This research was a quasi experimental research design with post test only control group design. This research was conducted from March to July 2019 in PMB Sri Wahyuni Surabaya, East Java. Sample of this research was taken by *simple random sampling* of 40 postpartum who were then divided into 4 groups (each group 10 postpartum) consisting of 1 control group and 3 treatment groups. The dependent variable was early breastfeeding initiation and oxytocin massage, while the dependent variable was the level of hormone prolactin.

Sample was divided into 4 groups, namely: 1) group of normal postpartum mothers without treatment as a control group, 2) group of normal postpartum mothers who were given IMD treatment, 3) group of normal postpartum mothers who were given oxytocin massage treatment, 4) group of normal postpartum mothers who were given treatment IMD and oxytocin massage. Each group contains 10 postpartum.

The treatment was oxytocin massage which given for 3 days from the first until the third day of puerperium. Oxytocin massage given two times a day at 08.00 and 16.00 for 3 minutes every treatment. Measurement of prolactin hormone levels through serum taken on day 3 post partum. Prolactin hormone levels were examined at the Kedungoro Laboratory using the ELFA method. Collected data were analyzed using Independent T-Test and Manova.

## RESULTS

After being given treatment, respondents will be measured levels of the hormone prolactin. Here are the results.

Table 1. Average prolactin hormone levels in each control group

Group	Prolactin hormone levels
G1	156 ± 5.65 ng/ml
G2	214.2 ± 5.46 ng/ml
G3	188.7 ± 3.66 ng/ml
G4	247.2 ± 8.45 ng/ml

The highest average prolactin level was in normal postpartum mothers who received a combination treatment of IMD and oxytocin massage (G4) with an average prolactin hormone level of  $247.2 \pm 8.45$  ng/ml.

Table 2. The results of the T test analysis in the group of normal postpartum mothers (IMD treatment) with the control group

Group	Average prolactin hormone levels	p
G1	$156 \pm 5.65$ ng/ml	0.000
G2	$214.2 \pm 5.46$ ng/ml	

Based on table 2, it can be concluded that there was a significant difference (p value 0.000) in the mean prolactin hormone levels between the normal puerperium group (IMD treatment) and the control group.

Table 3. The results of the T test analysis in the normal postpartum group (oxytocin massage treatment) with the control group

Group	Average prolactin hormone levels	p
G1	$156 \pm 5.65$ ng/ml	0.000
G3	$188.7 \pm 3.66$ ng/ml	

Based on table 3, it can be concluded that there was a significant difference (p value 0.000) in the mean prolactin hormone levels between the normal postpartum group (oxytocin massage treatment) and the control group.

Table 4. The results of the T test analysis in the normal puerperium group (IMD treatment and oxytocin massage) with the control group

Group	Average prolactin hormone levels	p
G1	$156 \pm 5.65$ ng/ml	0.000
G4	$247.2 \pm 8.45$ ng/ml	

Based on table 4, it can be concluded that there was a significant difference (p value 0.000) in the mean prolactin hormone levels between the normal puerperium group (combine IMD treatment and oxytocin massage) and the control group.

Table 5. The results of the ANOVA test analysis in the group of normal postpartum mothers with all treatment groups

Group	Average prolactin hormone levels	p
G1	$156 \pm 5.65$ ng/ml	0.000
G2	$214.2 \pm 5.46$ ng/ml	
G3	$188.7 \pm 3.66$ ng/ml	0.000
G4	$247.2 \pm 8.45$ ng/ml	

Based on table 5, it can be concluded that there is a significant difference in the mean prolactin hormone levels between the control group and the treatment group.

## DISCUSSION

Prolactin hormone has an important role during pregnancy and lactation. Prolactin hormone levels in pregnant and or breastfeeding women are higher when compared to women who are not pregnant and or breastfeeding. Main functions of prolactin hormone during pregnancy and lactation include the development of mammary glands, synthesis of breast milk, and maintaining milk secretion.

Naturally, the detachment of the placenta during labor causes the hormones estrogen and progesterone to decrease greatly. In addition, the stimulation of the nipple when the baby sucks will stimulate the sensory nerve endings that function as mechanical receptors. This stimulation is continued to the hypothalamus through the spinal cord and mesencephalon which then suppresses the release of factors that inhibit prolactin secretion and on

the contrary stimulates prolactin secretion through stimulation of the adenohypophysis (anterior pituitary). This hormone stimulates the alveoli cells which function to make milk <sup>(10)</sup>.

In line with the IMD treatment, giving oxytocin massage treatment to postpartum mothers was also able to increase prolactin hormone levels. This study also reported a significant difference in prolactin hormone levels between normal postpartum women and normal postpartum women with oxytocin massage treatment. Research conducted by Ratna Agustie, et al in 2017 also reported similar results. Not only an increase in the hormone prolactin, but also an increase in breast milk volume and baby weight <sup>(11)</sup>.

Oxytocin massage stimulates the production of oxytocin by the posterior pituitary gland (neurohypophysis). Oxytocin enters the circulatory system and causes contraction of special cells (myoepithelial cells) that surround the mammary alveoli and lactiferous ducts. Contraction of myoepithelial cells stimulates milk out of the alveolus through the lactiferous ducts into the lactiferous sinus. When the baby sucks, the milk in the sinuses is squeezed out into the baby's mouth. This movement of milk from the sinuses is called "Let Down" or release. At the same time, it stimulates the adenohypophysis gland so that prolactin enters the circulatory system and causes the acinus cells in the alveoli to produce milk (reflex prolactin).

### CONCLUSION

Combination of IMD and oxytocin massage to postpartum mothers can increase the levels of prolactin hormone even higher than IMD and oxytocin ma when given simultaneously triggers a greater release of prolactin hormone when given separately. IMD and oxytocin massage when given simultaneously triggers a greater release of the hormone prolactin.

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