



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[☆]

Ade Triansyah^a, Stang^{b,*}, Indar^c, Apik Indarty^d, Muh. Tahir^d, Muh Sabir^e, Rosmala Nur^f, Muhammad Basir-Cyio^g, Mahfudz^g, Alam Anshary^g, Muhammad Rusydi^h

^a Faculty of Public Health, Universitas Hasanuddin, Indonesia

^b Biostatistics Department, Faculty of Public Health, Universitas Hasanuddin, Indonesia

^c Health Administration and Policy Department, Faculty of Public Health, Universitas Hasanuddin, Indonesia

^d Reproduction Health Department, Faculty of Public Health, Universitas Hasanuddin, Indonesia

^e Microbiology, Faculty of Medicine, Universitas Tadulako, Indonesia

^f Public Health Department, Faculty of Public Health, Universitas Tadulako, Indonesia

^g Agrotechnology Department, Faculty of Agriculture, Universitas Tadulako, Indonesia

^h Geophysical Engineering Department, Faculty of Mathematics and Natural Science, Universitas Tadulako, Indonesia

ARTICLE INFO

Article history:

Received 28 June 2021

Accepted 30 July 2021

Keywords:

Exclusive breast milk

Oxytocin massage

Breast care

ABSTRACT

Objective: The objective of this research is to know the effect of oxytocin massage and breast care on the increase of breast milk production.

Method: This pre-experimental research was performed through the One Group Pretest–Posttest design. The sampling was done through non-probability sampling and purposive sampling, obtaining 30 samples. The data were collected in the form of a questionnaire, which was then analyzed using the Mc Nemar test.

Result: It was known that the production of breast milk during pre-intervention was poor on 18 respondents and adequately a lot on the other 12 respondents. Meanwhile, during the post-intervention, the production of breast milk on the 18 respondents whose previously breast milk production was poor then become adequate on the seven respondents, while the remaining 11 respondents still produced less breast milk. The statistical test result showed a *P* value of 0.016, which means that the *P* is less than 0.05.

Conclusion: Oxytocin massage and breast care affected the increase of breast milk production considered based on the frequency and duration of breastfeeding as well as the infants' weight in Lawanga Public Health Center, Poso District.

© 2021 SESPAS. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

The provision of exclusive breast milk in developing countries successfully saves around 1.5 million babies annually. Therefore, the World Health Organization (WHO) recommends exclusive breast milk as the sole food for the baby until the age of 6 years old. Exclusive breast milk is one of the keys to decrease the mortality rate of infants. Increasing the number of breastfeeding can save 820,000 children at the age of below five years old, of which 87% of them are six months old infants. This represents 13% of annual children's mortality rate.¹

Breastfeeding is hampered by the production of breast milk itself. The lack and late production of breast milk can cause inadequate breast milk for the baby.² Breast milk production can be affected by two factors; those are production and release. Breast milk production is affected by the prolactin hormone, while the

release is affected by oxytocin hormone. Oxytocin hormone is released through the stimulation of the nipple. The stimulation occurs due to the baby's mouth sucking through the massage on the mother's breast area and massage on the back. The mother will feel relax and calm so that the oxytocin can be released and the breast milk released fast.³

WHO issued data in 2016, indicating that the average provision of exclusive breast milk throughout the world was only around 38%. Furthermore, only 54.5% of 0–6 months old Indonesian babies were provided by exclusive breast milk, whereas the target is 80%. The highest achievement of exclusive breast milk in Indonesia was obtained by East Nusa Tenggara Province by 79.9%, while the lowest achievement was obtained by Gorontalo Province by 32.3% which has not achieved the target yet.⁴

Based on the data released by the Health Office of Central Sulawesi Province, among 34,342 people, those who obtained exclusive breast milk was only 19,345 or 56.3% of the total community.⁵ Furthermore, according to the data released by the Health Office of Poso District, the provision of breast milk in 2017 has not achieved the target, which was only 51.7%, especially in the working area of Lawanga Public Health Center which was still really low.⁶

[☆] Peer-review under responsibility of the scientific committee of the 3rd International Nursing, Health Science Students & Health Care Professionals Conference. Full-text and the content of it is under responsibility of authors of the article.

* Corresponding author.

E-mail addresses: stangbios@gmail.com, pmc@agri.unhas.ac.id (Stang).

Materials and methods

This pre-experimental research was done through One Group Pretest-Posttest design. The dependent variable of this research was breast milk production, while the independent variable was factors assumed to affect the increase of breast milk production on breastfeeding mothers, which is oxytocin massage and breast case. The sampling was done through Non-probability sampling and Purposive Sampling, obtaining 30 samples. The data collected using a questionnaire and analyzed using Mc Nemar test.

Results

Respondents' characteristics

The dependent variable of this research was breast milk production, while the independent variable was factors assumed to affect the increase of breast milk production on breastfeeding mothers, which is oxytocin massage and breast case. The sampling was done through Non-probability sampling and Purposive Sampling, obtaining 30 samples. The data collected using a questionnaire and analyzed using Mc Nemar test.

Based on Table 1 above, it is obtained that most breastfeeding mothers were at the age of 20–35 years old by 25 respondents (83.3%), were Senior High School graduates by 16 respondents (53.3%), were housewife by 19 respondents (63.3%), had two children by 12 respondents (40.0%), had children with normal birth

weight by 26 respondents (86.7%), had full-term pregnancy by 29 respondents (96.7%), and had protruded nipple by 23 respondents (23.3%). Furthermore, it is also known that all breastfeeding mothers had normal nutrition based on the upper arm circumference, did not experience inflammation, and had cesarean section labor (100%).

Bivariate analysis of oxytocin massage and breast care interventions on the increase of breast milk production

The following Table 2 presents the difference in the increase of breastfeeding mothers' breast milk production based on frequency, duration of breast milk provision, and baby's weight after the interventions of oxytocin massage and breast care in the working area of Lawanga Public Health Center, Poso District.

Before the intervention was performed, it was known that the production of breast milk was inadequate by 18 respondents, while the remaining 12 respondents' were adequate, while after the intervention, it was obtained that seven respondents of the 18 respondents whose breast milk production was inadequate previously became adequate after the intervention, while the remaining 11 respondents were still inadequate. The statistic test result conducted indicates a *p*-value of 0.016, which means that it is less than 0.05. Thus, it can be concluded that oxytocin massage and breast care can increase breast milk production.

Discussion

The effect of oxytocin massage and breast care on the increased breast milk production (frequency, duration of breast milk provision and babies')

The statistical test conducted in this research obtained a *p*-value of 0.016, which indicates that oxytocin massage and breast care affected the increase of breast milk production. Theory suggests that oxytocin massage and breast care increase milk production. It was found that the increase in milk production in the breast care and oxytocin group (mean = 17.37, SD = 9.70) was greater than the control group (mean = 1.58, SD = 1.69), where the difference was statistically significant (*p* < 0.001). There are two processes of breast milk formation; production and release. Through the stimulation on mothers' nipples through babies' mouths or massage on the back of the mothers, the oxytocin hormone will be released.

The purpose of the oxytocin massage is so that the mothers feel calm and relax so that they can increase the affection toward their baby and stimulates the release of oxytocin, which can accelerate the release of breast milk. Meanwhile, breast care will stimulate the lactiferous (prolactin hormone) to accelerate breast milk production as well. The combination of these two methods results in increased breast milk production through stimulation of touch to the breast and back of the mother which will stimulate the production of oxytocin which results in contraction of myoepithelial cells and increases the prolactin.⁷

This result is also consistent with previous studies showing that the intervention group produced more breast milk production of 3.74 cc than the control group (2.04 cc). Bivariate analysis performed showed a *p*-value of 0.001. Therefore, Endorphin, Oxytocin, and Suggestive Massage Stimulation (SPEOS) method concluded that those affected breast milk production in postpartum mothers.⁸ The smoother the breast milk production, the more breast milk produced, which then leads to the increase in baby's weight. Thus, through massage, the mother will feel relaxed, comfortable, lose the fatigue after labor and confident so that she will be able to produce breast milk exclusively to her baby.⁹ These results are also in line with the previous study (*p* < 0.000), that

Table 1
Respondents' characteristics.

Variable (age)	Samples group	
	<i>n</i>	%
<i>Age</i>		
<20 years old	1	3.3
20–35 years old	25	83.3
>35 years old	4	13.3
<i>Education</i>		
Elementary school	1	3.3
Junior high school	4	13.3
Senior high school	16	53.3
Undergraduate (S1)	9	30.0
<i>Occupation</i>		
Housewife	19	63.3
Entrepreneur	9	30.0
Employee	2	6.7
<i>Upper arm circumference</i>		
Normal	30	100
Malnutrition	0	0
<i>Parity</i>		
1 Child	7	23.3
2 Children	12	40.0
3 Children	7	23.3
4 Children	4	13.3
<i>Baby's birth weight</i>		
Low birth weight	4	13.3
Normal birth weight	26	86.7
<i>Gender</i>		
Male	15	50
Female	15	50
<i>Pregnancy age</i>		
Preterm	1	3.3
Full-term	29	96.7
<i>Breast inflammation</i>		
Inflammation	0	0
Non inflammation	30	100
<i>Nipple condition/inverted nipple</i>		
Flat	7	76.7
Protrude	23	23.3
<i>Type of labor</i>		
Normal	30	100
Cesarean section	0	0

Table 2
Bivariate analysis of oxytocin massage and breast care interventions on the increase of breast milk production in lawanga public health center, Poso District.

Breast milk production in pre-intervention	Breast milk production in post-intervention				p-Value
	Inadequate		Adequate		
	n	%	n	%	
Inadequate	11	36.7%	7	23.3%	0.016
Adequate	0	0%	12	40%	

oxytocin massage caused the increase of breast milk production of breastfeeding mothers at Public Health Center plus of Mandiangin Bukit Tinggi 2016.¹⁰

The lack and slow release of breast milk production can cause the mother to produce inadequate breast milk for her baby. In addition to prolactin hormone, the lactation process also depends on the oxytocin hormone, which is released from the posterior pituitary as a reaction to nipple suction.¹¹ Oxytocin affected the myoepithelial cells surrounding the alveoli mammae so that the alveoli are contracted and release breast milk that has been secreted by the Mammary gland. Such oxytocin reflexes are affected by the mother's psychology.¹² If there are anxiety, stress, and doubt, then the release of breast milk can be inhibited. So that one of the efforts to maintain the oxytocin hormone by giving back massage that can make the mother feels comfortable and relax.^{13,14}

The results of this study clearly stated that there are differences in the results of pre and post interventions for oxytocin massage and breast care. Based on Table 2, it is known that during the pre-intervention, the breast milk production of 18 respondents was inadequate and while the other 12 respondents produced adequate breast milk. Meanwhile, during the post-intervention, among the 18 respondents whose previous breast milk production was inadequate, 7 of them became adequate after the intervention, while the remaining 11 respondents were still inadequate.

Oxytocin massage will stimulate the spinal cord; then, the neurotransmitter medulla oblongata will send a message to the hypothalamus. Thus, the posterior pituitary will secrete the hormone oxytocin, which causes the breasts to produce milk.^{15,16} The production of breast milk and the process of breastfeeding requires stimulation of the breast muscles to the breast glands for the contractions needed in the lactation process. Stimulation of the breast muscle can be done by giving breast care techniques.^{16–18}

In addition, to increase the breast milk production, oxytocin massage and breast care also have many other benefits such as increasing the tightness of the breast and surrounding skin, relaxing the breast and breast area, preventing breast cancer, preventing the occurrence of breast milk blockage and maintaining breast hygiene especially on the nipples and many more.^{19,20} Based on the results of the research and theory above, there was a difference in increased breast milk production in breastfeeding mothers after oxytocin massage and breast care. Thus, it can be concluded that oxytocin massage and breast care can affect the increase of breast milk production in breastfeeding mothers at Lawanga Public Health Center, Poso District.

Conclusion

The recent research found that oxytocin massage and breast care causes breast milk production to increase based on the frequency and duration of breastfeeding and babies' weight in Lawanga Public Health Center, Poso District. It is expected that health workers such as doctors, midwives, and nurses can provide counseling on how to properly give oxytocin massage and breast care. So that the community, especially breastfeeding mothers, can have oxytocin massage and breast care independently to increase their breast milk

production so that breastfeeding mothers can provide exclusive breastfeeding to their babies.

Conflict of interest

The authors declare no conflict of interest.

Acknowledgments

The authors would like to thank Dean and all Vice Deans of the Faculty of Public Health at Universitas Hasanuddin for the research funding.

References

1. The United Nations International Children's Fund (Unicef). Word breastfeeding week message. World Health Organization (WHO).
2. F N. Differentiation between the effectiveness of back massage and lukewarm breast compress in the increasing of breast milk production (Perbedaan efektivitas massage punggung dan kompres hangat payudara terhadap peningkatan kelancaran produksi ASI di desa Maj). J Keperawatan. 2013;100–8.
3. Hanum SMF, Purwanti Y. Efektivitas pijat oksitosin terhadap produksi asi. J Kebidanan Midwifery. 2016;1:1–7.
4. Indonesian Health Ministry. Indonesian health profile. Jakarta: Indonesian Health Ministry; 2016.
5. Central Sulawesi Provincial Health Office. Profile of the Central Province health service. Palu: Central Sulawesi Provincial Health Office; 2016.
6. Dinas Kesehatan Kabupaten Poso. Profil Dinkes Kabupaten Poso. Poso: Dinas Kesehatan Kabupaten Poso; 2017.
7. Seri U, Sudarto ANA. Pijat Oksitosin Meningkatkan Produksi Asi Pada Ibu Post Partum Primipara di Kota Singkawang. Sumber. 2019;2:6–7.
8. Fitriani HH, Nadira S. The role of endorphin stimulation, oxytocin massage and suggestive technique (SPEOS) in improving breast milk production among breastfeeding mother at primary health center in Cimahi Tengah, West Java, Indonesia. KnE Life Sci. 2019;898–905.
9. Nugraheni DE, Heryati K. Metode speos (stimulasi pijat endorphin, oksitosin dan sugestif) dapat meningkatkan produksi ASI dan peningkatan berat badan bayi. J Kesehat. 2017;8:1–7.
10. Delima M, Arni GZ, Rosya E. Pengaruh pijat oksitosin terhadap peningkatan produksi ASI ibu menyusui di Puskesmas Plus Mandiangin. J IPTEKS Terap. 2016;9.
11. Resmana R, Hadiani DN. Oxytocin massage can expedite the time of colostrum discharge in the post section caesarian. Open J Nurs. 2019;9:757.
12. Barirah B, Mulyati E, Yunita N. The effect of combined marmet and oxytocin massage to colostrum production among section caesarean mother. In: Proceedings of the international conference on Applied Science and Health. 2017. p. 318–24.
13. Nurdiana D, Onny S, Sumarni S, et al. Oxytocin massage as an alternative in increasing prolactin hormone level and lactation process on post-sectio caesarea women (case study in Semarang city hospital). In: ASEAN/Asian Academic Society international conference proceeding series. 2016.
14. Azriani D, Handayani S. The effect of oxytocin massage on breast milk production. Dama Int J Res. 2016;1:47–50.
15. Widia L, Meihartati T. Oxytocin massage enhanced breast milk production in post-partum women. Maj Obstet Ginekol. 2017;25:63–5.
16. Hesti KY, Pramono N, Wahyuni S, et al. Effect of combination of breast care and oxytocin massage on breast milk secretion in postpartum mothers. Belitung Nurs J. 2017;3:784–90.
17. Nur R, Mallongi A, Demak IK, et al. Early-age marriage and the impact of health reproduction women. J Eng Appl Sci. 2019;14:981–6.
18. Nur R, Fitriyah SI, Mallongi A. Women's reactions and health disorders caused by abuse during the pregnancy-postpartum period. Med Leg Updat. 2020;20:1329–34. <http://dx.doi.org/10.37506/mlu.v20i1.559>.
19. Nur R, Demak IPK, Radhiah S, et al. The effect of moringa leaf extracton increasing hemoglobin and bodyweight in post-disaster pregnant women. Enferm Clin. 2020;30:79–82.
20. Nur R, Sese RGC, Patui NS, et al. Detection mapping of women with high-risk pregnancy in antenatal care in kamonji public health center, Palu City, Indonesia. Syst Rev Pharm. 2020;11:642–7. <http://dx.doi.org/10.5530/srp.2019.2.04>.