p-ISSN: 2089-8789
e-ISSN: 2714-7886

Effectiveness of Phoenix Dactylifera and Oxytocin Massage on Prolactin Levels in Breastfeeding Mothers in Palembang City

Aprilina, Ocktariyana, Dian Lestari*

Departement of Midwifery, Poltekkes Kemenkes Palembang, Palembang, Indonesia

ARTICLE INFORMATION

Received: 21, November, 2024
Revised: 4, January, 2025
Accepted: 5, January, 2025

KEYWORD

Breastfeeding; Phoenix Dactylifera; Oxytocin Massage; Prolactin.

CORRESPONDING AUTHOR

Aprilina
Poltekkes Kemenkes Palembang, Jln. Jend. Sudirman Kompleks RSMH Km. 3,5 Palembang
aprilina@poltekkespalembang.ac.id
+628127844974

DOI

https://doi.org/10.36456/embrio.v16i2.9787

A B S T R A C T

Exclusive breastfeeding is essential in the growth and development of babies and improves maternal health. Exclusive breastfeeding can reduce infant mortality rates; of the 3 thousand infant deaths in Indonesia, 10 million deaths of children aged <5 years in the world each year can be prevented by exclusive breastfeeding. The hormones that play a role in breastfeeding mothers are prolactin and oxytocin. The research aimed to look at the effectiveness of oxytocin massage and Phoenix dactylifera in increasing the levels of the hormone prolactin in breastfeeding mothers. The research was a Quasi Experiment with a Post Test only design, a sample of 30 people divided into three groups. Phoenix Dactylifera intervention, oxytocin massage intervention, and control without treatment. The research was conducted at TPMB Palembang city. Analysis using the Shapiro-Wilks test for data homogeneity using Levene's test ($p>0.05$) and the One Way ANOVA test compared the means of the three groups. The results showed no significant differences between the three groups where the ρ value was >0.05. The conclusion is that there is nothing more effective in increasing prolactin hormone levels than giving Phoenix dactylifera and oxytocin massage because it is thought to be caused by many influencing factors, including age, education, nutritional intake, and maternal parity.

Introduction

Exclusive breastfeeding is essential in the growth and development of babies and improves maternal health. Exclusive breastfeeding can reduce infant mortality rates; of the 3 thousand infant deaths in Indonesia, 10 million deaths of children aged <5 years in the world each year can be. Exclusive breastfeeding plays a vital role in the growth and development of babies and can improve maternal health. Breast milk contains many nutrients that are beneficial for the growth and development of babies, including 88.1% water, 3.8% fat, 0.9% protein, 7% lactose, and 0.2% other nutrients, namely DHA, DAA, shpynogelin, as well as other valuable substances (Andriyani & Pitriani, 2021; Aprilina & Lestari, 2022).

Exclusive breast milk is given to babies from 0 – 6 months of age without any additional food or drink. Based on the results of previous research, it is said that breastfeeding for 6 months or more can increase a baby's immune system 33.3 times better than breastfeeding under 4 months of age. This is because breast milk can reduce the incidence of non-communicable diseases such as allergies, obesity, and malnutrition (Andriyani & Pitriani, 2021; Triandini et al., 2023).

PP no. 33 of 2012 states that exclusive breastfeeding for the first 6 months of a baby's life aims to protect the rights of the baby and mother and encourage the role of the family, community, and government. The PP also explains the obligation for a mother to breastfeed, initiate early breastfeeding (IMD), and be able to donate breast milk. Facilities in the workplace and public places are also required to provide space (Aprilina & Lestari, 2022; Mawaddah, 2022).

UNICEF states that exclusive breastfeeding can reduce infant mortality rates, of which 3 thousand infant deaths in Indonesia and 10 million deaths of children under 5 years of age in the world each year can be prevented by exclusive breastfeeding (Andriyani & Pitriani, 2021).

Breastfeeding from 0-6 months is still lacking in Indonesia. In 2021, exclusive breastfeeding coverage in Indonesia was 69.7%; in 2022, it decreased to 67.96%. In 2021, exclusive breastfeeding coverage in the city of Palembang also decreased, where in 2020, it was 76.1%; in 2021, it will be 69.7% (Aprilina et al., 2024).

Problems that can occur during the breastfeeding process are caused by many factors that become obstacles to the success of exclusive breastfeeding. One of them is caused by suboptimal levels of the hormone prolactin. The breastfeeding process is greatly influenced by the hormone prolactin and the hormone oxytocin, so breastfeeding mothers need to be given additional natural interventions because they do not have side effects, such as consuming dates (Phoenix dactylifera) and doing oxytocin massage, which has been proven to be an effort to increase breast milk production (Anita et al., 2020; Aprilina & Lestari, 2022; Arsi et al., 2021; Hahn-Holbrook et al., 2021).

Oxytocin massage is one way to increase breast milk production. Oxytocin massage is performed on the right and left sides of the spine. Based on research that has been conducted by Aprilina & Lestari (2022), Noviyana et al. (2022), and Susanti & Yuliwati (2020) that oxytocin massage is very effective in increasing breast milk production (Tania & Huriah, 2023).

Many things can be done to increase breast milk production, one of which is through foods that contain galactagogues because people have trusted them since ancient times. Foods containing galactagogues that have been extensively researched include banana flowers, katuk leaves, banana flowers, moringa leaves, dates, black cumin, papaya, and many more. In this research, we used dates that had been extracted, so they are usually called date juice. Many studies have proven that date juice can increase breast milk production. Research conducted by Aprilina & Lestari (2022) showed that there was a significant difference in breast milk production when combined with date palm juice with a ρ value of 0.001(Mawaddah, 2022).

This study aims to see the effectiveness of oxytocin massage and Phoenix Dactylifera in increasing prolactin hormone levels in breastfeeding mothers.

Method

This study employs a quantitative approach and utilizes the quasi-experimental research method with a quasi-experimental and a post-test-only design. This research was conducted at the Independent Midwife Practice Place (TPMB) in the Palembang area from May to August 2024. Sampling was carried

out using purposive sampling. The sample consisted of 30 postpartum mothers from the first day to the seventh day, divided into three groups of 10 respondents, each meeting the inclusion and exclusion criteria. In this study, there were two intervention groups, namely, 1 group given Phoenix Dactylifera, 1 group given oxytone massage, and one control group given no treatment. Intervention is given on days 1-7 postpartum. Then, their blood was taken from respondents in all groups to see the prolactin hormone, and then it was analyzed.

The distribution of all data that has been obtained is determined using a normality test. The normality of the data was tested using Shapiro-Wilks because the sample in the study was < 50. Levene's test was used to determine the homogeneity of the data between groups (p> 0.05). The normally distributed and homogeneous data results meet the OneWay Anova parametric test to see the comparative analysis of the means of 3 groups (K1, K2, and K3).

Results

Table. 1 Characteristics of Respondents in the Intervention Group and Control Group

Characteristics of Respondents		Group		
		Phoenix Dactylifera	**Oxytocin Massage**	**Control**
Age				
	< 20 years old	0	3 (30%)	1 (10%)
	21 - 30 years old	5 (50%)	4 (40%)	4 (40%)
	31 – 40 years old	4 (40%)	3 (30%)	5 (50%)
	> 40 years old	1 (10%)	0	0
Education				
	High	3 (30%)	3 (30%)	3 (30%)
	Low	7 (70%)	7 (70%)	7 (70%)
Work				
	Working	2 (20%)	2 (20%)	3 (30%)
	Not working	8 (80%)	8 (80%)	7 (70%)
Parity				
	Primipara	2 (45%)	5 (50%)	3 (30%)
	Multipara	8 (80%)	5 (50%)	7 (70%)
IMT				
	Obesitas	6 (60%)	4 (40%)	3 (30%)
	Overweight	2 (20%)	2 (20%)	4 (40%)
	Normal	1(10%)	3 (30%)	1(10%)
	Underweight	1 (10%)	1 (10%)	2 (20%)

The table above shows that the characteristics of respondents based on age show that data in the Phoenix Dactylifera intervention group were mostly respondents aged 21 - 30 years, namely 50%, in the oxytocin massage group, also respondents aged 21 - 30 years, namely 40%, while in the control group, Most of the respondents were aged 31 - 40 years, namely 50%. Regarding education level, most of the breastfeeding mothers in the three groups had a low level of education, namely 70%. In the employment category, most respondents did not work, respectively, for the intervention group, which was 80%, while for the control group, it was 70%. In the parity category for the Phoenix Dactylifera intervention group, the majority were in the multiparous category, namely 80%; in the oxytocin massage group, the same amount was in the multiparous primiparas, namely 50%, while for the control group, the majority were in the multiparous category, amounting to 70%. In the BMI category for the Phoenix Dactylifera intervention group, the majority of respondents were in the obesity category, namely 60%;

in the oxytocin massage group, most of the respondents were also in the obesity category, namely 40%, while in the control group, the majority were overweight at 40%.

Table 2. Comparison of Prolactin Levels Between the Intervention Group and the Control Group

Measurement		Group		ρ value
		Mean ±SD	Std. Deviation	
Prolactin	Phoenix Dactylifera	257,68	166,72	
	Oxytocin Massage	151,46	149,49	0,375
	Control	225,84	193,85	

Table 2 above shows no significant differences between the three groups where the ρ value is > 0.05, namely 0.375.

Discussion

Milk production is important because the older a mother is, the more prepared and wise she is. She is expected to act and think about everything, including the reproductive process, one of which is breastfeeding. Ages under 20 years are still in the period of growth of reproductive organs, including breast growth, psychologically because mothers are still not ready; as a result, mothers often experience failure in the breastfeeding process due to feelings of excessive anxiety, so when babies are not breastfed frequently, breast milk production decreases. Feelings of anxiety will affect the hormone oxytocin so that the breast milk produced cannot be expressed optimally. The mother's mature age is 20-35 years; this is a healthy reproductive age, so the mother is ready and expected to be able to breastfeed optimally. (Aprilina & Lestari, 2022; Dinengsih, 2020; Sulistyawati & Mildiana, 2022; Elisa et al., 2020; Nugraha, 2022).

Research conducted by Wahyuni et al. (2023) showed that giving Phoenix Dactylifera from pregnancy until the first day postpartum on the smooth production of breast milk showed significant results where the ρ value was 0.001. Research conducted by Sary (2022) compared giving papaya and Phoenix Dactylifera. The results showed that the group given papaya produced more breast milk on average than those given date palm juice. Breast milk before being given papaya was 3.59, and after being given papaya, it was 8.94 with a mean difference of 5.35, whereas in the Phoenix Dactylifera group, before being given Phoenix Dactylifera, was 3.88 and after being given Phoenix Dactylifera, was 8.12 with a mean difference of 4.24 where the ρ value was 0.01.

Based on Table 2, the results showed no significant difference in the production of the hormone oxytocin between mothers who were given date palm juice and mothers who were given oxytocin massage. However, the average prolactin hormone produced in the group of mothers who were given date palm juice had more significant results than those who were given oxytocin massage. This can be caused by many factors that influence prolactin levels. The breastfeeding process will run smoothly when the hormones prolactin and oxytocin work synergistically. This is supported by research conducted by Aprilina & Lestari (2022) that there will be an optimal increase in breast milk production when given a combination of date juice and oxytocin massage on the 14th day (2 weeks) postpartum.

Based on theory, it is correct if seen from the average prolactin results between the date palm juice group and the oxytocin massage group. The theory is that food substances containing

galactagogues play a role in increasing the production of the hormone prolactin. In contrast, oxytocin massage plays a role in stimulating the production of the hormone oxytocin, so based on the research results show that the date palm juice group had a more excellent average of the prolactin hormone, namely 257.68, compared to the oxytocin massage group, namely 151. 46. The decrease in breast milk production in the first days after postpartum can be caused by a lack of stimulation to increase levels of the hormones prolactin and oxytocin (Safarringga & Putri, 2021).

In theory, prolactin is closely related to maternal nutrition; the better the mother's nutritional intake is, the more breast milk will be produced. Expressing breast milk requires the hormone oxytocin, whose action is also influenced by the baby's sucking process. The more often the baby sucks on the nipple, the more milk will be produced. The oxytocin hormone is often called the love hormone because it is influenced by mood, happiness, feeling loved, feeling safe, calm, and relaxed; prolactin and oxytocin play a significant role in the smooth production of breast milk (Arsi et al., 2021; Dinengsih, 2020).

The breastfeeding process involves not only the hormone prolactin and the hormone oxytocin but also a prolactin reflex and a letdown reflex, which is also very important. When a baby is breastfeeding, there are conditions for the breasts to be stimulated. Afferent fibers will carry this stimulation or stimulation to the hypothalamus to stimulate the anterior pituitary gland to secrete prolactin, which will release the hormone prolactin. This hormone will stimulate the alveoli glands to produce breast milk. This is what is called the prolactin reflex. The amount of hormones that will be produced and the amount of breast milk produced are influenced by the baby's sucking in the form of frequency, intensity, and duration during which the baby breastfeeds. Then, at the same time, when the baby is breastfeeding, the pituitary gland will release the hormone oxytocin into the mother's blood. This oxytocin hormone will stimulate the smooth muscles around the breasts, namely the alveoli and ducts, so that they will contract to express the milk that has been produced, resulting in the milk being released or gushing from the mother's breasts (Murdiningsih & Rohaya, 2020; Rolaeli et al., 2024).

This research has limitations because the sample still needs to be more significant. It does not control for other factors, both from the mother and the baby, which influence the production of the hormone prolactin.

Conclusions

Based on the research results, there was nothing more effective in increasing prolactin hormone levels between the two treatment groups, namely between date palm juice and oxytocin massage, because the results of different tests showed no differences. This may be due to many factors, including the influence of age, education, nutritional intake, and maternal parity.

Acknowledgments: Thank you to all parties involved in this research, especially the respondent mothers and midwives, who were willing to collaborate and follow the progress of this research until completion.

References

Andriyani, R., & Pitriani, R. (2021). The Relationship between Mother's Attitudes about Oxytocin Massage and the Smoothness of Exclusive Breastfeeding at PMB Ernita Pekanbaru. *Science Midwifery*, *9*(1), 224–227. https://midwifery.iocspublisher.org/index.php/midwifery/article/view/70/61

Anita, N., Ahmad, M., Usman, A. N., Sinrang, A. W., Alasiry, E., & Bahar, B. (2020). The potency of the back massage and acupressure on increasing prolactin hormone levels in primipara postpartum; consideration for midwifery care. *Enferia Clinica*, *30*(5), 202–205. https://doi.org/https://doi.org/10.1016/j.enfcli.2019.11.054

Aprilina, A., & Lestari, D. (2022). Effectiveness of Dates Extract and Oxytocin Massage on Increasing Breast Milk Production for Breastfeeding Mothers. *Jurnal Kebidanan Dan Kesehatan Tradisional*, 95–107. https://doi.org/10.37341/jkkt.v0i0.366

Aprilina, A., Lestari, D., & Ocktariyana, O. (2024). Pendampingan Ibu Dalam Upaya Peningkatan Produksi Asi Di Wilayah Kerja Puskesmas Talang Ratu Palembang. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*, *7*(6), 2602–2612. https://doi.org/10.33024/jkpm.v7i6.14837

Arsi, R., Rejeki, S., & Zulfa, A. (2021). Metode Speos (Stimulasi Pijat Endorphin, Oksitosin, dan Sugestif) Dalam Meningkatkan Produksi Asi Ibu Post Partum. *Jurnal Ilmu Keperawatan Maternitas*, *4*(1), 1–14. https://doi.org/10.26594/jikm.1.2.2018.278

Dinengsih, S. (2020). Pengaruh Kombinasi Pijat Woolwich dan Pijat Oksitoksin Terhadap Produksi ASI pada Ibu Post Partum. *JOURNAL FOR QUALITY IN WOMEN'S HEALTH*, *3*(2), 133–139. https://doi.org/10.30994/jqwh.v3i2.62

Elisa, Septiariani, L. L., & LestarI, K. P. (2020). Pengaruh Metode SPEOS (Stimulasi Pijat Endorfin Oksitosin Suggestif) Terhadap Produksi ASI Pada Ibu Nifas. *Indonesian Journal of Nursing Research(IJNR)*, *3*(1), 18–25. https://doi.org/10.35473/ijnr.v3i1.902

Hahn-Holbrook, J., Little, E. E., & Abbott, M. (2021). Mothers are more sensitive to infant cues after breastfeeding than bottle-feeding with human milk. *Hormones and Behavior* (Vol. 136). https://doi.org/10.1016/j.yhbeh.2021.105047

Mawaddah, S. (2022). Effectiveness of Papaya (Carica papaya) Leaf Extract Pills to Increase Breast Milk Production among Breastfeeding Women at Private Practice Midwife M Palangka Raya. *EMBRIO: Jurnal Kebidanan*, *14*(2), 250–254. https://doi.org/10.36456/embrio.v14i2.5386

Murdiningsih, M., & Rohaya, R. (2020). Effect of the Marmet Technique towards the smoothness of breast milk Expression for the mother postpartum in BPM Palembang City. *The 1st International Conference On Health, Social, Sciences, and Technology (ICoHSST 2020)*, 100–105. https://jurnal.poltekkespalembang.ac.id/index.php/icohsst/article/view/727/330

Noviyana, N., Lina, P. H., Diana, S., Dwi, U., Eni, N., Fransisca, A., Lataminarni, S., Rani, H. W., Ruth, A., & Welmi, S. (2022). Efektifitas Pijat Oksitosin dalam Pengeluaran ASI. *Jurnal Ilmu Keperawatan Maternitas*, *5*(1), 23–33. https://doi.org/10.32584/jikm.v5i1.1437

Nugraha, N. D. (2022). Hubungan Inisiasi Menyusu Dini (IMD) dan Paritas Terhadap Produksi Asi pada Ibu Post Partum. *Journal of Nursing and Health (JNH)*, *7*(3), 267–273. https://doi.org/10.52488/jnh.v7i3,%20Desember.157

Rolaeli, M. D., Sukmawati, E., Khomsah, Y. S., & Imanah, N. D. N. (2024). Pemberian Massage Payudara untuk Memperlancar Pengeluaran Asi. *Journal of Andalas Medica*, *2*(3), 109–119. https://jurnal.aksarabumiandalas.org/index.php/jam/article/view/33/27

Safarringga, A., & Putri, R. D. (2021). Pengaruh pemberian ekstrak daun kelor terhadap produksi asi pada ibu nifas. *JOURNAL OF Tropical Medicine*, *1*(1), 9–15. https://doi.org/10.56922/tmi.v1i1.140

Sary, D. Y. (2022). *Efektifitas Pemberian Buah Pepaya Dan Sari Kurma Terhadap Kelancaran Asi Pada Ibu Menyusui Diwilayah Kerja Puskesmas Nusa Indah Kota Bengkulu Tahun 2022* [Thesis, Poltekkes Kemenkes Bengkulu]. Poltekkes Bengkulu.

https://repository.poltekkesbengkulu.ac.id/1554

Sulistyawati, H., & Mildiana, Y. E. (2022). The Effect of Oxytocin Massage on Breast Milk Production in Postpartum Mothers at PMB Nurul Awalia Astarie, A.Md. Keb, Mojoagung District, Jombang Regency. *EMBRIO: Jurnal Kebidanan*, *14*(1), 21–29. https://doi.org/10.36456/embrio.v14i1.3489

Susanti, D., & Yuliwati. (2020). Effectiveness of Stimulation of Endorphin, Oxytocin, and Suggestive Massage Method on The Breast Milk Production in Post-Partum Mothers at General Hospital, South Tangerang, Banten. *THE 7th INTERNATIONAL CONFERENCE ON PUBLIC HEALTH 2020*, *5*(1), 18–19. https://doi.org/https://doi.org/10.26911/the7thicph-FP.03.73

Tania, N. L. L. A., & Huriah, T. (2023). Effectiveness of oxytocin massage for breast milk production: a literature review. *Jurnal Aisyah: Jurnal Ilmu Kesehatan*, *8*(2), 275–286. https://doi.org/10.30604/jika.v8i2.1822

Triandini, I. G. A. A. H., Gumangsari, N. M. G., & Wangiyana, I. G. A. S. (2023). Knowledge and Behavior regarding Consumption of Herbal Galactagogues among Breastfeeding Women in Mataram City. *EMBRIO: Jurnal Kebidanan*, *15*(1), 1–10. https://doi.org/10.36456/embrio.v15i1.6199

Wahyuni, R., Sinaga, E. G., & Agustinigsih, D. (2023). Efektivitas Pemberian Kurma Terhadap Kelancaran Pengeluaran Asi Hari Pertama Post Partum. *Avicenna : Journal of Health Research*, *6*(1), 71–80. https://doi.org/10.36419/avicenna.v6i1.825