Women, Midwives, and Midwifery
https://wmmjournal.org

Publisher: Asosiasi Pendidikan Kebidanan Indonesia (AIPKIND)
http://aipkind.org

Baby Massage is Useful in Stunting Prevention

Sri Sukamti [1], Junengsih[2], Aticeh[3], Djuju Sriwenda[4]

[1,2,3] *Midwifery Department, Health Polytechnic Ministry of Health of Jakarta III, Jakarta Indonesia*
[4] *Midwifery Department, Health Polytechnic Ministry of Health of Bandung*
Corresponding author: sukamtisri@yahoo.co.id

ABSTRACT

Background: Stunting, underweight, and extreme thinness continue to plague Indonesian children's growth; stunting, underweight, and extreme thinness are still common in children under the age of five. One possible countermeasure is providing tactile stimulation (touch) to malnourished babies. Baby massage is a type of tactile stimulation that can help a baby's sense of touch develop.

Purpose: This study aims to determine the effect of baby massage on baby weight gain to prevent stunting in babies below the standard weight curve.

Methods: Quasi-experimental pre-posttest one-group design is used in this study. The study included 21 malnourished babies under two who weighed less than the normal weight curve. Purposive sampling was used to collect the samples. The study was conducted at an independent midwife clinic providing baby massage services. Data was collected using questionnaires and checklist sheets. The dependent t-test is used in data analysis to perform a correlation test.

Results: The results show a significant relationship between baby massage and baby weight gain (P-value 0.001; average weight in the first week was 7714.29 grams, 7909.52 grams in the second week, 8095.24 grams in the fourth week, 8180.95 grams in the fifth week, and 8228.57 grams in the sixth week). The p-value is 0.001, indicating a significant difference between the average increase in body weight from the first to the sixth week.

Conclusion: Weekly massages given consistently and repeatedly to malnourished babies can help them gain weight and prevent stunting. The recommended action is to improve the mother's ability to massage the baby independently to increase the baby's weight.

Keywords: *malnourished baby; baby massage; baby's weight*

BACKGROUND

Stunting, being underweight, and extreme thinness continue to disrupt the growth of Indonesian children, which still occurs frequently in children under the age of five (Kemenkes RI, 2022). Chronic malnutrition in children is characterized by stunting, which can have long-term consequences such as stunted growth, reduced cognitive and mental capacity, vulnerability to various diseases, decreased economic production, and poor reproductive quality (Mustakim et al., 2022). Over the last decade, the proportion of underweight (5.7%), overweight (6.7%), or stunted (22.0%) toddlers has increased (Kemenkes RI, 2022). According to the WHO, there are 45.5 million malnourished children under the age of five in the world, with 31.9 million, or roughly 70.2%, Asian residents (UNICEF et al., 2023).

Stunting rates in Indonesia have fallen from 24.4% in 2021 to 21.6% in 2022 in the last two years. However, this figure remains relatively high compared to the planned stunting reduction target of 14% for 2024 (Liza Munira, 2023). Banten is one of the provinces where the stunting rate remains above 20%, at 24.5% in 2021 and 20.5% in 2022 (Liza Munira, 2023). Tangerang City as one of the cities in Banten Province, the prevalence of nutritional status (weight according to age) in children under five was 2.74%, with a percentage of malnutrition of 14.19%, while children with good nutrition was 79.55% in 2022 (Liza Munira, 2023). The prevalence of nutritional status in children in the city of Tangerang (body length per age) is 3.70% in very short children, 14.87% in short children, and 81.43% in children with normal body length (Basrowi et al., 2022).

There are many factors that cause stunting in Indonesia, including the fact that babies are still found to be underweight and do not receive enough stimulation, resulting in babies who are thin and malnourished (WHO, 2018). To overcome stunting, many programs have been created and developed by the government, including providing supplementation during the antenatal period, monitoring and providing exclusive breastfeeding to babies (Hasanah et al., 2019; Munira, 2023). Monitoring baby growth and development provides good results by detecting early the possible risk of stunting in babies (Taqwin et al., 2022a), so that interventions can be carried out to prevent the risk of stunting (Ishikawa & Shiga, 2012).

The process of preventing stunting can be carried out early on for every mother who has a baby at risk of stunting, for example those with low body weight can get regular massage to increase body weight (Muliastiti et al., 2023; Taqwin et al., 2022). Previous research has looked at the impact of massage on weight gain in low birth weight babies or babies with substandard weight curves (Prastiwi & Alindawati, 2022; Sutarmi et al., 2022). Previous research to see the impact of baby massage on baby weight gain was mostly carried out in less than 1 month and was carried out without any minimum average limit for the baby's weight. For this reason, it is important to carry out this research to see the weight gain due to baby massage in babies whose weight is below the normal weight curve, and the intervention is carried out for more than 1 month.

OBJECTIVE

The aim of this research is to determine the effect of baby massage on increasing the weight of babies whose body weight is below the normal weight curve in an effort to prevent stunting.

METHOD

This research is a quasi-experimental study in one intervention group with pre-post test design, that measures the baby's weight before the intervention and after the intervention. The sample for this study was babies aged less than 2 years with a body weight below the normal curve for monitoring baby weight based on the calculation of child weight indicators according to WHO (Direktorat Gizi Masyarakat Kementerian Kesehatan RI, 2021). Samples were taken using a purposive sampling technique with the inclusion criteria being a 2-year-old baby with a weight below the normal curve or below the red line on the weight indicator on the toddler health card, no serious congenital defects and no comorbidities. Meanwhile, the exclusion criteria are that the baby is under special care from a doctor. This study intervened with babies by doing baby massage every week for 6 weeks and calculate the weight every time he has a baby massage. The massage was carried out by midwives who were trained and skilled in doing baby massage. Every baby to be massaged will be weighed first. This research uses a questionnaire containing questions to determine the characteristics of respondents and also a check list sheet to record examination result data. The research was conducted at the independent midwife clinic in the Tangerang area for 3 months. Data analysis used the t-Dependent correlation test to see differences in baby weight between groups before and after intervention. The study has been authorized by the URINDO Health Research Ethics Commission under number 471/SK.KEPK/URN/X/2023.

Results

Table 1. Distribution of Respondents Based on sex, mode of birth, and number of children

Variabel	N	%
Sex		
- Male	10	47,6
- Female	11	52,4
Mode of birth		
- Spontan	16	76,2
- Action (vacuum/ forceps)	5	23,8
Number of children		
- 1	10	47,6
- 2	8	38,1
- ≥3	3	14,3

Based on table 1, it is known that most of the babies were girls (52.4%), had a history of spontaneous birth (76.2), and were the first child (47.6%).

Table 2. Analysis of average birth weight, birth length, body length and baby head circumference

Variable	Means	Minimum-Maximum score	SD
Birth weight (gram)	2766,67	2500 - 4000	361,017
Birth length (cm)	48,76	46 - 53	1,300
Body length (cm)	80,33	66 - 93	7,716
Head circumference (cm)	44,52	42 - 46	1,601

Based on table 2, most babies have an average body weight of 2800 gram with an average body length at birth of 48 cm. The average body length when the first measurement was carried out before the intervention was 80.33 cm and the average head circumference when the first intervention was carried out was 44.52 cm.

Tabel 3. Analysis of the average baby's weight before and after baby massage

Birth weight	Means	Minimum-Maximum score	SD	P-value*
First measurement (gr)	7714,29	6000 - 9000	902,932	
1st week (gr)	7714,29	6000 - 9000	902,932	
2nd week (gr)	7909,52	6100 - 9400	908,243	< 0.001
3rd week (gr)	7995,24	6300 - 9500	882,879	< 0.001
4th week (gr)	8095,24	6400 - 9800	893,575	< 0.001
5th week (gr)	8180,95	6500 - 10000	929,311	< 0.001
6th week (gr)	8 228,57	6600 - 10000	919,317	< 0.001

* t test-Dependent

Based on Table 3, the results showed that there was a significant increase in body weight from the second week of each week to the sixth week after the baby massage, namely from the average body weight at the first measurement of 7714 grams to the average weight at the sixth week's measurement of 8229 grams (p-value < 0.001). Baby massage has been proven effective in increasing body weight in babies with low birth weight after two weeks after the first massage, with a p-value < 0.001.

DISCUSSION

Baby massage is an act of stimulating the baby's body with touch therapy on muscle tissue which aims to relax the body, optimize blood circulation and make the baby's growth and development more optimal (Ishikawa & Shiga, 2012). Babies who are massaged regularly every day show better physical and emotional development. By providing stimulation to muscle tissue and organ systems, massage can provide the answers the baby needs (safety, comfort and affection). Stimulation is important in a child's growth and development. Children who receive targeted and regular stimulation will develop more quickly than children who receive little or no stimulation at all (Boshoff, Nelmira & Malan, 2008; Sutarmi et al., 2022).

This study found that baby massage was effective in increasing babies' weight from below the WHO standard red line curve to above the average normal curve within six weeks of massage. Baby massage has many benefits, including being suitable for skin conditions, stimulating circulation, encouraging blood supply to muscles and tissues, improving digestion and preventing colic and constipation, helping with weight gain, reducing pain in the body by stimulating endorphins, increasing mobility and flexibility in joints, soothing, and improving sleep patterns (Muliastiti, Muawanah, Purnomo, et al., 2023). Regularly massaged babies will experience an increase in the tone of the vagus nerve (10th brain nerve). This process causes an increase in levels of absorption enzymes and insulin so that food absorption improves, and the baby will quickly feel hungry and breastfeed more often (Fauzia et al., 2022; ÖzdemiR & Yildiz, 2019). The impact is that the mother's breast milk production will be excellent in quality and quantity. Baby

massage can also bond with the person massaging, stimulate the blood circulation, heart, breathing, digestion, and immune systems of babies and children (reducing adrenaline and increasing corticosteroids so that babies are calm and their immunity increases), train babies to be calmer in dealing with stress, and also promote the growth of muscle structure and flexibility (Ishikawa & Shiga, 2012).

Increasing body weight during infancy is very necessary to prevent stunting. In this study, massaging babies whose weights are below the standard curve will increase their weight significantly. According to this research, baby massage will be effective in preventing stunting in the future because it contributes to increasing the baby's weight. The effect of massage on babies will increase appetite and facilitate the enzyme and hormone systems in the body, making it easier to absorb food essences. This research is also in accordance with several previous studies that stated that baby massages performed on small-weight babies, whether pre-term babies or babies with a body weight below standard, can increase body weight (Fatmawati et al., 2021; Muliastiti et al., 2023). Previous research has not produced findings on how often massage is given to babies, which can increase body weight (Fatmawati et al., 2021; Hasanah et al., 2019; Sutarmi et al., 2022). Meanwhile, in this current study, it was found that weight gain began to occur in the second week of the baby massage process, and there was an increase every week from the baby massage process.

This research provides the excellent benefit that baby massage can be done on babies whose weight is below the WHO standard normal curve on the Card for Healthy Toddlers who will increase their weight starting from the second week of the massage process. This baby massage can be done every week until the baby reaches its ideal weight. This research still needs further research using a larger sample.

CONCLUSION

The conclusion of this research is that baby massage has been proven effective in increasing the weight of babies below the red line of the baby weight curve. Regular baby massage can stimulate an increase in the baby's weight as one of the growth parameters so that, in the long term, it can prevent the baby from developing growth disorders such as chronic malnutrition or stunting. Education needs to be given to mothers so that mothers with underweight babies can stimulate their babies independently.

REFERENCES

Basrowi, R. W., Dilantika, C., Sitorus, N. L., & Yosia, M. (2022). Impact of Indonesian Healthcare Worker in Stunting Eradication. *The Indonesian Journal of Community and Occupational Medicine*, *2*(2), 107–113. https://doi.org/10.53773/ijcom.v2i2.66.107-13

Boshoff, Nelmira, E., & Malan, L. (2008). *The role of massage in stress, bonding and development of babies*.

Direktorat Gizi Masyarakat Kementerian Kesehatan RI. (2021). Petunjuk teknis penggunaan Kartu Menuju Sehat (KMS) balita. In *Petunjuk Teknis Penggunaan Kartu Menuju Sehat (Kms) Balita*. Kementrian Kesehatan RI.

Fatmawati, N., Zulfiana, Y., & Pratiwi, Y. S. (2021). The Effect of Baby Massage on Improvement Baby Weight. *Journal for Quality in Public Health*, *4*(2), 227–232. https://doi.org/10.30994/jqph.v4i2.212

Fauzia, R. L., Budihastuti, U. R., Faculty of Medicine, Universitas Sebelas Maret, Masters Program in Public Health, Universitas Sebelas Maret, Adriani, R. B., & Faculty of Medicine, Universitas Sebelas Maret. (2022). Meta-Analysis the Effect of Baby Massage in Increasing Quality of Sleep and Infant Body Weight. *Journal of Maternal and Child Health*, *7*(1), 64–74. https://doi.org/10.26911/thejmch.2022.07.01.07

Hasanah, D. R., Rohmatin, E., & Kurnia, H. (2019). EFFECT OF BABY MASSAGE ON BABY WEIGHT AGED 0-6 MONTHS. *Midwifery and Nursing Research*, *1*(2), 64. https://doi.org/10.31983/manr.v1i2.5287

Ishikawa, C., & Shiga, T. (2012). Massage Changes Babies' Body, Brain and Behavior. *Kansei Engineering International Journal*, *11*(3), 109–114. https://doi.org/10.5057/kei.11.109

Kemenkes RI. (2022). Profil Kesehatan Indonesia 2021. In *Pusdatin.Kemenkes.Go.Id*.

Liza Munira, S. (2023). *Hasil Survei Status Gizi Indonesia (SSGI) 2022*. KEMENKES RI.

Muliastiti, N. K., Muawanah, S., & Purnomo, M. Z. (2023). *Effect of Baby Massage on Weight Gain in Undernourished Toddlers In Wasegi Indah Village, Prafi District, Manokwari Regency*.

Muliastiti, N. K., Muawanah, S., Purnomo, M. Z., & Kebidanan, S. I. (2023). Effect of Baby Massage on Weight Gain in Undernourished Toddlers In Wasegi Indah Village, Prafi District, Manokwari Regency Pengaruh Pijat Bayi terhadap Peningkatan Berat Badan Pada Balita Gizi Kurang di Desa Wasegi Indah Kecamatan Prafi Kabupaten Manokwa. *Menara Journal of Health Science*, *2*(2), 216–223.

Munira, L. (2023). *Hasil Survei Status Gizi Indonesia (SSGI) 2022*. KEMENKES RI.

Mustakim, M. R. D., Irwanto, Irawan, R., Irmawati, M., & Setyoboedi, B. (2022). Impact of Stunting on Development of Children between 1-3 Years of Age. *Ethiopian Journal of Health Sciences*, *32*(3), 569–578. https://doi.org/10.4314/ejhs.v32i3.13

ÖzdemiR, S., & Yildiz, S. (2019). The Effects of Massage on theWeight Gain of Preterm Infants: A Systematic Review. *Journal of Traditional Medical Complementary Therapies*, *2*(1), 33–41. https://doi.org/10.5336/jtracom.2018-62885

Prastiwi, I., & Alindawati, R. (2022). Analyzing The Effect Of Increasing Growth And Motoric Development Of Infants Aged 6-11 Months Who Are At Risk Of Stunting With Baby Spa Treatment. *JURNAL KEBIDANAN KESTRA (JKK)*, *5*(1), 90–102. https://doi.org/10.35451/jkk.v5i1.1344

Sutarmi, S., Astuti, Y., Siswanto, S., Kunarti, E., & Susilowati, D. (2022). *Effectiveness of Healthy Massage on Growth and Development among Stunting Babies*.

Taqwin, T., Linda, L., Kusika, S. Y., Ramadhan, K., Radhiah, S., & Bohari, B. (2022a). The Effectiveness of Baby Massage in Stunting Prevention: Study Based on Body Length Gain in Infants aged 0 – 3 Months. *Scientific Foundation SPIROSKI Republic of Macedonia*, *10*(2020), 1184–1189.

Taqwin, T., Linda, L., Kusika, S. Y., Ramadhan, K., Radhiah, S., & Bohari, B. (2022b). The Effectiveness of Baby Massage in Stunting Prevention: Study Based on Body Length Gain in Infants aged 0–3 Months. *Open Access Macedonian Journal of Medical Sciences*, *10*(E), 1184–1189. https://doi.org/10.3889/oamjms.2022.8906

UNICEF, WHO, & WORLD BANK. (2023). Level and trend in child malnutrition. *World Health Organization*, 4.

WHO. (2018). *Reducing stunting in children: Equity considerations for achieving the Global Nutrition Targets 2025*.