JPM
Jurnal Pengabdian Mandiri
Volume 2 Issue 1, 2025 (37-44)
ISSN (*online*) : 3089-3070
Homepage : https://jurnalunived.com/index.php/MANDIRI
Doi : https://doi.org/10.37676/mandiri

Infant Massage As A Stunting Prevention Intervention: A Knowledge Assessment Of Mothers In Gedongan Village

Azkia Noorrahmah [1)]; Taufik Eko Susilo [2)]; Farid Rahman [3)]; Adnan Faris Naufal [4)]; Arif Pristianto [5)]; Tiara Fatmarizka [6)]
[1,2,3,4,5,6)] Department of Physiotherapy, Muhammadiyah University of Surakarta, Indonesia
e-mail : [1)] j120220134@student.ums.ac.id

Received [01-04-2025] *Revised [02-05-2025]* *Accepted [11-06-2025]*

Abstract. Stunting is a long-term nutritional disorder that ultimately affects a child's physical and cognitive development. One non-pharmacological intervention to prevent stunting is baby massage, which can stimulate appetite, improve blood circulation, and provide sensory and motor stimulation. This study aims to evaluate the effectiveness of education about baby massage in increasing mothers' knowledge of stunting prevention. The method used was a one-group pretest-posttest design involving 14 mothers in Gedongan Village, Sukoharjo. The intervention was conducted through socialization, baby massage practice, and the distribution of leaflets. The analysis results showed a significant increase in mothers' knowledge levels after the intervention, with the category of good knowledge rising from 64.3% to 92.9%, while the poor category decreased from 35.7% to 7.1% (p = 0.025). These findings indicate that education about baby massage effectively enhances mothers' understanding of stunting prevention. Therefore, similar educational programs should be integrated into community-based stunting prevention efforts to support optimal child growth.

Keywords: *Baby Massage, Child Growth, Health Education, Stunting.*

INTRODUCTION

Stunting refers to a condition of failure to thrive in children that results in shorter-than-normal stature and stunted thinking. This problem arises due to long-term inadequate nutritional intake, affecting the physical and mental development of children. (Hizriyani & Aji, 2021). Stunting can lead to long-term consequences that include impaired physical, immune system, neurological and cognitive development, and socioeconomic conditions (Cheng et al., 2017). The long-term impacts of stunting include reduced productivity in adulthood and an increased risk of intergenerational poverty. Based on the 2022 Indonesian Nutrition Status Survey (SSGI), the prevalence of stunting in Indonesia decreased from 24.4% to 21.6%. According to President Joko Widodo, stunting is not just a problem of stunted physical growth, but also affects cognitive development, mental health, and increases vulnerability to chronic diseases in the future. The government aims to reduce the stunting rate to 14% by 2024 through integrated nutrition and sanitation interventions (Ministry of Health, 2023). According to WHO data in 2019, the South-East Asia region has the second highest prevalence of stunting in the world (31.9%), after Africa (33.1%). Within this region, Indonesia ranks sixth with a stunting rate of 36.4%, higher than the regional average. Some countries that have a higher prevalence than Indonesia include Bhutan, Timor Leste, Maldives, Bangladesh and India (WHO, 2019).

Factors causing stunting include chronic malnutrition during pregnancy and the toddler period. Other causes include a lack of maternal understanding about health and nutrition from pre-pregnancy to postnatal, limited health facilities (including antenatal and postnatal services), and limited access to nutritious food, adequate sanitation and clean water. The most effective

interventions to address this multidimensionality should focus on the first 1000 days of life (HPK). Other determinants include maternal employment status, genetic characteristics (parental height), family financial condition, household structure, quality of care, exclusive breastfeeding, child health status, and instant food consumption habits (Wahdah et al., 2015) (Yuwanti et al., 2021). Additional risk factors for stunting include maternal formal education, maternal literacy about nutrition, timing of complementary feeding, micronutrient status (zinc and iron), history of infectious diseases and genetic influences (Aridiyah et al., 2015).

Gedongan Village in Sukoharjo Regency is one of the areas that still faces stunting challenges. Local data shows there are 20 pregnant women and 234 children in this village. Among them, two children were found to be stunted and four pregnant women had the potential to have stunted babies. Supplementary feeding programmes, food fortification and balanced nutrition education campaigns are some of the efforts that have been made to reduce stunting. However, an approach that only focuses on nutritional intake is not enough to solve this problem. Studies show that physical and psychosocial stimulation are also very important to support optimal child growth.

A recommended type of stimulation to help children's growth and development is massage therapy. As part of the effort to support the Healthy Indonesia programme, parents are expected to perform infant massage in their own homes. This is done by empowering the community to take promotive and preventive actions. In addition, infant massage is useful for improving the way mothers interact with their babies. This ability can be obtained by teaching mothers such as an understanding of child development and hands-on training in performing stimulation such as infant massage, thus providing experience for them (Dewi et al., 2023).

Infant massage has long been recognised as a beneficial method for improving infant health and well-being. Various studies have shown that infant massage can help train muscle strength, increase blood circulation, improve respiratory and digestive functions, and maximise infant growth and development (Apriningrum et al., 2021). In addition, infant massage can stimulate nerve receptors on the skin that are important for the growth of the central nervous system, improve brain function, motor coordination, and hormonal balance to support optimal growth of the baby. Infant massage is also known to increase appetite, thus contributing to stunting prevention efforts (Taufiqoh et al., 2022).

Extension results from Eka & Pristianto's research in 2021 showed that 59% of mothers had low knowledge of the role of physiotherapy and the benefits of baby massage, while 73% of toddlers had good sleep quality. In conclusion, baby massage can improve the quality of sleep of infants aged 11-25 months. According to Purwanti's research, 2021 after six weeks of baby massage, there was a significant weight gain, which was 100% (20 babies). At the age of 3-5 months, the increase in baby weight ranged from 705-890 grams, while the age of 6-11.8 months was 560-650 grams. Before the intervention, there were four undernourished infants and 16 well-nourished infants. The results of this study show that infant massage can be an effective effort in preventing stunting, because the average weight gain after massage is above the average normal growth.

Prevention of stunting can be done since the First 1000 Days of Life, which is from pregnancy until the child is two years old. In this golden period, providing the right stimulation, such as infant massage, can support optimal development of gross motor, fine motor, language skills, and child independence (Gani et al., 2023). Stunting in children has an impact on cognitive function, including low levels of intelligence, which will affect the quality of human resources in the future. Various factors cause stunting in children under five, and these components are related to each other. Interventions during the first 1,000 days of life are the most effective in reducing stunting rates in the community (Mitra et al., 2020). Massage therapy is also a simple and affordable complementary intervention to help increase infant weight gain,

strengthen the emotional bond between mother and child, and create a comfortable social atmosphere for infants.

Infant massage should be done when the baby shows signs of being 'ready', i.e. in a relaxed state after bathing in the morning or evening. Ideally, the baby is in good health, not sleepy, and not hungry. It is important to avoid massaging the baby immediately after eating, while sleeping, or when the baby is fussy and does not want to be massaged, as this can actually make him uncomfortable. Massage should only be given when the baby is completely calm and co-operative. (Roesli, 2016 as cited in Masruroh et al., 2022). Massage stimulation can be done at any time according to the wishes of the parents, and can be done every day. Massage in the morning before bathing is the right time, because the remaining massage oil will be easier to clean and the baby will be more cheerful. While baby massage at night is also beneficial because after the massage, babies tend to feel relaxed and sleepy, which helps improve their sleep quality (Setiawandari, 2019).

Although the benefits of infant massage are well known, many mothers still do not understand how to use the right techniques and the positive effects on their child's growth. In Indonesia, research shows that only 30% of mothers know the correct technique for infant massage (Purwanti, 2021). In some areas, such as Gedongan Village, infant massage is not commonly practised as part of infant care due to a lack of socialisation and assistance. This situation indicates a gap between knowledge and practice in the community that needs to be addressed to optimise stunting prevention. This study aimed to measure the level of knowledge of mothers in Gedongan Village about stunting and the benefits of infant massage in supporting child growth. The methods used included socialisation, baby massage practice, and distribution of leaflets as a guide to proper massage techniques. Evaluation was conducted by comparing changes in mothers' knowledge before and after the intervention through pre-test and post-test. The results of this study are expected to provide a new understanding of the effectiveness of infant massage in supporting child growth and increase mothers' awareness to apply this method as part of infant care. In addition, this study is expected to contribute to the development of community-based health programmes that are more effective in preventing stunting in Indonesia.

RESEARCH METHODS

This study used a pre-test and post-test design with one group (before-after design) to measure changes in mothers' knowledge of infant massage techniques and its relationship with stunting prevention. The study subjects consisted of 14 mothers who had children under the age of 2 years. The activity began with filling out a pretest questionnaire to assess the level of knowledge and understanding of mothers regarding healthy baby massage as an effort to prevent stunting in children. Furthermore, socialisation, baby massage practice, and distribution of leaflets containing explanations on how to improve mothers' understanding of the meaning, benefits, appropriate time, and steps to perform baby massage on healthy children were conducted. The socialisation was delivered in the form of a group discussion guided by the researcher. The material provided included the definition of infant massage, its benefits for infant health, and its relation to stunting prevention.

After the socialisation stage, a baby massage practice session was conducted. The massage techniques taught to the mothers refer to the guidelines contained in baby massage books that are proven to be safe and effective. In this session, the researcher demonstrated the correct baby massage technique, then the mothers were asked to follow and practice the technique with direct guidance. Each practice session lasted about 7 minutes, and mothers were advised to massage their babies 2-3 times a day for maximum benefit. This activity was also attended by midwives and posyandu cadres of Gedongan Village who helped the smooth implementation of the activity.

There are some contraindications in infant massage that need to be considered so that the massage does not negatively affect the baby. Firstly, avoid doing massage immediately after the baby has finished eating, as this can interfere with the digestive process. Secondly, do not wake up the baby just to get a massage, as this can disrupt his sleeping pattern. Thirdly, massage is not recommended when the baby is sick, such as fever or infection, as it can worsen his condition. Fourth, if the baby looks uncomfortable or refuses the massage, do not force it. Finally, avoid forcing certain positions when massaging so that the baby still feels comfortable and does not experience muscle tension (Susanti & Putri, 2020).As part of the intervention, each mother was also given a leaflet containing complete guidelines on infant massage techniques as well as important information about stunting and the benefits of infant massage in its prevention. This leaflet is designed as a reference for mothers after the intervention is completed, so that they can apply the baby massage technique correctly in their daily activities.

Evaluation of the activity will be conducted after the completion of the posttest questionnaire. The purpose of this posttest is to find out how much knowledge mothers in Gedongan Village have about infant massage to prevent stunting. The questions focus on what mothers know about stunting, the benefits of baby massage, the right time to do massage, and contraindications during baby massage as well as the correct baby massage technique. Pre- and post-test results will be compared to measure changes in mothers' knowledge of infant massage techniques and stunting prevention. Pre-test and post-test data will be analysed using the McNemar test to analyse changes in mothers‘ knowledge measured in categories so as to assess the extent to which the educational intervention can improve mothers’ knowledge of correct baby massage techniques and their understanding of the relationship between baby massage and stunting prevention.

RESULTS AND DISCUSSION

The activity was held at Posyandu Ngudi Laras 1 in Gedongan Village on Tuesday, 3 September 2024, 14 mothers with babies under 2 years old attended. Midwife Lusi in Gedongan Village together with posyandu cadres played a role in preparing the venue and coordinating participants during the activity. The results of this activity show an increase in knowledge, understanding, and skills through baby massage training to prevent stunting in children through pre-test and post-test. This study used quantitative methods to measure changes in mothers' knowledge about infant massage as an effort to prevent stunting, which was analysed statistically. McNemar's test was chosen because it is suitable for paired categorical data, such as pretest-posttest, which measures the change in the proportion of mothers‘ knowledge (’less' and “good”) before and after education. This test is effective in detecting changes in knowledge after an intervention and fulfils the assumptions of paired and dichotomous categorical data. The data can be seen in Table 1.

Table 1. Frequency distribution of mothers' knowledge about infant massage to prevent stunting in Gedongan Village

Knowledge Category	Pretest (n, %)	Posttest (n, %)
Less	5 (35,7%)	1 (7,1%)
Good	9 (64,3%)	13 (92,9%
Total	14 (100%)	14 (100%)
McNemar Test	0,025 (signifikan)	

Source: Primary data processed, 2024

Based on the table above, before education was conducted (pretest), 5 mothers (35.7%) had a poor level of knowledge, while 9 mothers (64.3%) had good knowledge. After being given

education (posttest), the number of mothers with poor knowledge decreased to 1 person (7.1%), while the number of mothers with good knowledge increased to 13 people (92.9%). There was a significant difference between the mothers‘ knowledge level before and after the socialisation, according to the McNemar statistical test results, with a p value = 0.025 ($p < 0.05$), indicating that there was an increase in mothers’ knowledge after attending the baby massage training. The educational intervention proved effective in increasing mothers' understanding of infant massage as a way to prevent stunting. Mothers became more aware of the importance of touching or stimulating the baby's skin so that the baby's growth and development goes well after attending the baby massage training.

Figure 1: Socialisation Activity

Mothers' better knowledge about baby massage, which is one form of stunting prevention, is influenced by several factors that support the effectiveness of this activity, namely the duration of the training which lasts for 2 hours, providing an opportunity for participants to understand the material more deeply, with space for discussion and questions and answers that help overcome confusion.

Figure 2: Practising Baby Massage

In addition, the level of engagement of participants in the hands-on infant massage sessions allowed them to apply the techniques taught, increasing their understanding and confidence in applying them at home. The friendly socialisation approach and use of simple language, plus visual aids such as pictures made the material easier to understand and remember. All these factors worked together to strengthen the mothers' understanding of stunting prevention through infant massage.

Figure 3: Photo Activity With Midwives And Posyandu Cadres

The results of the previous study showed that the level of knowledge and skills of the participants was very different before and after the training. The pretest score was 43.85%, while the posttest score increased to 97.69%, with a significance value of p 0.000 ($p < 0.005$) (Sulistyawati et al., 2023). Infant massage is effective in improving blood circulation, improving children's cognitive function, and the production of endorphin hormones, which make toddlers comfortable and calm. Massage can also improve the function of the vagus nerve, which makes children feel hungrier, and stimulates the production of enzymes that help digest food, which is very important for increasing children's weight (Cuciati et al., 2024).

Infant massage treatment is an effective and economical alternative to optimise infant weight gain, which in turn can support children's growth and development later in life. Infant massage has been shown to significantly increase body weight, so it is important for mothers to apply this massage technique in caring for their babies (Purwanti, 2021). The participants' knowledge was very different before and after the activity. After the activity, participants obtained an average score of 62.67 in the questionnaire; however, after the activity, participants' knowledge increased, with the average score reaching 80.33 (Marwang et al., 2022). Research showed that infants aged 0-3 months who received infant massage twice a week for one month experienced an increase in body length (Taqwin et al., 2022).

This significant increase in knowledge suggests that education is an effective method to provide mothers with an understanding of the benefits of infant massage in stunting prevention. The education provided allows mothers to better understand how infant massage can support their baby's health and growth. The results of this study confirm the findings of previous studies which showed that educational interventions can increase mothers' awareness and knowledge in caring for their children. The findings also have important implications for health workers and health extension workers, to more actively promote the importance of optimal infant care. A sustained education programme could help reduce stunting through improved early infant care.

CONCLUSION

From the results of this study, it can be concluded that education about infant massage as a step to prevent stunting has a significant effect on increasing mothers' knowledge and understanding of infant massage techniques. The results of the pretest and posttest evaluation showed a significant increase in knowledge, with a p value = 0.025 ($p < 0.05$), indicating that the educational intervention through baby massage training was effective in improving mothers' understanding. In addition, this education can also help mothers understand the benefits of infant massage in supporting children's health and growth, and increase their awareness of the importance of optimal infant care.

Factors that supported the success of this training included the adequate duration of the training, the involvement of participants in the practical sessions, and the friendly and easy-to-

understand approach to socialisation. The results of previous studies in line with this revealed that providing education can improve mothers' knowledge in caring for their children. Therefore, continuous education, especially by health workers such as midwives and health extension workers, is very important to reduce stunting rates and improve early infant care. Thus, infant massage can be an effective, affordable, and easy-to-implement method in supporting optimal child development and growth.

REFERENSI

Apriningrum, N., Rahayu, S., & Aisyah, D. S. (2021). Pemantauan Pertumbuhan Bayi Melalui Pelatihan Pijat Bayi Sehat Bagi Kelompok Ibu Di Kabupaten Karawang. *JURNAL KREATIVITAS PENGABDIAN KEPADA MASYARAKAT (PKM)*, *4*(5), 1168–1175. https://doi.org/10.33024/jkpm.v4i5.4252

Aridiyah, F. O., Rohmawati, N., & Mury Ririanty. (2015). Faktor-faktor yang Mempengaruhi Kejadian Stunting pada Anak Balita di Wilayah Pedesaan dan Perkotaan. *JAOCS, Journal of the American Oil Chemists' Society*, *3*(1), 163–170.

Cheng, W. D., Wold, K. J., Benzoni, N. S., Thakwalakwa, C., Maleta, K. M., Manary, M. J., & Trehan, I. (2017). Lactoferrin and lysozyme to reduce environmental enteric dysfunction and stunting in Malawian children: Study protocol for a randomized controlled trial. *Trials*, *18*(1), 1–9. https://doi.org/10.1186/s13063-017-2278-8

Cuciati, C., Uswatun, D., & Handayani, T. (2024). Upaya Pencegahan Stunting pada Balita Melalui Pelatihan Pijat Bayi di Kelurahan Bandung Kota Tegal. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*, *7*, 967–973. https://doi.org/10.33024/jkpm.v7i3.12693

Dewi, I. R., Centis, M. C. L., Senudin, P. K., Padeng, E. P., Saputri, E. D., Farida, K., Saul, M. H., Panggur, M. K., & Jina, L. H. (2023). Edukasi Tumbuh Kembang dan Pelatihan Pijat Bayi pada Ibu BALITA DI DESA DALO KECAMATAN RUTENG. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*, *6*, 4547–4565.

Eka, N. W., & Pristianto, A. (2021). PENYULUHAN PEMBERIAN BABY MASSAGE DALAM MENINGKATKAN KUALITAS TIDUR BAYI USIA 11 - 25 BULAN DI POSYANDU HARAPAN BUNDA. *Jurnal Pengabdian Mayarakat Multidisiplin*, *5*(1), 1–6. https://jurnal.univrab.ac.id/index.php/jpm/article/view/1952

Gani, M., Putri, C. P., Zakaria, R., Nurhidayah, N., Podungge, Y., & Claudia, J. G. (2023). Pencegahan Stunting Pada Bayi Usia 6 - 24 Bulan Dengan Pendekatan Humanis Melalui Teknik Baby Massage. *JMM (Jurnal Masyarakat Mandiri)*, *7*(2), 1910–1917. https://doi.org/10.31764/jmm.v7i2.13045

Hizriyani, R., & Aji, T. S. (2021). Pemberian ASI Eksklusif sebagai Pencegahan Stunting. *Jurnal Jendela Bunda*, *8*(2), 56–62. https://ojs.nchat.id/index.php/nchat/article/view/13

Kemenkes. (2023). *Prevalensi Stunting di Indonesia Turun ke 21,6% dari 24,4%*. Kementrian Kesehatan RI. https://www.kemkes.go.id/article/view/23012500001/prevalensi-stunting-di-indonesia-turun-ke-216-dari-244.html

Marwang, S., Rahman, S. A., Lestari, A., & Sudirman, J. (2022). Sosialisasi Pijat Dan Status Gizi Bayi Dalam Rangka Pencegahan Kejadian Stunting. *JMM (Jurnal Masyarakat Mandiri)*, *6*(2), 1159–1167. https://doi.org/10.31764/jmm.v6i2.7094

Masruroh, M., Pranoto, H. H., Widayati, W., Nurrohman, N., Kale, C. C., Aristiani, S. A., & Choifin, F. (2022). Pijat Bayi untuk Menstimulasi Pertumbuhan dan Perkembangan Bayi Usia 0-12 Bulan. *Indonesian Journal of Community Empowerment (Ijce)*, *4*(1), 50–57. https://doi.org/10.35473/ijce.v4i1.1614

Mitra, Lita, Mardeni, Aditia, N. E. O., Khairunisa, R., Roza, N. T., Kartilian, F., & Putri, T. F. S. (2020). Edukasi Pencegahan Stunting Pada 1000 Hari Pertama Kehidupan. In M. Dr. Mitra, SKM. (Ed.), *Widina Bhakti Persada Bandung* (Vol. 5, Issue 3). [enerbit Widina.

Purwanti, T. : M. Y. (2021). Upaya Pencegahan Stunting pada Bayi Dengan Baby Massage.

Jurnal Abdi Medika, *1*, 1–7. https://digilib.itskesicme.ac.id/ojs/index.php/jam/article/view/919

Setiawandari. (2019). Modul stimulasi pijat bayi dan balita. In *Research Gate* (Issue November 2019).

Sulistyawati, E., Yuliastuti, E., Rismaya, R., Radiansyah, M. R., Hakiki, D. N., Fauziyyah, A., & Ulfah, M. (2023). Peningkatan Pengetahuan Dan Keterampilan Kader Pos Binaan Terpadu (Pobindu) Dalam Produksi Makanan Sehat Berbasis Labu Kuning Untuk Para Lansia. *Jurnal Pengabdian Kepada Masyarakat*, *5*, 256–268. https://doi.org/10.33830/diseminasiabdimas.v5i2.6182

Susanti, N., & Putri, A. R. (2020). Penyuluhan Dan Pelatihan Fisioterapi Pada Balita Di Posyandu Balita Seruni XII Poncol Kota Pekalongan. *PENA ABDIMAS : Jurnal Pengabdian Masyarakat*, *1*. https://doi.org/10.31941/abdms.v1i1.1013

Taqwin, T., Linda, L., Kusika, S. Y., Ramadhan, K., Radhiah, S., & Bohari, B. (2022). 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

Taufiqoh, S., Aryunani, M. K., Anifah, F., Najahiyah, P. A., Rahmah, Salisah, V. N. A., Djunaidi, & Aprilia, Q. (2022). *Pelatihan dan Penerapan Terapi Komplementer Pijat Bayi dan Perbaikan Pola Makan sebagai Upaya Pencegahan Stunting pada Anak Balita di Wilayah Kerja PKM Tanah Kali Kedinding Kota Surabaya*. 0–13.

Wahdah, S., Juffrie, M., & Huriyati, E. (2015). Faktor risiko kejadian stunting pada anak umur 6-36 bulan di Wilayah Pedalaman Kecamatan Silat Hulu, Kapuas Hulu, Kalimantan Barat. *Jurnal Gizi Dan Dietetik Indonesia (Indonesian Journal of Nutrition and Dietetics)*, *3*(2), 119–130. https://doi.org/10.21927/ijnd.2015.3(2).119-130

WHO. (2019). *Child stunting*. World Health Organization. https://apps.who.int/gho/data/node.sdg.2-2-viz-1?lang=en#content

Yuwanti, Y., Mulyaningrum, F. M., & Susanti, M. M. (2021). Faktor – Faktor Yang Mempengaruhi Stunting Pada Balita Di Kabupaten Grobogan. *Jurnal Keperawatan Dan Kesehatan Masyarakat Cendekia Utama*, *10*(1), 74–84. https://doi.org/10.31596/jcu.v10i1.704