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The effectiveness of baby massage in increasing infant's body weight

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Abstract

Background: Baby care that is not optimal at a critical period can cause death in the baby. The Neonatal Mortality Rate (NMR) is set to be up to 12 per 1000 live births in 2030. Massage provides a stimulus to the systems in the body, a substance that regulates functions such as appetite, sleep, memory, and learning, regulates temperature, mood, behavior, the function of blood vessels, muscle contraction, regulation of the endocrine system, and depression.

Purpose: The purpose of this study is to determine the effectiveness of giving a baby massage to increase baby weight.

Method: A quasi- experimental approach, specifically focusing on one group pretest - posttest. The study took place from April 2023, in Ubud Health Center, Bali. The independent variable was baby massage while the dependent variables is a baby weight. Using purposive sampling and the Slovin formula, 30 participants were selected. Univariate statistical analysis was conducted, bivariate data analysis using Shapiro-Wilk dan Wilcoxon test.

Results: Shows an increase in average infant weight from 5.24 kg pre-test became to 6.19 kg after post-test and a p-value of 0.000 (<0.05), indicating that infant massage significantly affected infant weight gain.

Conclusion: Proves that giving massage to babies can help optimize baby growth by increasing baby weight. Infants who are massaged have increased levels of absorption enzymes and insulin so that the absorption of food extracts becomes better.

Keywords: Infant; Massage; Weight.

INTRODUCTION

Maternal health refers to the health of women during pregnancy, childbirth, and the postpartum period. While neonatal health refers to the health of newborns from 0-28 days of age. All phases, both maternal and neonatal health must be a positive experience, to ensure that women and their babies can achieve full health and well-being. Babies born in low-income countries (27/1.000), have a 10 times greater risk of dying in the neonatal period compared to *high-income countries*. Years 2021, around 2.3 million babies in the world died in the first month of life, known as neonatal deaths (Amru, Haryati, & Aziz, 2022). Neonatal deaths account for 46% of total under-five deaths, and most occur in the first

week. Similar to maternal deaths, some of these neonatal deaths can also be prevented. The government's policy in reducing MMR and IMR is realized through health service programs for mothers and neonates, which are expected to have coverage that is in accordance with the target and access to all targets with good quality (Arieska, 2024).

The results of the 2021 Indonesian Demographic and Health Survey showed that the IMR was 24 per 1000 live births. The infant mortality rate in Bali Province in 2021 was 5 per 1000 live births and in Gianyar Regency in 2021 there were 24 infant deaths. Infant care by conducting early detection of diseases suffered by infants and providing

stimulation to maintain health and stimulate infant growth and development (Bali Provincial Health Office, 2023).

Determinants of stunting are the first 6 months of babies not getting exclusive breastfeeding, low household socioeconomic status, premature babies, birth length less than normal, short baby mothers, and low education of the baby's mother. Increasing parental education and knowledge about stunting, use of family latrines according to health standards, improvement of sanitation infrastructure, delivery in health facilities, and health workers who assist in childbirth are factors that can increase child growth (Wu, Lye, & Briollais, 2017).

Baby massage is a sensory, motoric and cognitive stimulation in the form of touch therapy. Baby massage creates a positive relationship between parents and babies so it should be done by parents or caregivers in their daily care. Baby massage can be started immediately after the baby is born. By starting massage sooner, the baby will get greater benefits. Baby massage can be done every day from birth until the baby is 6-7 months old (Damanik, Simanjuntak & Sinaga, 2022). Regularly massaging your baby can provide benefits in influencing nerve and skin stimulation and producing hormones that have an effect on increasing your little one's appetite, such as the hormones gastrin and insulin which play an important role in the process of absorbing food (Gultom, 2015).

Touch therapy, especially massage produces changes physiological benefits that can be measured scientifically, including, measurement of saliva levels, urine hormone/eatecholamine levels, and EEG (Electro Encephalogram/brain wave image) examination. Massage Regularly bathing your baby is useful for maintaining your baby's health. Moreover, baby massage is cheap, easy and commonly done in Indonesia so it is not something new for our culture. Bainbridge and Heath stated that baby massage have biochemical effects and physical or clinical effects on the baby's body. For babies can develop communication, reduce stress or pressure and reduce pain or reduce pain (Ministry of Health of the Republic of Indonesia, 2023).

Touch therapy is a good part of stimulation in improving the relationship between mother and baby in bonding attachment and having a positive impact

on increasing the growth and development of the baby, in particular LBW or premature babies. Forms of touch therapy can be either direct touch between mother and baby (skin to skin) or baby massage (infant massage). Many studies have integrated touch therapy and baby massage in routine care of premature babies or LBW in the NICU (Goudet, Bogin, Madise, & Griffiths, 2019).

For mothers can increase breast milk production, understand baby's cues, increase confidence yourself and understand the baby's needs. In addition, the benefits of baby massage are in general, it can increase body resistance, improve blood circulation blood and respiration, stimulates digestive and excretory functions, increase weight gain, reduce stress and tension, increase alertness, make sleep deeper, reduce pain (such as bloating and stomach ache), improving the inner connection between parents and babies, and increase breast milk production (Arieska, 2023).

Massaged babies, the production of these two hormones increases so that appetite absorption increases. Increased appetite will then make their weight increase. Massaged babies will experience increased *vagus nerve tone* (10th brain nerve) which makes the levels of gastrin and insulin absorption enzymes increase so that absorption of food essence becomes better, better food absorption will cause babies to get hungry quickly and therefore babies will breastfeed more often (Dewi, Ramadhini, & Aswan, 2021). Body weight is an indicator to assess the results of the increase or decrease of all tissues in the body (bones, muscles, fat, body fluids) so that the child's nutritional status or growth and development will be known. Body weight can also be used as a basis for calculating drug doses (Astriana, & Suryani, 2017).

Body weight is the most important and most frequently used anthropometric measurement in newborns (neonates). Body weight is used to diagnose normal babies or low birth weight babies. Toddlers, body weight is used to see the rate of physical growth and nutritional status, unless there are clinical abnormalities such as dehydration, ascites, edema, and the presence of tumors. In addition, body weight can be used as a basis for calculating drug and food doses (Hayati, & Wahyuni, 2019).

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The effectiveness of baby massage in increasing infant's body weight

Previous research conducted infant massage is effective in increasing the average infant weight and average sleep time (Wintoro, & Wahyuningsih, 2022). Likewise, the results of research found that there was a significant difference in infant weight before and after massage in the group intervention. From the results of this study, it is known that baby massage is very effective in improving baby's weight. So baby massage can also be used as an intervention in midwifery care. in babies so that the baby's growth and development can be achieved optimally (Santri, Idriansari, & Girsang, 2014).

RESEARCH METHOD

A quasi- experimental approach, specifically focusing on one group pretest - posttest. The study took place from April 2023, in Ubud Health Center, Bali. The independent variable was baby massage while the dependent variables is a baby weight.

Using purposive sampling and the Slovin formula, 30 participants were selected, who met specific inclusion and exclusion criteria. The inclusion criteria required infants aged 0-12 months, infants with low weight or at risk of stunting (based on WHO percentiles), and mothers or caregivers willing to provide written consent, while exclusion criteria involved Infants with chronic illnesses, congenital abnormalities, or medical conditions that may affect growth, such as metabolic disorders, infants who have undergone other intervention programs to improve weight gain, such as intensive nutritional

therapy, infants with skin conditions that hinder massage application, such as dermatitis or skin infections.

Data collection utilized, prepare a warm room, baby massage oil, clean pad, and scale. Make sure hands are clean and baby is in good health. the steps of the massage include chest: gentle movements from the center of the chest to the shoulders. arms: massage from shoulder to wrist, including fingers. abdomen: circular movements in a clockwise direction. legs: massage from thigh to ankle, including the sole of the foot. back: circular movements from the neck to the hips. Massage was performed bi-daily for 3 weeks, 15-20 minutes per session. Weigh the baby before and after the intervention to measure weight change. Record the weight and implementation of each massage session.

The data was analyzed following a step-by-step process, beginning with a normality test using the Shapiro-Wilk test. With p-values greater than 0.05, the data was determined to follow a normal distribution. The analysis proceeded with a univariate test to determine the frequency distribution of respondents characteristics, followed by bivariate analysis using wilcoxon test. All analyses were conducted using SPSS 24. This research has obtained permission from the Research Ethics Committee of the High School of Health Sciences Buleleng with number. KEPK4210823.

RESEARCH RESULTS

Table 1. Characteristic of the Participants (N=30)

Variables	Results
Age (n/%)	
Age (Mean±SD)(Range)(Month)	(3.74±1.506)(1-6)
1-3	14/53.3
>3-6	16/46.7
Education (n/%)	
Elementary Education	9/30.0
High School/Vocational School	19/63.3
College	2/6.7
Employment (n/%)	
Housewife	19/63.3
Employee	11/36.7

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Table 1. shows characteristics of participants with a mean age and standard deviation (3.74 ± 1.506) ranging from 1-6 months. That most infants were in the one to three months age group (53.3%). Most respondents had a secondary education level (63.3%) and worked as housewives (63.3%).

Table 2. Effect of Baby Massage to Weight Gain

Variable	Min	Max	Mean $\pm$ SD	p-value
Pre-test	3.5	8.1	5.24 $\pm$ 1.29	0.000
Post test	4.4	8.9	6.19 $\pm$ 1.28	

Table 2 shows an increase in average infant weight from 5.24 kg pre-test became to 6.19 kg after post-test and a p-value of 0.000 (<0.05), indicating that infant massage significantly affected infant weight gain.

DISCUSSION

The analysis shows that the age group of 1–3 months requires close monitoring of physical and nutritional growth. The intervention group had more respondents in this age range, while the control group had more in the 3–6-month range. Babies aged 0–6 months need extra attention from parents or caregivers, including adequate nutrition through exclusive breastfeeding and interventions like baby massage to support optimal growth and development (Irva, 2014).

The results of the data analysis obtained maternal education in both groups, namely the most with high school/vocational high school education. The education of parents, especially mothers, greatly influences the growth and development of children, so that mothers are able to apply information related to parenting patterns and stages of development that children go through. This increase in education has an impact on the experience and insight and ability of mothers to make decisions related to health (Kalsum, 2014). Research was found that respondents worked more as housewives. The mother's work is related to the time to care for babies at home. In this study, more mothers were housewives so they had more time to provide stimulation to babies with baby massage (Agustin, Arum, & Noviadi, 2020).

Univariate testing revealed that baby weight aligns with the minimum standard for normal growth, serving as a critical indicator for assessing increases or decreases across all body tissues, including bones, muscles, fat, and body fluids. This assessment helps determine the nutritional status

and overall growth and development of the child. By providing interventions such as baby massage, weight gain in babies can be stimulated more effectively (Carolin, Suprihatin, & Agustin, 2020). The results of this study demonstrate that babies who received routine baby massage interventions showed a significantly higher average weight gain compared to those in the control group who did not receive massage. This finding underscores the importance of baby massage as a practical and beneficial tool for supporting healthy growth and development in infants (Fitriyanti, Arsyad, & Sumiaty, 2019).

The results of the hypothesis test using the Wilcoxon test obtained an asymp.sig value of 0.000 <0.05 , so it can be concluded that baby massage is effective in increasing baby weight. Babies who are massaged will experience increased levels of absorption enzymes and insulin, improving the absorption of essential nutrients from food (Marni, 2019). This leads to babies becoming hungrier more frequently, prompting more frequent breastfeeding sessions, which in turn increases breast milk production. Additionally, massage stimulates the vagus nerve, enhancing food absorption and further increasing the baby's appetite, ultimately contributing to a noticeable increase in the baby's weight (Safitri, Lathifah, & Iqmy, 2021).

Baby massage is a touch therapy, especially massage produces changes physiological benefits that can be measured scientifically, including: measurement of saliva levels, urine hormone/eatecholamine levels, and EEG (Electro

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Encephalogram/brain wave image) examination (Aryastami, & Tarigan, 2017). Massage Regularly bathing your baby is useful for maintaining your baby's health. Moreover, baby massage is cheap, easy and commonly done in Indonesia so it is not something new for our culture (Karjono, & Febriani, 2023).

Baby massage is a type of tactile stimulation that can improve the performance of muscles, bones, and organ systems. According to Health and Bainbridge, baby massage activates the vagus nerve. This nerve will increase the capacity of the intestinal peristaltic, allowing stomach emptying to be faster and the baby to feel more hungry. Furthermore, baby massage can boost a baby's weight by improving blood circulation and metabolism (Bennet, Underdown, & Barlow, 2013). Baby massage improves favorable interactions between mother and baby when done under observation, making it simpler to mother and supply nursing to the baby. Baby massage has been found in several trials to improve mother-baby attachment. This identified differences in the nutritional status of newborns getting massage and infants not receiving massage (Guzetta, D'Acunto, Carotuneto, Berardi, Bancalle, Biagioni, & Cioni, 2011).

Baby massage can stimulate motor skills, help the sleep process, reduce anxiety and complaints. There is an increase in nutrients in the digestive tract and development of the child's mentality, making body temperature more stable and increasing gastrin and insulin hormones, which play a role in food absorption, resulting in faster weight gain for the baby (Hanifah, Djais, & Fatimah, 2019). Based on qualitative observations, it is known that confounding factors, such as nutritional intake obtained by the respondents of this study, also have a significant influence on the weight gain of the babies, suggesting that proper nutrition in conjunction with baby massage can further enhance the effectiveness of the intervention (Purwanti, & Mildiana, 2021).

CONCLUSION

This study proves that giving massage to babies can help optimize baby growth by increasing baby weight. Infants who are massaged have increased levels of absorption enzymes and insulin so that the absorption of food extracts becomes better.

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REFERENCES

- Agustin, I., Arum, K. A. S., & Noviadi, P. (2020). Pengaruh Pijat Bayi Terhadap Peningkatan Berat Badan Bayi Usia 1-3 Bulan. *Jurnal'Aisyiyah Medika*, 5(2).
- Amru, D. E., Haryati, S. D., & Aziz, H. (2022). Pengaruh Pijat Bayi Terhadap Kenaikan Berat Badan Bayi di Klinik Zada Care. *Healthcaring: Jurnal Ilmiah Kesehatan*, 1(1), 61-68.
- Arieska, R. (2023). The Influence Of Leaflet Media On Increasing Mothers' Knowledge And Attitudes Towards Toddler Visits At Integrated Healthcare Center. *JKM (Jurnal Kebidanan Malahayati)*, 9(1), 124-132.
- Arieska, R. (2024). Edukasi Gizi Seimbang Pada Remaja Di Wilayah BTN Pagesangan Pepabri Melalui Penggunaan Aplikasi Deteksi Dini Dan Edukasi Potensi Obesitas. *Alkhidmah: Jurnal Pengabdian dan Kemitraan Masyarakat*, 2(1), 171-176.
- Aryastami, N. K., & Tarigan, I. (2017). Kajian kebijakan dan penanggulangan masalah gizi stunting di Indonesia. *Buletin Penelitian Kesehatan*, 45(4), 233-240.
- Astriana, A., & Suryani, I. L. (2017). Pengaruh pijat bayi terhadap peningkatan berat badan pada bayi di BPS Masnori Teluk Betung Utara Kota Bandar Lampung. *Holistik Jurnal Kesehatan*, 11(2), 72-76.
- Bali Provincial Health Office. (2023). Profil Kesehatan Provinsi Bali. Accessed from: <https://www.diskes.baliprov.go.id/profil-kesehatan-provinsi-bali/>
- Bennett, C., Underdown, A., & Barlow, J. (2013). Massage For Promoting Mental And Physical Health In Typically Developing Infants Under The Age Of Six Months. *Cochrane Database Of Systematic Reviews*, (4).
- Carolyn, B. T., Suprihatin, S., & Agustin, C. (2020). Pijat bayi dapat menstimulus peningkatan berat Badan pada Bayi. *Jurnal Ilmiah Kebidanan Indonesia*, 10(02), 28-33.

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- Damanik, N. S., Simanjuntak, P., & Sinaga, P. N. F. (2022). Pengaruh Pijat Bayi Terhadap Peningkatan Berat Badan Pada Bayi Umur 0-6 Bulan. *Indonesian Health Issue*, 1(1), 83-89.
- Dewi, S. S. S., Ramadhini, D., & Aswan, Y. (2021). Efektifitas pijat bayi terhadap peningkatan berat badan bayi di ruang perinatologi Rumah Sakit Umum Inanta Kota Padangsidempuan. *Jurnal Akademika Baiturrahim Jambi*, 10(1), 170-175.
- Fitriyanti, Y. E., Arsyad, G., & Sumiaty, S. (2019). Pengaruh Pijat Bayi Terhadap Peningkatan Berat Badan. *Jurnal Bidan Cerdas*, 1(3), 144-150.
- Gultom, D. Y. (2015). Efektifitas Pijat Bayi terhadap Peningkatan Berat Badan Bayi Prematur di Ruang Perinatologi Rumah Sakit Imelda Medan. *Jurnal Ilmiah Kebidanan Imelda*, 1(1), 28-34.
- Guzzetta, A., D'Acunto, M. G., Carotenuto, M., Berardi, N., Bancalè, A., Biagioni, E., & Cioni, G. (2011). The Effects Of Preterm Infant Massage On Brain Electrical Activity. *Developmental Medicine & Child Neurology*, 53, 46-51.
- Goudet, S. M., Bogin, B. A., Madise, N. J., & Griffiths, P. L. (2019). Nutritional interventions for preventing stunting in children (birth to 59 months) living in urban slums in low-and middle-income countries (LMIC). *Cochrane Database of Systematic Reviews*, (6).
- Hanifah, R. N., Djais, J. T., & Fatimah, S. N. (2019). Prevalensi Underweight, Stunting, dan Wasting pada Anak Usia 12-18 Bulan di Kecamatan Jatinangor. *Jsk*, 5(3), 3-7.
- Hayati, S., & Wahyuni, H. (2019). Faktor-Faktor Yang Berhubungan Dengan Kejadian Bayi Berat Lahir Rendah (BBLR) di Rumah Sakit Umum Daerah Kota Bandung. *Jurnal Keperawatan BSI*, 7(2).
- Irva, T. S. (2014). *Pengaruh terapi pijat terhadap peningkatan Berat badan bayi* (Doctoral dissertation, Riau University).
- Kalsum, U. (2014). Peningkatan berat badan bayi melalui pemijatan. *Jurnal Keperawatan Indonesia*, 17(1), 25-29.
- Karjono, M., & Febriani, E. P. (2023). Pemanfaatan Buku Kesehatan Ibu dan Anak dengan Keteraturan Kunjungan Pemeriksaan Kehamilan. *Empiricism Journal*, 4(2), 551-557.
- Ministry of Health of the Republic of Indonesia (2023). Profil Kesehatan Indonesia. Accessed from: <https://ayosehat.kemkes.go.id/pentingnya-mengukur-status-gizi-anak-secara-rutin>
- Mirzaee, K., Oladi Ghadikolaee, S., Taghi Shakeri, M., & Mousavi Bazzaz, S. M. (2015). Maternal knowledge on postpartum care in healthcare centers of Mashhad, Iran in 2013. *Journal of Midwifery and reproductive health*, 3(4), 456-464.
- Marni, M. (2019). Pengaruh pijat bayi terhadap peningkatan berat badan pada bayi. *Jurnal Kebidanan Indonesia*, 10(1), 12-18.
- Purwanti, T., & Mildiana, Y. E. (2021). Upaya Pencegahan Stunting Pada Bayi dengan Baby Massage. *Jurnal Abdi Medika*, 1(1), 1-7.
- Safitri, M., Lathifah, N. S., & Iqmy, L. O. (2021). Pengaruh pijat bayi terhadap peningkatan berat badan neonatus. *Midwifery Journal*, 1(2), 94-100.
- Santri, A., Idriansari, A., & Girsang, B. M. (2014). Faktor-faktor yang mempengaruhi pertumbuhan dan perkembangan anak usia toddler (1-3 tahun) dengan riwayat bayi berat lahir rendah. *Jurnal Ilmu Kesehatan Masyarakat*, 5(1).
- Wintoro, P. D., & Wahyuningsih, A. (2022). Efektifitas Pijat Bayi Terhadap Penambahan Berat Badan Bayi Di Klinik Kusuma Husada Bayat. *Involusi: Jurnal Ilmu Kebidanan*, 12(1), 23-28.
- Wu, Y. Y., Lye, S., & Briollais, L. (2017). The role of early life growth development, the FTO gene and exclusive breastfeeding on child BMI trajectories. *International journal of epidemiology*, 46(5), 1512-1522.

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