

The Effect of Oxytocin Massage on Weight among Infant in Sub-Urban and Rural Areas

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Abstract

Background: The World Health Organization (WHO) recommends exclusively breastfeeding for six months. In addition to the advantages of breastfeeding, one of the critical challenges is the issue of exclusive breastfeeding, namely the uneven milk production. In the medical setting, pharmacological therapy is used post-partum to encourage breastfeeding. Unfortunately, this approach makes the mother dependent on the child. A non-invasive method of increasing milk supply, oxytocin massage is safe for mothers.

Objective: This study aims to ascertain how oxytocin massage affects infant weight gain. **Method:** This study has a quasi-experimental design and is an experiment. There were 46 participants in this study. Purposive sampling was used to collect samples from 30 post-partum women randomly split into two groups, 15 of whom received oxytocin massages and 15 of whom received breast care. **Result:** According to the statistical test results, the intervention group's oxytocin massage had a substantial impact on the infants' weight being reached. The findings of this study will raise the standard of care provided by healthcare professionals, particularly midwives acting in the capacity of executors, who will be better able to inform mothers about the advantages of oxytocin massage and inspire families to engage in it. **Conclusion:** Due to the study's findings, providing the intervention group with an oxytocin massage significantly increased milk production as measured by the quantity of milk produced, the baby's weight, the frequency of feedings, and the frequency of urine. During the post-partum phase, the mother receives an oxytocin massage. **Recommendation:** The findings of this study would enhance the standard of care provided by healthcare professionals, particularly midwives who serve as executors. It may inform mothers about the advantages of oxytocin massage and inspire families to undertake it.

Keywords: Oxytocin, Massage, Infant's Weight

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INTRODUCTION

The World Health Organization (WHO) has recommended exclusive breastfeeding for infants aged 0-6 months. This is supported by reports that in low- and middle-income countries, only 37% of children under six months of age are exclusively breastfed, including in Indonesia (1). The coverage of exclusive breastfeeding (ASI) in Indonesia still needs to improve. Based on Susenas data (National Socio-economic Survey) in 2010, only 33.6 percent of infants aged 0-6 months were exclusively breastfed, meaning that there were still around 2/3 of infants in Indonesia who were not breastfed (Indonesia, 2011). This matter was reinforced by the 2010 Basic Health Research (Riskesdas) data, which stated that only 15.3 percent of infants aged less than six months were exclusively breastfed (2).

Physiologically, the role of ASI is very influential in fulfilling nutrition and immunity for babies and is the main pillar in the growth and development of babies at the cognitive, behavioral, and motor levels (3,4). The benefits of breastfeeding for mothers can increase oxytocin levels, which can help in uterine involution during the puerperium (5). The release of the hormone oxytocin can be induced either directly through administration or indirectly through massage. Oxytocin is produced by the posterior lobe of the pituitary (6,7). Strengthening and controlling uterine contractions and the production of breast milk are both functions of the hormone oxytocin (8).

Increased breast milk production significantly helps the baby gain weight. Oxytocin massage and breast care is one method to stimulate milk production (9,10). Breast care attempts to hasten blood flow and avoid blocking milk production pathways, which would facilitate milk expenditure. Additionally, oxytocin massage can trigger the letdown reflex, which causes milk to flow out, by stimulating the hormone's release. Oxytocin massage has become a therapy that can decrease the Adrenocorticotropic Hormone (ACTH) rate, which may help hormone and prolactin secretion increase milk production (11,12).

The results showed that there were significant mean differences in infant weight gain between the treatment and control groups ($p < 0.05$) as a non-pharmacological effort to

increase milk production, which will have a positive impact on infant weight so that it can support the government's efforts to increase exclusive breastfeeding coverage and reduce infant mortality and morbidity (13,14).

Lack of milk supply or milk flow are two breastfeeding issues. This is caused by the hormone oxytocin, which has no effect because it isn't stimulated by the infant sucking, which is necessary for the hormone to do its job (15). Oxytocin massage is one procedure that must be carried out to maximize the quality and quantity of breast milk. The oxytocin massage technique involves massaging the vertebrae in the spine from the seventh cervical to the fifth or sixth rib to expedite work.

To create oxytocin, parasympathetic nerves must get instructions from the front of the brain(16). Comparing ASI to infants fed formula, a better level of cognitive development is shown. For instance, oxytocin massage therapy can improve exclusive breastfeeding in newborns aged 0 to 6 months by helping moms produce more milk throughout the puerperium. In particular, oxytocin massage therapy can improve exclusive breastfeeding in newborns aged 0 to 6 months by assisting moms to produce more milk throughout the puerperium. Research demonstrating the impact of oxytocin massage on post-partum moms' milk production lends credence to this. The mother's milk production can be increased with the help of this simple, non-invasive therapy.

The statistical analysis used in the earlier study yielded a p-value of 0.016, indicating that oxytocin massage impacted the rise in milk production. According to theory, oxytocin massage increases milk production. It was discovered that the oxytocin group produced more milk than the control group (mean = 1.58, SD = 1.69), with the difference being statistically significant ($p < 0.001$)(14). Breast milk is produced and released through two different mechanisms. Oxytocin is released when their infants' lips touch their mothers' nipples or when mothers' backs are massaged. The oxytocin massage aims to make mothers feel at peace and relaxed so they can show their infants more affection.

It is expected that health workers such as doctors, midwives, and nurses can provide counseling on how to give oxytocin massage

properly. So that the community, especially breastfeeding mothers, can have oxytocin massage and breast care independently to increase their breastmilk.

This affects the availability of midwifery care in the area and can boost success rates for exclusive breastfeeding prevalence. It is thought that placing midwives in rural, suburban, or urban areas will help the local population access healthcare(17). In order to enable people to obtain maternity and child health services, midwives can offer their services to urban, suburban, and rural locations.

OBJECTIVE

This study aims to identify the effect of oxytocin massage on infant weight gain.

METHODS AND DESIGN

Design

This study has a quasi-experimental design and is an experiment using a two-group pre- and post-test intervention design.

Sample, sample size, & sampling technique

There were 46 participants in this study. Purposive sampling was used to collect samples from 30 post-partum women randomly split into two groups, 15 of whom received oxytocin massages and 15 of whom received breast care. The research was conducted at the Public Health Center area in Ciamis, Indonesia. For maternal education, subjects were asked to identify their dependency level on various maternal education sources using a Likert scale. Observation and infant weight measurement were the techniques of data collection.

Instrument for data collection

A personal information form and questionnaires were used to gather the study's data. The current study used A baby weight scale as the measurement equipment for the variable representing the infant's weight. The patient's homeroom served as the location for data collection. Data collection took an hour. The researcher filled out the personal information section of this form. There were 12 questions about the individuals' medical and sociodemographic information. After subject randomization, we began the intervention. Patients in the intervention group received 15-

and 30-minute oxytocin massages at home every day for three days.

The interventions were oxytocin massage, and the group control carried out breast care. Every intervention was done once a day for three days straight, lasting 30 minutes each morning from 9:00 to 9:30. Up till the fifth and sixth costal bones, massage was applied to the vertebrae.

Data collection process

Patients in the intervention group received oxytocin massages for 15 and 30 minutes daily between 7 and 10 a.m. for three days at home. Before the massage, the patient's surroundings and personal space were prepared. After consulting with the patients, the best position for a back massage was chosen; the patient sat in a chair, a side table was set up in front of them, and cushions were placed on the table for support. Before and after each breastfeeding, milk samples from each breast were taken by hand expression into a glass and subsequently into 5-ml syringe vials.

Data analysis

The descriptive analysis was used to describe the characteristics of the subject. The Kolmogorov-Smirnov was used to analyze the normality of the data. The independent and dependent sample T-tests were used to compare the means of infant weight gain before and after the treatment and between the groups. It began with the selection of the respondents. The survey questions on social determinants of health (SDOH) were modified from the Treatment Services Review assessment tool, an interview-driven instrument designed to initially assess service use among substance-using post-partum women (18).

Ethical consideration

Ethical approval was obtained from the Faculty Of Health Dian Nuswantoro University research ethics committee with No: 319/EA/KEPK-Fkes-UDINUS/XI/2022. Written informed consent was obtained from all subjects after explaining the procedures. All thirty subjects participated in the study completely.

Characteristics	All (n= 30)	Control Group (n = 15) n (%)	Intervention Group (n = 15) n (%)
Age (years) (mean) (SD)	28.28 (5.09)	27.76 (5.39)	28.8 (4.80)
12-19 years	0 (0)	0 (0)	0 (0)
20-24 years	10 (25)	4 (13.33)	6 (20)
>25 years	20 (75)	11 (66.77)	9 (80)
Educational background			
Elementary	7 (23.3)	3 (3.4)	3 (10)
Junior High School	13 (43.3)	7 (23.3)	6 (20)
Senior High School	9 (30)	3 (10)	6 (20)

SD=standard deviations

Overall, the 2-week post-partum women recruited were primarily adults with a mean age of 28.3 years (\pm 5.09) (Table 1). According to educational background, the subjects were mainly graduated from junior high school (40%) and junior high school (43.33%). Almost all subjects (91.7%) were given early breastfeeding. For the parity status, most subjects were on the 2nd parity. Issues in rural areas were more significant than those in suburban areas (76.67%). For the intervention group, the mean age of the subjects was 28.8 (\pm 4.80), while in the control group, the mean age was 27.76 (\pm 5.39) (Table 1). The mean age of the subject's child was 6.2 weeks (\pm 0.25).

Table 2. The comparison of breast milk production between the control and intervention groups (n=30)

Variable	Control group		Intervention Group		t	p-value
	mean	SD	mean	SD		
weight	106.16	102.31	151.50	91.30	45.34	<.001

Among the two groups' intervention, the one-tailed paired t-test showed a significant mean difference of 45.4 (\pm 6.72) after receiving the intervention. All groups given oxytocin massage showed a significant increase in breast

RESULTS

Table 1. Characteristic of subjects

Characteristics	All (n= 30)	Control Group (n = 15) n (%)	Intervention Group (n = 15) n (%)
University	1 (3.4)	0 (0)	1 (3.34)
Parity			
1 st	10 (33.34)	5 (16.7)	5 (16.67)
2 nd	13 (43.33)	6 (20)	7 (23.34)
3 rd	6 (20)	3 (10)	3 (10)
Type of place resident			
Rural (n)	23 (76.67)	11 (36.67)	12 (40)
Suburban (n)	7 (23.33)	3 (10)	4 (13.34)
Age of infant (moths) (mean) (SD)	0.84 (0.25)	0.86 (0.28)	0.81 (0.23)

milk production. However, the highest growth was in the oxytocin massage (Table 2). The mean difference in baby weight in the intervention group was 151.50 grams. In comparison, the mean difference in the control group was 106.16 grams.

DISCUSSION

The results of this study demonstrate the increase in infant's weight after receiving the oxytocin massage for three days. An earlier study showed a similar finding, indicating the positive effect of the intervention on increasing an infant's weight (13). According to another study, the majority of responders (85%) gave oxytocin massages at a frequency of two to three times per week, and the vast majority of babies' weights at two months old were consistent with their ages (98.8%). The family of post-partum women with baby body weight was affected by oxytocin massage instruction in the findings of the bivariate analysis ($p = 0.009$) (19).

The average weight of the newborn following treatment varied between the intervention and control groups, according to the results of subsequent analysis using the Wilcoxon test ($p < .001$). Compared to the control group, the intervention group's average baby weight increased significantly due to the oxytocin massage. In the intervention group, there was a mean difference of 151.5 grams in

newborn weight. In contrast, the group control's mean difference is 10.16 grams. There is a substantial difference in the mean newborn weight gain between the intervention group and the group control, according to additional analysis of test findings using the Wilcoxon test ($p < .001$).

These results support earlier research that showed a considerable rise in newborn weight, with the oxytocin massage group exhibiting the most significant gain (20). In addition to the factors mentioned earlier, breast care procedures and oxytocin massages were other factors affecting breast milk production (6,21). In order to stretch the nipples and prevent obstruction of the lactation lactus when the baby is more likely to suckle and for the milk to come out smoothly, physical treatment of the breast is necessary both before and during lactation.

Based on the findings of this study, it was determined that back massage and breast care are complementary therapies for postpartum primiparous women that may help enhance the hormone oxytocin.

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REFERENCES

- (1) Victora CG, Bahl R, D Barros AJ. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect* Lancet. 2016;387:475-90.
- (2) Indonesia BS. SUSENAS 2010: National socio-economic survey. Jakarta: BPS; 2020.
- (3) Horta BL, de Sousa BA, de Mola CL. Breastfeeding and neurodevelopmental

- outcomes. *Curr Opin Clin Nutr Metab Care*. 2018;21(3):174-8.
- (4) Nova M, Afriyanti O. Hubungan berat badan, asi eksklusif, mp-asi dan asupan Energi dengan stunting pada balita usia 24-59 bulan Di puskesmas lubuk buaya. *JURNAL KESEHATAN PERINTIS* (Perintis's Health Journal). 2018;5(1):39-45.
- (5) Krol KM, Monakhov M, San Lai P, Ebstein RP, Heinrichs M, Grossmann T. Genetic variation in the maternal oxytocin system affects cortisol responsiveness to breastfeeding in infants and mothers. *Adaptive Human Behavior and Physiology*. 2018;4(3):248-63.
- (6) Hendriyani F, Suryaningsih SA. Effectiveness of oxytocin massage and breast care treatment on breast milk production. *Indian J Forensic Med Toxicol*. 2019;13(4):4725-32.
- (7) Constantin PE, Isidor N, De Seigneux S, Momjian S. Association between urinary oxytocin secretion and natriuresis after transphenoidal pituitary surgery. *J Neurosurg*. 2023;1(aop):1-7.
- (8) Bonapace J, Gagné GP, Chaillet N, Gagnon R, Hébert E, Buckley S. Physiologic basis of pain in labor and delivery: an evidence-based approach to its management. *Journal of obstetrics and gynecology Canada*. 2018;40(2):227-45.
- (9) Purnamasari KD, Hindiarti YI. Metode Pijat Oksitosin, Salah Satu Upaya Meningkatkan Produksi ASI Pada Ibu Postpartum. *Jurnal Kesehatan Perintis*. 2020;7(2):1-8.
- (10) Doko TM, Aristiati K, Hadisaputro S. Pengaruh pijat oksitosin oleh suami terhadap peningkatan produksi ASI pada ibu nifas. *Jurnal Keperawatan Silampari*. 2019;2(2):66-86.
- (11) Winter J, Jurek B. The interplay between oxytocin and the CRF system: regulation of the stress response. *Cell Tissue Res*. 2019;375(1):85-91.
- (12) Feldman-Winter L. Evidence-based interventions to support breastfeeding. *Pediatric Clinics*. 2013;60(1):169-87.
- (13) Gustirini R, Anggraini IA. Combination of breast care and oxytocin massage of breastfeeding mothers in infant weight

- gain. *Jurnal Kesehatan Prima*. 2020;14(1):24-30.
- (14) Triansyah A, Indarty A, Tahir M, Sabir M, Nur R, Basir-Cyio M, et al. The effect of oxytocin massage and breast care on the increased production of breast milk of breastfeeding mothers in the working area of the public health center of Lawanga of Poso District. *Gac Sanit*. 2021;35:S168-70.
- (15) Prabasiwi A, Fikawati S, Syafiq A. ASI eksklusif dan persepsi ketidakcukupan ASI. *Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*. 2015;9(3):282-7.
- (16) Morhenn V, Beavin LE, Zak PJ. Massage increases oxytocin and reduces adrenocorticotropin hormone in humans. *Altern Ther Health Med*. 2012;18(6):11.
- (17) Nirmala SA, Mandiri A. Pilihan Jenis Pelayanan Bidan pada Masyarakat Urban, Sub-Urban dan Rural. *Jurnal Kesehatan Vokasional*. 2020;5(4):232-41.
- (18.) Zlotnick C, Tzilos G, Miller I, Seifer R, Stout R. Randomized controlled trial to prevent post-partum depression in mothers on public assistance. *J Affect Disord*. 2016;189:263-8.
- (19.) Fatimah Fatimah FF, Lia Dian Ayuningrum LDA. The effect of oxytocin massage during post-partum on baby weight. *Jurnal Ners & Kebidanan Indonesia (Indonesian Journal of Nursing & Midwifery)*. 2021;9(2):147-54.
- (20.) Hendriyani F, Suryaningsih SA. Effectiveness of oxytocin massage and breast care treatment on breast milk production. *Indian J Forensic Med Toxicol*. 2019;13(4):4725-32.
- (21.) Johan I, Azizah N. The Effect of Oxytocin Massage on Breastmilk Production Post-partum Mothers in Peterongan PHC Area, Jombang, East Java, Indonesia. 2016;