MEDIA PENELITIAN DAN
PENGEMBANGAN KESEHATAN
Vol 35 No 3, September 2025

e-ISSN: 2338-3445
p-ISSN: 0853-9987

DIFFERENCES IN THE INCREASE IN BREAST MILK PRODUCTION AND PROLACTIN HORMONE IN POST-PART MOTHERS DURING LOCAL AND SEGMENTAL POINT ACUPRESSURE

Perbedaan Peningkatan Produksi Asi dan Hormon Prolaktin Ibu Nifas pada Akupresur Titik Lokal dan Segmental

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ABSTRAK

Pengeluaran ASI yang kurang dan lambat menjadi alasan utama ibu berhenti menyusui karena merasa tidak mempunyai produksi ASI yang cukup untuk memenuhi kebutuhan bayi. Untuk itu peneliti berinovasi dalam meningkatkan produksi ASI ibu nifas dengan membandingkan terapi akupresur pada titik lokal (ST15, ST16, CV17, ST18, SP18) dan titik segmental (SI1, ST36, LI4, SP6). Tujuan dalam penelitian ini adalah untuk mengetahui perbedaan produksi ASI dan hormon prolaktin ibu nifas pada akupresur titik lokal dan segmental. Penelitian quasy experimental dengan non-equivalent group design, terdiri dari 2 kelompok. Jumlah populasi yaitu seluruh ibu nifas di RSUD Suradadi Kabupaten Tegal dengan jumlah sampel 20 responden setiap kelompok. Kelompok 1 diberikan perlakuan akupresur pada titik lokal dan kelompok 2 akupresur pada titik segmental selama 3 hari. Analisis Bivariate mengunakan Repeated Measure Anova, Friedman dan Wilcoxon. Hasil penelitian menunjukkan tidak terdapat perbedaan peningkatan produksi ASI berdasarkan kategori berat badan bayi (p = 0,242), frekuensi buang air kecil bayi (p = 0,209), buang air besar bayi (p = 0,355), dan kadar hormon prolaktin ibu nifas (p = 0,698) pada kelompok titik lokal maupun titik segmental. Simpulannya adalah akupresur pada titik lokal dan titik segmental signifikan meningkatkan produksi ASI dan hormon prolaktin ibu nifas, namun keduanya tidak terdapat perbedaan yang signifikan terhadap peningkatan produksi ASI berdasarkan kategori BB bayi, BAK bayi, BAB bayi, dan hormon prolaktin ibu nifas.

Kata kunci : *akupresur, BAB, BAK, BB, ibu nifas, prolaktin*

ABSTRACT

Insufficient and slow breast milk production is the main reason mothers stop breastfeeding because they feel they don't have enough breast milk production to meet the baby's needs. For this reason, researchers innovated in increasing breast milk production in postpartum mothers by comparing acupressure therapy at local points (ST15, ST16, CV17, ST18, SP18) and segmental points (SI1, ST36, LI4, SP6). The objective is to determine the differences in breast milk production and prolactin hormone in postpartum mothers at local points and segmental points of acupressure. The method is quasi quasi-experimental study with non-equivalent group design, consisting of 2 groups. The population is all postpartum mothers at Suradadi Tegal Hospital with a sample of 20 respondents in each group. Group 1 gave acupressure threat at local points and group 2 on segmental points for 3 days. Bivariate analysis used Repeated Measure Anova, Friedman and Wilcoxon. The results were there was no difference in the increasing breast milk production based on the categories of infant weight (p = 0.242), infant urination (p = 0.209), infant defecation (p = 0.355), and postpartum maternal prolactin hormone (p = 0.698) in the local points and segmental groups. Acupressure at local points and segmental points has a significant effect on increasing breast milk production and prolactin hormone in postpartum mothers; however, there is no significant

https://doi.org/10.34011/jmp2k.v35i3.3030

e-ISSN: 2338-3445
p-ISSN: 0853-9987

difference between both in increasing breast milk production based on the categories of infant weight, infant urination, infant defecation, and postpartum mother's prolactin hormone.

Keywords: acupressure, defecation, postpartum mother's, prolactin, urination, weight

INTRODUCTION

Breast milk (ASI) is the main food to fulfill the nutritional needs of babies in the first 6 months of life and continues until the age of 2 years or more[1]. Breast milk contains various substances needed by babies for growth and development, such as protein, fat, carbohydrates, minerals, and vitamins. Providing breast milk within the first hour of birth can reduce newborn mortality, reduce the incidence of dental malocclusion, increase intelligence, provide immunity, and enhance bonding[2]. Breast milk also has benefits for mothers, such as reducing the incidence of osteoporosis, ovarian and breast cancer, and type II diabetes[3].

Breast milk is the natural food given to babies, and is the most important and highly recommended food for babies at least for the first six months of life. Insufficient and slow milk production is the main reason for mothers not to breastfeed their babies, because postpartum mothers feel that milk production is not enough to meet the baby's needs and support weight gain. The need to increase breast milk production in the early postpartum period is because when breast milk flows smoothly, it can build a mother's confidence to breastfeed her baby, so that the mother is not easily influenced by external factors that do not support exclusive breastfeeding[4].

World Health Organization(WHO), recommends that mothers breastfeed their babies within the first hour after birth and continue for up to 6 months, given exclusively and continued until the age of 2 years or even more. In general, at the global level, the coverage of exclusive breastfeeding is still low, especially in developing countries. Based on WHO and UNICEF data from 2014-2020, the target for achieving exclusive breastfeeding worldwide only reached 44%, which is still far from the global target of 5, estimated to reach 50% by 2025[5]. Data on babies who receive exclusive breastfeeding in Indonesia, according to the Ministry of Health in 2023, was 63.9%, in Central Java, it was 64.5%[6]. Data from the Tegal Regency Health Office in 2023 showed that 60% of babies received exclusive breastfeeding[7]. This percentage meets the national exclusive breastfeeding target of 50%. However, data from Suradadi Regional General Hospital, Tegal Regency, from January to August 2024 showed that only 37.7% of postpartum mothers exclusively breastfed. Postpartum mothers did not breastfeed their babies, citing a lack of milk supply.

Unstable breast milk production will impact the baby, namely, the baby will not receive optimal nutrition. Unstable breast milk can also result in decreased stimulation of lactation hormones and inhibit milk production. Breast milk release can be influenced by two factors: production and release obtained from the baby's sucking. Breast milk production is influenced by the hormone prolactin. This hormone appears after breastfeeding and produces milk for the next breastfeeding process, while release is influenced by the hormone oxytocin, which functions to stimulate smooth muscle contractions in the walls of the alveoli and ducts, so that milk is pumped out[4].

Hospitals' efforts to address postpartum mothers' complaints about breast milk production include educating them about nutritious foods and consuming commercially available katuk extract supplements. However, most postpartum mothers still experience problems with breast milk production. Several studies have shown that efforts to increase breast milk production include consuming herbal foods such as katuk leaves, red ginger, turmeric, and moringa leaves[8], relaxation techniques such as hypnobreastfeeding[9], aromatherapy[10], Marmet technique (milking and massaging the breasts)[11], as well as acupuncture techniques such as acupressure[12].

https://doi.org/10.34011/jmp2k.v35i3.3030

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Responses to herbal interventions vary from person to person, possibly due to inappropriate dosage or difficulty in consistent use. Relaxation techniques such as hypnobreastfeeding, aromatherapy, and the Marmet technique require assistance and cannot be performed alone, but acupressure allows postpartum mothers to perform the treatment independently. Therefore, researchers are interested in acupressure techniques that can be practiced independently by postpartum mothers[13].

Acupressure is a development of acupuncture techniques and non-pharmacological therapy, namely traditional Chinese medicine, using massage performed on specific points on the body's surface according to the acupuncture points. The non-invasive method used is to apply pressure to acupuncture points without using needles, usually using fingers or a blunt object that is safe so as not to injure the surface of the body. It provides a pressure effect so that it is more acceptable and tolerated by patients than acupuncture using needles[14]. The points used to increase breast milk production are acupuncture points CV17, ST18, and SI1[15].

Acupressure therapy can increase blood and systemic endorphin levels by affecting brain areas, stimulating beta-endorphins in the brain and spinal cord, and stimulating neurotransmitters. The effects of acupressure point stimulation are linked to the release of substances that can block pain signals sent to the brain via nerves and activate humoral transmitters. Endorphins are opiates naturally produced by the pituitary gland. They function to reduce pain, affect memory and mood, and provide a feeling of relaxation and comfort[16]. They can also increase the hormone prolactin[4].

Acupressure is one way to address the problem of insufficient breast milk production. Acupressure can maximize prolactin and oxytocin receptors, and this action produces effects through several different mechanisms. Acupressure through local points (ST15, ST16, CV17, ST18, SP18) and segmental points (SI1, ST36, LI4, SP6) has electrical properties that, when stimulated, can alter the body's chemical neurotransmitter levels. Acupressure is believed to reduce pain and muscle tension, increase blood circulation and the release of endorphins, which will provide a sense of relaxation, increase patient comfort, and stimulate the release of oxytocin, thus increasing breast milk production[17].

Wigati's research (2021) concluded that acupressure has an effect on breast milk production in postpartum mothers[18]. However, the study has weaknesses such as the lack of a control group, the absence of acupressure points used, and the duration of the intervention. In terms of assessing success with breast milk volume, which sometimes does not comply with research ethics, it also does not examine infant urination and defecation. Susilowati's study states that there is an effective combination of acupressure therapy with oxytocin massage on the length of time to express breast milk in postpartum mothers. The combination of acupressure therapy and oxytocin massage can be considered an alternative effort to accelerate breastfeeding in postpartum mothers[19].

Sulymbona's (2020) research shows that acupressure at CV18 and ST17 points for 3 weeks can increase breast milk volume, but it has not assessed the adequacy of breast milk in infants, such as the frequency of Defecation, urination, and body weight, and has ethical limitations in measuring breast milk volume [20]. Meanwhile, Wahidah's (2023) research used a combination of ST15, ST16, CV17, and LI4 points for 10 days, and was proven to affect increasing infant weight and prolactin hormone[21], but in this study there was no significant relationship related to the adequacy of infant breast milk from the category of defecation and urination. This study presents novelties related to the differences in local and segmental acupressure techniques and a comparison of effectiveness at local and segmental points, as well as several indicators related to the adequacy of breast milk from maternal and infant indicators that have never been done in previous studies, and distinguishes local and segmental acupressure points, because in previous studies more focused on one group of acupressure points that did not explain

https://doi.org/10.34011/jmp2k.v35i3.3030

e-ISSN: 2338-3445
p-ISSN: 0853-9987

local or segmental points, then comparing these two types of points systematically could be a novelty. This study will provide evidence on whether one type of point is more effective than another in increasing breast milk production, as well as examine whether acupressure at local and segmental points provides a more significant synergistic effect on increasing breast milk production compared to if it is done randomly.

Local and segmental acupressure points have different mechanisms for increasing milk production. Local points around the breasts work directly by improving circulation and stimulating the mammary glands through prolactin regulation. Meanwhile, segmental points work indirectly by balancing hormones and improving bodily system function. Both complement each other in supporting milk production[22], [23].

A preliminary survey on March 16, 2024, of 20 mothers on their third day of postpartum at Suradadi Regional Hospital showed that only 7 mothers (35%) were able to breastfeed directly within the first hour after delivery, while 13 mothers (65%) were unable to do so. The main causes were insufficient or low milk production (53.8%), followed by the mother not having recovered from a C-section (15.4%), the baby being too small (7.7%), and the baby refusing to breastfeed (23.1%). The main problem was low milk production. Hospital efforts such as IEC, domperidone administration, and husband massage were not effective in addressing this issue. Acupressure has the potential to increase breast milk production, especially when used with the right combination of points, as each point has a different energy (Qi) stimulation function[24]. However, previous research on acupressure interventions has generally involved only a limited combination of points. Therefore, this study aims to examine the differences in breast milk production and prolactin hormone levels in postpartum mothers receiving acupressure at local points compared to those receiving acupressure at segmental points.

METHODS

This study was a quantitative study, using a quasi-experimental design with a non-equivalent groups design. There were two groups with different treatments: the first group was given acupressure at local points, and the second group was given acupressure at segmental points. These measurements were conducted for three consecutive days: the first, second, and third. The differences in treatment were then assessed by comparing the pretest and posttest scores[25]. Pretest was conducted on the first day, posttest 1 on the second day, and posttest 2 on the fourth day. This study was conducted at Suradadi Regional Hospital, Tegal Regency, with a population of 91 postpartum mothers, a total sample of 40 respondents consisting of 20 respondents in the local acupressure group and 20 respondents in the segmental acupressure group, taken by purposive sampling. The sample determination used the sample size calculation formula for the two-mean difference test. The inclusion criteria were normal postpartum mothers on the first day, no breast abnormalities, healthy mother and baby conditions, using diapers (not using disposable diapers), exclusive breastfeeding, without breast milk booster and exclusion criteria were mothers who were allergic to massage oil or baby oil. The study was conducted from November 19 to December 5, 2024.

Acupressure intervention is carried out by providing stimulation with gentle pressure using the thumb or index finger for 10-15 minutes, once a day in the morning, which is done with consistent and gentle pressure, carried out when the postpartum mother is relaxed, comfortable, not hungry, and in a room with guaranteed privacy. The instruments in this study included observation sheets for neonatal weight (birth weight), urination (voiding), defecation (bowel movement), the standard operating procedure (SOP) for acupressure, and blood sampling[26]. In this study, the variables of weight, urinary and defecation were observed 3 times, namely pretest (first day), posttest 1 (second day) and posttest 2 (fourth day) and the maternal prolactin hormone variable

https://doi.org/10.34011/jmp2k.v35i3.3030

e-ISSN: 2338-3445
p-ISSN: 0853-9987

was taken blood samples twice pretest (first day) and posttest (fourth day) to be examined at the GAKI UNDIP Laboratory using an elisa kit. Blood sampling was carried out in the morning around 08.00-10.00 before heavy activity and breastfeeding in the last 2 hours. There were no dropouts in this study.

This study used bivariate analysis consisting of Repeated Measures ANOVA, Friedman's test, and Wilcoxon's test. Ethical eligibility is a written statement provided by the research ethics committee for research involving living organisms.
Clearance obtained from the Research Ethics Commission of the Ministry of Health Polytechnic of Semarang, No. 1280/EA/F/XXIII.38/2024 on November 19, 2024.

RESULTS

Table 1. Respondent Characteristics

Characteristics	Local point			Segmental point			*p-value*[a]
	N	%	*Mean*± SD	n	%	*Mean*± SD	
Mother's Rest							
Not enough	18	90	-	19	95	-	0.239
Enough	2	10		1	5		
Breastfeeding Frequency			12.00 ± 3.47			13.00 ± 3.64	0.493
Birth weight			2962 ± 364			3135 ± 503	0.250
Gestational age at delivery			38.20 ± 1.43			38.50 ± 1.43	0.637

[a5]*Levene Test*

Based on Table 1, the results show that the characteristics of maternal rest in the local point group, almost all respondents, namely 18 (90%), had insufficient rest and in the segmental point group, almost all respondents, namely 19 (95%), had insufficient rest. Based on statistical tests, it was concluded that maternal rest time in both groups was homogeneous (p>0.05). In the characteristics of breastfeeding frequency in the local point group, the average breastfeeding of babies was 12 times and in the segmental point group was 13 times. Based on statistical tests, it was concluded that the frequency of breastfeeding of babies in both groups was homogeneous (p>0.05).

In the characteristics of the birth weight of babies in the local point group, the average birth weight of babies was 2,962 grams, and in the segmental point group was 3,135 grams. Based on statistical tests, it was concluded that the birth weight of babies in both groups was homogeneous (p>0.05). In the characteristics of gestational age at delivery in the local point group, the average was 38.20 weeks and the segmental point was 38.50 weeks. Based on statistical tests, it was concluded that the gestational age at delivery in both groups was homogeneous (p>0.05).

Table 2. Differences in Increased Breast Milk Production in Postpartum Mothers Based on Baby Weight Category

Variables	Group	Mean± SD pretest	Mean± SD posttest 1	Mean± SD posttest 2	Pretest – posttest2	
					Mean Diff	*Sig*[a]
Infant Weight	Local Point	2,962.75 ± 364.20	2,884.50 ±370.32	2,826.40 ± 362.54	136.35±564.93	0.001
	Segmental Point	3,123.75 ± 484.80	3,043.50 ±492.92	2,988.25 ± 503.29	135.50±95.83	0.001
p-value[b]					0.974	

[a]*Repeated Measured Anova,* [b]*Independent T-test*

Table 2 shows a significant increase in breast milk production based on infant weight in both groups from the first measurement (pretest) to the second measurement (posttest

https://doi.org/10.34011/jmp2k.v35i3.3030

e-ISSN: 2338-3445
p-ISSN: 0853-9987

2) (p=0.001). However, this increase, when viewed based on the difference (delta) in breast milk production based on BW between groups, did not show a significant difference in either the pre-post-posttest1, pretest-posttest2, or posttest1-posttest2 measurements (p>0.05). The following is a graph showing the increase in breast milk production in postpartum mothers based on the baby's weight category.

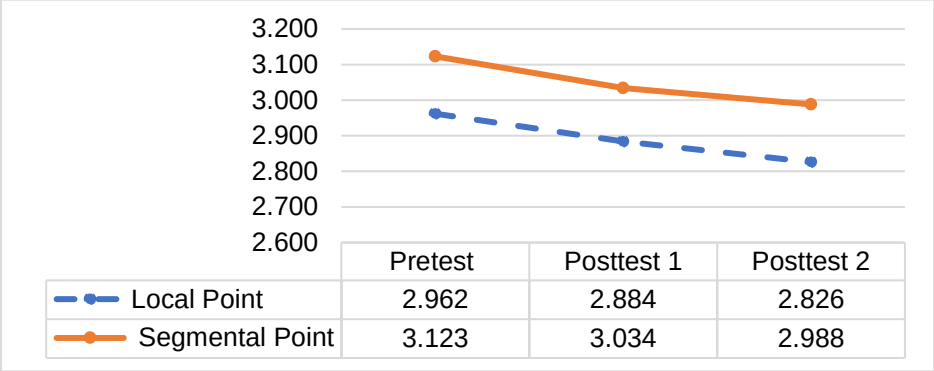

Figure 1. Difference in Weight Gain

Based on Figure 1, it is explained that the weight of babies in the local point group and the segmental point group experienced a decrease.

Table 3. Differences in Increased Breast Milk Production in Postpartum Mothers Based on Infant Urination Category

Variables	Group	*Mean*± SD pretest	*Mean*± SD posttest1	*Mean*± SD *posttest2*	*Pretest*–posttest 2 *Mean Diff*	*p-value*[a]
Infant Urination	Local Point	4.10 ± 1.80	6.65 ± 2.27	7.15 ± 1.63	3.05 ± 1.98	0.001
	Segmental Point	3.45 ± 1.53	5.50 ± 1.67	6.80 ± 1.28	3.35 ± 1.34	0.001
p-value[b]					0.295	

[a]*Friedman* [b]*Man Whitney*

Table 3 shows a significant increase in breast milk production based on infant urination in both groups from the first measurement (pretest) to the second measurement (posttest 2) (p=0.001). However, when viewed based on the difference (delta) in breast milk production based on infant urination between groups, there was no significant difference in the pretest-posttest 1, pretest-posttest 2, or posttest 1-posttest 2 measurements (p>0.05).

The following is a graph that shows the increase in breast milk production in postpartum mothers based on the category of frequency of baby urination.

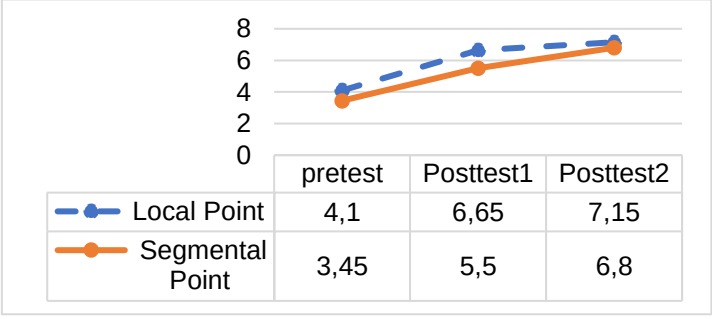

Figure 2. Differences in Infant Urination Frequency

Based on Figure 2, it is explained that the frequency of infant urination increased in the local point group, namely from 4.1 times initially, increasing to 6.65 times, and increasing to 7.15 times. In the segmental point group, namely from 3.45 times initially, increasing to 5.5 times, and increasing to 6.8 times.

https://doi.org/10.34011/jmp2k.v35i3.3030

e-ISSN: 2338-3445
p-ISSN: 0853-9987

Table 4. Differences in Increased Breast Milk Production in Postpartum Mothers Based on Infant Defecation Category

Variables	Group	*Mean*± SD pretest	*Mean*± SD posttest1	*Mean*± SD *posttest2*	*Pretest*–posttest 2 *Mean Diff*	*p-value*[a]
Infant Defecation	Local Point	1.65 ± 0.58	2.20 ± 1.10	2.65 ± 1.34	1.00 ± 1.37	0.002
	Segmental Point	1.45 ± 0.51	1.80 ± 0.69	2.60 ± 0.94	1.15 ± 0.18	0.001
p-value[b]					0.416	

[a]*Friedman* [b]*Independent T-test*

Table 4 shows that breast milk production significantly increased based on the infant defecation category in both groups from the first measurement (pretest) to the second measurement (posttest 2) ($p<0.05$). However, this increase, when viewed based on the difference (delta) in breast milk production based on defecation between groups, did not show a significant difference in either the pretest-posttest 1, pretest-posttest 2, or posttest 1-posttest 2 measurements ($p>0.05$).

The following is a graph showing the increase in breast milk production in postpartum mothers based on the frequency category of infant defecation.

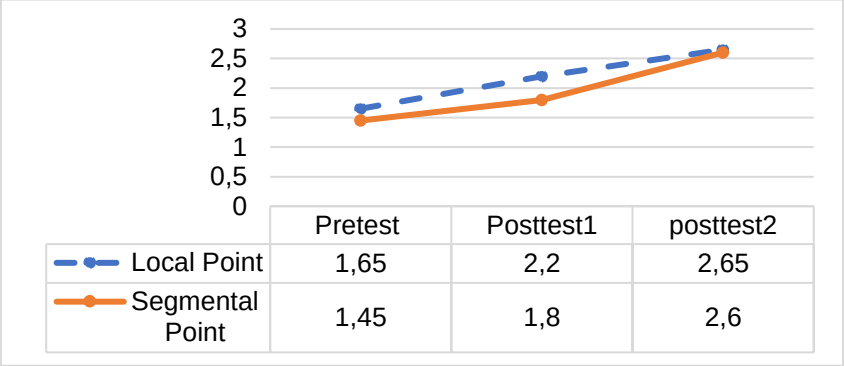

Figure 3. Differences in Infant Defecation Frequency

Based on Figure 3, it is explained that the frequency of infant defecation increased in the local point group, from 1.65 times initially to 2.2 times and then to 2.65 times. In the segmental point group, from 1.45 times initially to 1.8 times and then to 2.6 times.

Table 5. Differences in Increased Breast Milk Production in Postpartum Mothers Based on Prolactin Hormone Category

Variables	Group	*Mean*± SD pretest	*Mean*± SD posttest	*Pretest – posttest* *Mean Diff*	*p-value*[a]
Prolactin Hormone	Local Point	240.20 ± 131.91	334.35 ± 75.34	94.15±159.41	0.025
	Segmental Point	255.40 ± 124.39	328.15 ± 140.24	72.75±128.59	0.033
p-value[b]				0.695	

[a]*Wilcoxon* [b]*Man Whitney*

Table 5 shows a significant increase in breast milk production based on prolactin hormone levels in postpartum mothers in both groups from the first measurement (pretest) to the second measurement (post-test) ($p<0.05$). However, when viewed based on the difference (delta) in breast milk production based on prolactin hormone levels

https://doi.org/10.34011/jmp2k.v35i3.3030

e-ISSN: 2338-3445
p-ISSN: 0853-9987

between groups, there was no significant difference in increase from the pretest to posttest measurements (p>0.05).

The following is a graph showing the increase in breast milk production in postpartum mothers based on the postpartum mother's prolactin hormone category.

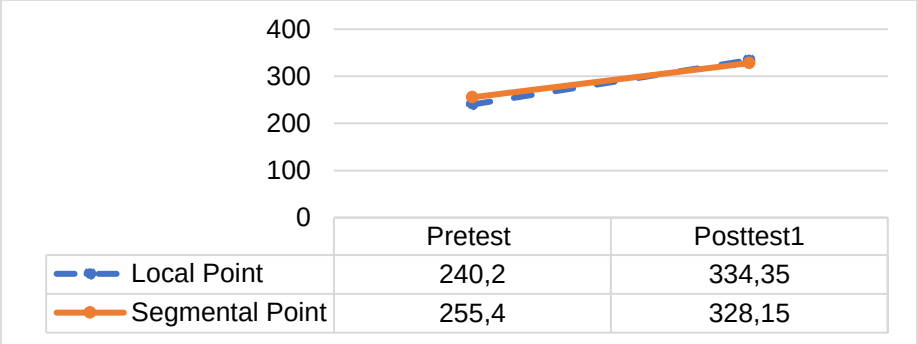

Figure 4. Differences in Prolactin Hormone Levels in Postpartum Mothers

Based on Figure 4, it is explained that prolactin levels increased in the local point group, from 240.2 ng/ml initially to 334.35 ng/ml. In the segmental point group, from 255.4 ng/ml initially to 328.15 ng/ml.

DISCUSSION

The study found a significant increase in breast milk production based on changes in infant weight, urination, and Defecation from the initial (pretest), posttest 1, and posttest 2 measurements ($p < 0.05$), and prolactin hormone levels from pretest to posttest ($p < 0.05$). However, the increase, when viewed from the delta difference between groups, did not show a significant difference in increase. This study shows a physiological weight loss in the first week of life, approximately 5–10% of birth weight. This is due to fluid loss through urine, stool, and skin evaporation, as the baby adapts from the liquid environment in the womb to the drier external environment[27]. In addition, newborns receive only a limited nutritional intake in the form of colostrum from their mother's breast milk for the first few days of life. Colostrum is rich in nutrients and antibodies, but the amount is relatively small compared to the volume of mature milk that will be produced several days later. Energy requirements remain high for basal metabolism and adaptive activities; this imbalance between caloric intake and needs can lead to weight loss[28].

This weight loss is usually temporary and does not require special intervention, as long as the baby's weight begins to increase again within the first 7-10 days after birth[29]. With optimal breastfeeding, babies typically return to their birth weight within 10-14 days. Therefore, it is important for healthcare providers to regularly monitor the baby's feeding patterns, weight, and hydration signs to ensure proper physiological adaptation[30]. This research is in line with Wahidah's research[31], which shows that acupressure at points LI4, ST15, ST16, and CV17 can increase breast milk production based on the baby's weight. And Purwanto's research[32] states that acupressure at points ST15, ST16, SP18, CV17, and ST18 is effective in increasing breast milk sufficiency based on the baby's weight.

The results of the study, based on the urination category, showed an increase in urination frequency from the pretest, posttest 1, and posttest 2 measurements with a p-value (<0.05) and no significant differences between groups. This means that both interventions significantly increased breast milk production. One factor indicating a baby receiving sufficient breast milk is a urination frequency of 6-7 times a day[33]. Breast milk contains 87.5% water, so babies only need to be given breast milk without needing additional water because the water supply is sufficient for the baby's needs[34]. Breast milk also affects the frequency of urination and defecation in babies; the protein and electrolyte content affects kidney excretion to regulate the elimination of substances in

https://doi.org/10.34011/jmp2k.v35i3.3030

e-ISSN: 2338-3445
p-ISSN: 0853-9987

urine[35]. Urination is the process of releasing urine from the bladder through the urethra to the urinary meatus to be expelled from the body. In infants, this process occurs as an involuntary reflex (involuntary muscle or reflex) that is a spinal cord reflex. This involuntary process causes infants to experience frequent urination every day. Physiologically, the process of urination is a coordination of the central, autonomic, and somatic nervous systems. The brain centers that control the process of urination are the pons, periaqueductal gray (PAG), and cortex. Urinary excretion in infants is generally not yet formed, and a voluntary urination pattern will develop by age 4, or at the latest by age 5[36].

This is supported by Subekti's research[37] that there is a relationship between the frequency of urination and the smooth flow of breast milk. Babies who are sufficiently breastfed will urinate frequently, indicating that their nutritional needs are being met. Amin's research[38] A baby who is getting enough breast milk is characterized by urinating at least six times a day, with urine usually clear yellow and not pale yellow. A baby who is getting enough breast milk will urinate at least six to eight times a day.

Babies who get enough breast milk are also characterized by a frequency of defecating 3-4 times a day[21]. The viscosity and carbohydrate content of breast milk are suited to a baby's digestive tract, with easily digestible glucose. Breast milk also contains nucleotides that stimulate the growth of beneficial bacteria, as well as easily absorbed zinc to prevent diarrhea. The optimal content of undigested casein and oligosaccharides increases osmolarity and bowel frequency. During breastfeeding, the gastrocolic reflex also improves the baby's bowel pattern[35]. The frequency of infant defecation is influenced by the function of the gastrointestinal tract, which remains immature until around two years of age. Peristalsis occurs rapidly, with gastric emptying times of 2.5–3 hours in newborns and 3–6 hours in older infants. Gastric parietal cells begin producing hydrochloric acid after six months of age. In young infants, the gastrocolic reflex works more rapidly, leading to more frequent bowel movements[39]. This research is in line with Rochsitasari's research[40]and Johan's [41]. This indicates that the average frequency of defecation is highest in the first week of life, then decreases with age across all food groups. Newborns generally have suboptimal lactation activity, limiting their ability to hydrolyze the lactose contained in breast milk and formula. This condition causes increased osmolarity in the lumen of the baby's small intestine, which leads to increased defecation frequency. Therefore, exclusively breastfed babies tend to have a bowel movement frequency of 3-4 times a day.

Acupressure methods at both local and segmental points are equally effective in stimulating the release of the hormone prolactin, which plays a crucial role in breast milk production. Stimulating these acupressure points can increase energy circulation and blood flow, which helps optimize the pituitary gland's function in releasing prolactin. Local points have a more significant effect on increasing prolactin than segmental points because the stimulation applied to local acupressure points is in areas directly related to the breast, such as the nipple or the area around the breast. This stimulation can increase local physiological responses that stimulate mechanoreceptors in the surrounding breast tissue, thereby directly affecting the afferent nerves leading to the hypothalamus[42]. The hypothalamus then responds by increasing the release of oxytocin and prolactin. Oxytocin helps contract the breast alveoli to release milk, while prolactin functions to produce milk by stimulating cells in the mammary glands. In other words, direct stimulation at a local point maximizes the activation of neurohormonal pathways focused on lactation[43].

While stimulation of segmental points affects prolactin release through a broader reflex mechanism, it has a lower intensity because it operates through a more indirect neural pathway. This makes its physiological effect on the mammary glands less potent than that of local points. Therefore, acupressure at local points tends to produce more

https://doi.org/10.34011/jmp2k.v35i3.3030

e-ISSN: 2338-3445
p-ISSN: 0853-9987

significant results in increasing prolactin and supporting optimal milk production in postpartum mothers[12]. Acupressure stimulates the release of endorphins, blocks pain receptors, and triggers the production of prolactin and oxytocin. Pressure applied to meridian points sends sensory stimuli through afferent pathways, influencing bioenergy flow and related organ functions. This stimulation also activates neural, somatovisceral, meridian, and local responses. As a result, the posterior pituitary releases prolactin and oxytocin into the bloodstream, initiating the let-down reflex to enhance and facilitate breast milk production and ejection[44],[45].

This study showed that acupressure at local points was more effective in increasing breast milk production, as indicated by an increase in prolactin levels from 240.2 ng/ml to 334.35 ng/ml, compared to segmental points, which increased from 255.4 ng/ml to 328.15 ng/ml. Local points, located around the breast, are anatomically closer to the tissues involved in breast milk production, thus more effectively stimulating blood flow and the neurohormonal reflex that triggers prolactin release from the pituitary gland[46]. This research is in line with Wahidah's research[31]and Anita's [47], which states that acupressure can increase breast milk production based on the mother's prolactin hormone.

CONCLUSION

This study concluded that there were no significant differences in breast milk production based on weight, urination, defecation, and prolactin levels between the local and segmental points. However, the local points were more effective in stimulating neurohormonal reflexes directly in the breast area, resulting in faster results. Therefore, local points are recommended in clinical practice for postpartum mothers who need to increase breast milk production quickly, while segmental points can be an alternative for those who are less comfortable with direct breast stimulation. Limitations of this study include the lack of randomization and differences in baseline characteristics between groups, such as age, parity, nutritional status, stress, breastfeeding patterns, and breast milk quality.

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