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Miyik-Miyikan Aromatherapy on Postpartum Back Massage Increases Baby Weight Gain

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Abstract

Back Massage technique combined with holistic aromatherapy treatment can be an effective therapy for postnatal mothers to increasing breast milk production. This study aims to analyze the effect of Miyik-miyikan aromatherapy on back massage. The increase of breast milk production in postpartum mothers can be seen from the baby's weight gain. This study was conducted at an inpatient Primary Health Center in Denpasar, in June-October to 30 mothers. This study was designed in a quasi-experimental pre-posttest control group with a time series approach. The observation of the baby's weight gain and breastfeeding satisfaction starts from day 1, day 7, and day 14 after delivery. This study was analyzed using the Kruskal Wallis test and the Mann Whitney test. The result of the study showed that the Kruskal Wallis test is $p < 0,05$, meaning that there was a difference in breast milk production in the two groups of intervention. Additionally, the Mann Whitney test showed the difference of baby weight on the 7th day to those in the Miyik-miyikan and Cananga group, and on the 14th day in the Cananga, Miyik-miyikan, and Champak group. Thus, the use of Miyik-miyikan aromatherapy on a back massage can be done earlier after delivery

Keywords: Back Massage, Miyik-miyikan, Aromatherapy

1. Introduction

The failure of the breastfeeding process is often caused by obstacles from both the mother and the baby. One of the most inhibitors of breastmilk supply is maternal stress. Sleep deprivation and adjustments to the baby's time cause an increase in the cortisol hormone which then can significantly reduce breastmilk supply (Hechler, Weerth, Beijers, & Riksen, 2018). If the baby is given additional milk outside of breastfeeding, it will reduce the baby's need for breastmilk. Breastfeeding syndrome cannot be overcome by early recognition, and providing practical care assistance to the mother is necessary to increase breastfeeding confidence (Azizah, Rosyidah, & Mahfudloh, 2018). Back Massage is an effective and holistic approach in the form of massage on the back along the vertebral column. This technique accelerates the function of the parasympathetic nerves in delivering commands to the back of the brain (Cerebellum) after labor to stimulate the oxytocin reflex or let down reflex so that breastmilk is increasing. Massage contributes to improving sleep quality, speeds up healing, and helps postpartum recovery.

Massage can also stimulate breastmilk to come out earlier on the second day (Morhenn, Francisco, Beavin-yates, & Zak, 2012; Mukhodim, Hanum, & Purwanti, 2015; Nurhayati, 2019).

The addition of aromatherapy to massage provides a soothing sensation, which passes into the bloodstream through the skin in small amounts. The evaporated aromatherapy will be inhaled and relax tense muscles. Miyik-miyikan is made of essential oils from Champak, Cananga, and Pandanus Amaryllifolius (Fragrant Pandanus) which are closely related to postpartum aromatics for the Balinese. This aroma is believed to be able to deliver serenity and self-control so that it benefits the people to live all the burdens of life. Fragrant pandanus contains alkaloids, flavonoids, saponins, tannins, and polyphenols that function as natural antioxidants. It helps wound healing, maintains red blood cells, and nerves and increases endurance (Faras, Wadkar, & Ghosh, 2014).

Antioxidants maintain health, increase skin elasticity, and moisture so that it helps mothers to be confident. Alkaloid compounds in Pandan also increase antidepressant activity by reducing levels of adrenocorticotrophic hormones (Hritcu et al., 2020; Ghasemzadeh & Jaafar, 2013). Anti-radical properties are also found in Cananga essential oil in the form of hydroxyl, peroxy, and alkyl compounds that are needed by breastfeeding mothers in the healing process. Moreover, triterpenoid and flavonoid compounds in Champak essential oil function as antioxidant and antifungal. The natural anti-fungal element of Champak essential oil will help resist the process of microorganism breeding (Teng et al., 2015). The study aimed to analyze the effect of Miyik-miyikan Aromatherapy on Back Massage towards the increase of postpartum mother's breastmilk supply as seen from the Baby Weight at Denpasar Primary Health Center.

2. Materials and Method

This research is a quasi-experimental pre-posttest control group design with a time series approach and 3 times of the baby's body weight measurement; on the first day (baseline), the seventh day, and the fourteenth day which was carried out at inpatient Primary Health Center in Denpasar from June until October 2019. The sample is as many as 30 people, each group consisting of 6 mothers after labor from day one to fourteen. The treatment group got Miyik-miyikan aromatherapy (P1), Cananga (P2), Champak (P3), and Fragrant Pandanus (P4). Besides, the control group received VCO. The sampling technique was done using non-probability sampling and consecutive sampling. The use of Miyik-miyikan aromatherapy on back massage starts on the first day after labor and is carried out every day until day 14. The massage is done for 10-15 minutes by the husband or relatives who have been trained by the researcher. Then, the data were collected on the first, seventh, and fourteenth days. The changes in the baby's weight were measured using the same weighing scale at the Primary Health Centre followed by home visits. The results of the data normality test with Shapiro Wilk on each aromatherapy were found not to be normally distributed. The baby's weight on the seventh day of testing on Fragrant Pandanus aromatherapy is $p(0.001)$, VCO $p(0.039)$. Also, the baby's weight on day 14 using Fragrant Pandanus aromatherapy is $p(0.018)$. The data analysis was carried out by using the Kruskal Wallis test followed by Post Hoc with the Mann Whitney test.

3. Results

The results of observing the characteristics of the research subjects are as follows

Table 1: Respondents' Characteristics

		Frequency (f)	Percentage (%)
Age	20-35	28	93.3
	>35	2	6.7
Parity	Primiparous	8	26.6
	Multiparous	22	73.3
Perineal Laceration	None	9	30
	Grade1	10	33.3
	Grade2	11	36.7
Occupation	Housewife	16	53.3
	Employee	13	43.3
	Civil Servant	1	3.4

Education	Primary	2	6.6
	Secondary	8	26.6
	High School	16	53.3
	Diploma	2	6.6
	Bachelor	2	6.6
Colostrum Period	Day 1	18	60
	Day 2	12	40

According to Table 1, the respondents are mostly in the age range of 20-35 years old, mostly multiparous and housewives, as well as the majority is high school graduates, and also the most colostrum period is on the first day.

Table 2: Analysis of the Effect of Aromatherapy; Miyik-Miyikan, Cananga, Champak, Fragrant Pandanus, and VCO towards Breastmilk Production in Postpartum Mothers Based on Baby Weight

Body Weight		n	p
Day 7	Miyik-Miyikan	6	0,012
	Cananga	6	
	Champak	6	
	Fragrant Pandanus	6	
	VCO	6	
Day 14	Miyik-Miyikan	6	0,004
	Cananga	6	
	Champak	6	
	Fragrant Pandanus	6	
	VCO	6	

Table 2, Kruskal Wallis test indicates that there is at least a difference in breastmilk production (day 7 body weight) between the two groups ($p=0,012$) and at least a difference in breastmilk production (day 14 body weight) between the two groups ($p = 0.004$).

To find out which groups have the differences, a Post Hoc analysis was performed using the Mann Whitney test. Post Hoc test with the results as follows:

Table 3: Analysis of the Effect of Aromatherapy; Miyik-Miyikan, Cananga, Champak, Fragrant Pandanus, and VCO towards Breastmilk Production in Postpartum Mothers Based on Baby's weight on Day 7

Baby's weight		Median (minimum- maximum)	P Value
Day 7 Body Weight	Miyik-Miyikan	0 (-200-400)	0,004
	VCO	-50 (-200-500)	
	Cananga	-85 (-300-300)	0,019
	VCO	-50 (-200-500)	
	Champak	285 (-250-450)	0,294
	VCO	-50 (-200-500)	
	Fragrant Pandanus	-200 (-225-690)	0,196
	VCO	-50 (-200-500)	

Table 3 shows that there is a significant difference in baby weight in the p value of Cananga group (0.019), and a very significant difference in Miyik-miyikan group with p value (0.004) on the seventh day after delivery.

Table 4: Analysis of the Effect of Aromatherapy; Miyik-Miyikan, Cananga, Champak, Fragrant Pandanus, and VCO towards Breastmilk Production in Postpartum Mothers Based on Baby's weight on Day 14

Baby's Weight		Median (minimum- maximum)	P Value
Day 14 Body Weight	Miyik-Miyikan	375 (60-650)	0.004
	VCO	432,5 (210-1200)	
	Cananga	325 (50-1200)	0,020
	VCO	432,5 (210-1200)	
	Champak	440 (250-610)	0.008
	VCO	432,5 (210-1200)	
	Fragrant Pandanus	380 (60-2000)	0,423
	VCO	432,5 (210-1200)	

According to Table 4, there is a significant difference in baby weight in the p value of Cananga group (0.020) and very significant in Miyik-miyikan with p value (0.004) and Champak with p value (0.008) on the 14th day after delivery.

4. Discussion

The results of the study with the Kruskal Wallis test showed that at least there was a difference in breastmilk production as reported on baby weight between the two groups ($p < 0.05$). The results of the Post Hoc analysis using the Mann Whitney test were consecutively found differences in the weight of the seven-day baby between the Miyik-miyikan-VCO and Cananga-VCO groups. Groups that had differences in baby weight on day 14 were Miyik-miyikan-VCO, Cananga-VCO, and Champak-VCO. In line with these results, it is seen that the three aromatherapies had an impact on breastmilk production on day 14, while only two aromatherapies had an impact on day 7. Also, on the 7th and 14th day, Miyik-miyikan aromatherapy was found to have a very significant effect on breastmilk production observed from the changes in baby's weight.

Miyik-miyikan aromatherapy is a combination of essential oils of Champak, Cananga, and Fragrant Pandanus. The aroma of fragrant pandan leaves has a working mechanism similar to that of antidepressant drugs so that it is such good use to reduce postpartum stress. The main content of Cananga oil is monoterpene which provides a relaxing effect. It also exhibits gentle antioxidant activity. Besides, Champak essential oil is known to have the ability to resist fungal growth and great antioxidant activity. Therefore, the presence of natural anti-fungal elements in Champak essential oil will certainly help inhibit the breeding process of microorganisms (Maulida & Wahyuni, 2018). The combination of aromas resulted from these three components is very soft, fragrant, as well as liked by the respondents. The effect of the three scents provides more benefits than using just one aroma. This aromatherapy massage oil is made in the form of oil with the addition of olive oil or virgin coconut oil (VCO), so it is thicker than essential oils. Its use is to apply it to the body (Ali et al., 2015).

The application of Miyik-miyikan aromatherapy which is rubbed when doing back massage contains two physiological working mechanisms of the human body, namely the blood circulation system, and the olfactory system. Aromatherapy influences a person's psychological, memory, and emotional conditions (Dixon, Skinner,

& Foureur, 2013). Smell stimulates natural communication in humans. An odor arises from a molecule that evaporates into the air and enters the nasal cavity through the respiratory process. The vibrating hairs in the nasal cavity function as receptors to deliver electrochemical messages to a person's emotional and memory centers so that they are recorded by the brain as the olfactory process. The smell is transmitted to the olfactory center. Next, the neuron cell system interprets the smell and delivers it to the limbic system which is then sent to the hypothalamus to process and send throughout the body (Bolbol-Haghighi, Masoumi, & Kazemi, 2016; Smith, Collins, & Crowther, 2011).

The message that is delivered throughout the body will be converted into action by releasing neurochemical substances in the form of feelings such as pleasure, relaxation, calm, or arousal. The molecular size of aromatherapy is tiny so that it can easily penetrate the skin and enter the bloodstream. It is estimated that 5-25% essential oil at a concentration of 1-5% can be applied during massage, but only 4-25% will be absorbed. It takes a few seconds up to two hours for the aromatherapy oil to get in the skin and within four hours to leave the body through urine, sweat, and other excretion processes.

The data shows that from all treatment groups, the baby's weight loss which did not exceed 10%, on the seventh day occurred in 16 babies (53.3%), and on the 14th day, the baby's weight was 100% already above average birth weight. Aromatherapy in this study is entirely applied with the same method, namely through Back Massage. Massage can have both local and systemic effects on the circulatory system and even on the lymph. It can also influence autonomic stimulation, stimulate naturally, soothe, and reduce stress. As a result, postpartum mothers can breastfeed comfortably which can have an impact on the baby's weight since their nutritional needs are fulfilled (Dieterich, Felice, O'Sullivan, & Rasmussen, 2014).

Positive social behavior and physical as well as emotional bonding can affect the release of oxytocin. Stimulation in the form of touch, warmth, olfactory sensation, light pressure, and massage can increase oxytocin released in the blood circulation and in the cerebrospinal fluid. This is because oxytocin has an important role in the continuity of the lactation process. The release of oxytocin is influenced by the stimulation of the baby's suction which then causes an erection of the nipple and helps the production of breastmilk through the lactiferous sinuses to the pores of the nipple (Awano & Shimada, 2010; Carter, 2014).

Touch and massage techniques can activate A - β fibers and slow conduction of the C fiber subpopulation in the body so that it is associated with the release of the oxytocin hormone from the posterior pituitary. The activation of the A - β and C fibers induces changes in the insular cortex which is the part of the brain that deals with emotions and the interpretation of tactile stimuli. Therefore, giving back massage to women can increase levels of oxytocin, decrease levels of beta-endorphin, and reduce levels of adrenocorticotropin (ACTH). The hormone oxytocin plays an important role in the breastfeeding or lactation process. Physiologically, massage along the vertebrae through neurotransmitters will stimulate the medulla oblongata by sending a message to the hypothalamus in the posterior pituitary. This stimulates the oxytocin reflex or let-down reflex to secrete the oxytocin into the blood. By giving massage, oxytocin will further accelerate breastmilk production and provide comfort to mothers. However, the impact of a massage on the sensations a person feels is not always consistent (Delima, Arni, & Rosya, 2016; Uvna's-Moberg et al., 2020).

The touch received during massage treatments can improve the patient's self-image. Massage that is done by the family or relatives is able to foster relationships and communication, especially between husband and wife in terms of taking care of their baby. But on the other hand, every patient does not necessarily have the same preference for massage techniques. The results of massage are highly dependent on the patient group, the massage technique used, and the length of follow-up performed. This is in line with the results of this study, which are not the same although all aromatherapy is applied through massage (Dewi, Dasuki, & Kartini, 2017; Adams, White, & Beckett, 2010; Munevver, Füsün, & Lu, 2020).

5. Conclusion

According to the results and discussions of the research, there is a significant difference in baby weight on the seventh day after delivery in the Cananga group with p-value (0.019), and a significant difference in Miyik-

miyikan group with p-value (0.004). Also, on day 14, there is a significant difference in baby weight in the Cananga group with p-value (0.020) and a very significant difference between the Champak group showing p-value (0.008) and Miyik-miyikan group with p-value (0.004). Miyik-miyikan aromatherapy shows the most significant influence among other aromatherapies for increasing baby weight on day seven and day fourteen.

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