

**IMPROVING INFANT GROWTH THROUGH BABY MASSAGE:
A STUDY ON 3–6-MONTH-OLD BABIES IN TAMANSARI HEALTH CENTER, TASIKMALAYA****Tia Sri Sutiawati¹, Yanti Cahyati², Laila Putri Suptiani³, Meti Widia Lestari⁴, Helmi Diana⁵.**^{1,2,3,4,5} Poltekkes Kemenkes Tasikmalaya***Corresponding author:**yantinaufal@gmail.com**Article Info**

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Abstract

Infant weight that has not increased optimally is still a child health problem in Indonesia. One of the non-pharmacological interventions that can be given is infant massage. Infant massage has been shown to be beneficial in stimulating the nervous system and blood circulation, increasing appetite, and improving the quality of infant sleep, all of which contribute to weight gain. Purpose This study aims to determine the effect of infant massage on the weight of infants aged 3–6 months in the Tamansari Health Center, Tasikmalaya City. The method of this type of research is a quasi-experiment with a one group pretest-posttest design. Sampling was carried out using a purposive sampling technique of 20 infant respondents aged 3–6 months. The intervention in the form of infant massage was carried out for 15 minutes, once a week for 4 weeks. Data analysis using the Paired T-Test test, Results The average infant weight increased significantly. The results of the Paired T-Test test showed a p value = 0.007 in the intervention group. Conclusion Infant massage has a significant effect on increasing the weight of infants aged 3–6 months. Therefore, it is recommended for mothers to imagine regular baby massage as a form of beneficial growth and development stimulation.

INTRODUCTION

A baby is the first stage of a human's life after being born from the mother's womb. Infancy is a critical period of a person's development (golden period) because babies are already sensitive to the environment, and infancy is very short and cannot be repeated. This is what distinguishes children from adults. Children show characteristics of growth and development that are appropriate for their age (Sirait et al., 2024).

Babies have three primary needs that must be met by parents, namely physical-biological needs essential for brain growth, sensory development, and motor skills. Interpersonal and intrapersonal emotional intelligence through the need for affection and the need for stimulus or stimulation to

improve the working mechanisms of the sensory and motor systems. The most important aspect of a child's growth and development is the presence of stimulation or stimulus. Stimulation is a basic need that must be met. Stimulation plays a vital role in promoting the growth and development of babies, enabling them to develop optimally. (Aulia, 2021).

According to Marlina and Lestari (2019), weight is one of the key anthropometric indicators used to assess growth in infants and children. Efforts can be made to optimize weight in infants, in addition to the nutrition provided by the mother. Another way is to provide stimulation, commonly known as baby massage. Massage is one of the oldest treatment methods in the world.

Massage encompasses the art of healthcare and treatment that can relax stiff joints and unite body organs through touch. With the application of massage to the muscle tissue, blood circulation can be increased, allowing muscle tissue to be restored and repaired, thereby improving the functions of body organs as much as possible (Roesli, 2016).

In addition, continuous and routine stimulation can stimulate the development of brain cells and strengthen the connections between nerves that have been formed, thereby improving brain function automatically. Stimulation is provided by parents in various forms, including visual, verbal, auditory, tactile, and other types. Attention, warmth, touch, hugs, smiles, and affection given by parents are important stimulations in the early development of babies (Maya & Pratama, 2019).

Baby and toddler massage can be interpreted as a gentle form of communication through touch between mother and baby or toddler. Touch is a natural sensation in babies and toddlers, which can manifest in various forms, such as rubbing, massaging, or gentle stroking. If this action is performed regularly, it can serve as a form of stimulation and intervention that provides numerous benefits for children. Touch fulfills basic human needs to feel safe, comfortable, and loved. Touch is also an intrinsic factor in child development. Baby massage stimulation is tactile-kinesthetic stimulation, verbal communication, and the manifestation of parental love for children. The implications of limited touch in children involve significant effects on growth, development, and healthy emotional conditions. The therapeutic benefits of massage are emphasized by data from studies conducted (Yulizawati & Afrah, 2022).

The strongest message a child receives during his life is at birth itself, which comes from contractions during the labor process. In this process, prolonged uterine contractions push the baby through the birth canal while stimulating the peripheral nervous system and vital organs in preparation for life outside the womb. By continuing a pattern of physical stimulation similar to baby or toddler massage, parents can help increase their child's resilience (Setiawandari, 2019).

According to data from the Tasikmalaya Health Office in December 2024, the Tamansari Health Center had a number of toddlers who experienced weight loss. Based on the initial data survey conducted by researchers, the number of babies in December-January in the Tamansari Health Center work area was 148 babies, of which 56 babies did not experience weight gain. Interviews conducted by researchers with 5 mothers, 3 of whom said that the baby's mother did not know how to care for the baby's health by stimulating baby growth using baby massage. Judging from the description of the problem of baby weight not increasing well enough and the lack of knowledge of mothers regarding the importance of stimulating baby growth using baby massage.

The study was conducted in Mulyasari Village, Tasikmalaya City from April 14 to May 22, 2025. Located at Posyandu Ciburuyan 1, Ciburuyan 2, Sukamaju 1, Sukamaju 2 and Perum Mitra Batik. Because in the Posyandu there are still many babies who are underweight, the researcher is interested in conducting a study on "The Effect of Baby Massage on the Weight of Babies Aged 3-6 Months in the Tamansari Health Center Work Area, Tasikmalaya City".

The specific objectives are to: Get an overview of the weight of babies aged 3-6 months before and after baby massage. Analyze the difference in weight in babies aged 3-6 months before and after baby massage.

Similar studies to this study include Farida et al. (2020). The effect of baby massage on increasing the frequency and duration of breastfeeding in infants aged 1-3 months, with an experimental research design, the results showed that there was an effect between baby massage and the frequency of breastfeeding in infants and there was no effect between baby massage and the duration of breastfeeding in infants. The difference in this study was in the variables, place and time of the study.

Mardiana L and Diah Eko Martini (2017), The effect of baby massage on the quantity of sleep in infants aged 3-6 months in Munungrejo Village, Ngimbang District, Lamongan Regency, with a Pre-Experimental Design with a One Group Pretest-posttest design, the results showed that the quantity of baby sleep after massage was higher (13.77 hours/day) than before massage (12.42 hours/day) with an average increase of 1.29 hours/day. The differences in this study are in the research population, research design, research variables, research location and research time.

Pamungkas, Bintang Aji (2021). The effect of baby massage on the sleep quality of babies aged 0-6 months at the Kartasura Health Center, with an experimental research design, the results showed that there was an effect of baby massage on the sleep quality of babies aged 0-6 months where babies who received baby massage were 15 times more likely to have good sleep quality than babies who did not receive baby massage. The differences in this study were in the research population, case control research design, data collection using a questionnaire.

METHOD

The type of research used is quantitative research. The research method used is a descriptive analytical approach with a quasi-experimental design, namely one group pre-test and post-test design to determine the effect of baby massage on the weight of babies aged 3-6 months. All units were observed during the observation. The population in this study were all babies born in the Tamansari Health Center working area, totaling 56 babies. The number of samples taken was 20 samples.

The sampling technique used was purposive sampling, because it was in accordance with the predetermined sample criteria. In this study, every baby who met the research criteria and was not accidentally identified during the data collection process would be included as a subject. The inclusion criteria in this study were a history of normal pregnancy and babies with exclusive breastfeeding aged 3-6 months; the exclusion criteria in this study were babies with congenital abnormalities and sick babies. Data collection was carried out after the intervention using the observation method, including weighing the baby's weight. Treatment or intervention in the form of providing baby massage once a week for 1 month, each massage for 15 minutes to the respondents. Massage was performed at 5 Posyandu consisting of Sukamaju 1, Sukamaju 2, Ciburuyan 1, Ciburuyan 2 and Perum Mitra Batik from April 14 to May 22, 2025 and the massage was performed by researchers who had been tested fit to carry out baby massage and assisted by two enumerators who had received previous training by the researchers. Measurements were taken after the baby massage was performed every 30 days for 1 month. Before further analysis was carried out, the data were tested for normality using Shapiro Wilk to determine whether the weight data before and after the intervention were normally distributed. If the data is normally distributed ($p > 0.05$), then a parametric test such as the Paired T-test is used to compare the average weight before and after the intervention. If the data is not normally distributed ($p < 0.05$), then a non-parametric test such as the Wilcoxon Test is used.

RESULTS AND DISCUSSION

The following is the average weight of babies before and after massage:

Table 1.

Average distribution of baby weight before and after baby massage

interventional baby massage	N	Mean	SD	Minimum	Maximum
before	20	6638.00	565.456	5520	7700
after		6793.50	614.186	5740	7850

Table 1 shows that in the intervention/experimental group, before the baby massage was given, the average weight was 6638.00 with a standard deviation of 565.456, a minimum value of 5520, and a maximum of 7700, with a 95% confidence level. The average baby weight after the baby massage was between 5740 and 7850 grams and the average increase in baby weight is around 100-300 grams after massage. The results of the analysis are in Table 2 above:

Table 2.
Differences in frequency of baby massage on baby weight intervention

Variabel	Mean	SD	P Value
Baby weight after intervention	6793.50	614.186	0.007

Based on the results of the statistical test, a p-value of 0.007 (<0.05) was obtained, indicating a significant difference, and it can be concluded that there is a significant difference in weight gain due to baby massage.

DISCUSSION

The results of the study showed that the average weight of infants after the intervention (baby massage) was 6,793.50 grams with a standard deviation of 614.186. Respondents who were given baby massage treatment were massaged for 15 minutes once a week. The average increase in baby weight scores after baby massage reached 100-300 grams after baby massage. This study shows that baby massage carried out routinely for four weeks has a significant effect on increasing the weight of infants aged 3-6 months. This is evidenced by the results of the Paired T-Test on the intervention which showed a p value = 0.007.

These results are in line with the studies of Setiawandari (2019) and Pamungkas (2021) which show that baby massage can improve digestive system function and increase appetite, thus impacting weight gain. In addition, Farida et al. (2020) also showed the effect of baby massage on increasing the frequency of breastfeeding which indirectly contributed to weight gain. Clinically, infant massage can be recommended as a simple, safe, and non-pharmacological intervention to support infant growth, especially in increasing the weight of infants at risk of malnutrition. However, this study has several limitations. The relatively small sample size ($n=20$) may affect the generalizability of the study results. The absence of a comparison group without any intervention at all means that the influence of external factors such as nutritional intake and sleep patterns cannot be fully controlled. The study was conducted in a relatively short period of time (4 weeks) so that its long-term effects cannot be evaluated.

Massage also enhances the mechanism of food absorption through the vagus nerve, thereby increasing the baby's appetite, which can directly contribute to weight gain (Syaukani, 2018). The release of insulin will facilitate the metabolism of glucose. The secretion of hydrochloric acid, pepsinogen, pancreatic enzymes, and increased bile flow from the liver will facilitate the digestion of

food. When food reaches the duodenum, it stimulates the release of cholecystokinin, which in turn stimulates intestinal motility. With increased gastric and intestinal motility, mixing, pushing food, and nutrient absorption will be facilitated (Guyton, 2018).

The baby's initial weight is measured before receiving a massage, and subsequent weighings are conducted during the last week. After giving the baby a massage every week, the results of the baby's weight development can be observed, showing whether there is an increase, a decrease, or no change. The results of the data obtained show that the average weight of babies aged 3-6 months who received baby massage treatment every week experienced an average increase in weight. This suggests that giving baby massage is the most effective and cost-effective alternative in efforts to increase the baby's weight optimally, with notes. Growth is an increase in the size and number of cells. Growth is a quantitative phenomenon that can be measured in units of weight or length, such as body weight or height. At the same time, development refers to an increase in complex abilities or skills with a regular pattern. It can be said to be the maturation of the central nervous system, including the development of emotions, intellectual abilities, and behavior, as a result of interaction with the environment (Fitriyanti, Y.E., 2019).

One of the factors that can improve infant growth and development is providing stimulation (Narendra & Soetjningsih, 2008). Baby massage has many benefits, one of which is increasing the baby's weight because babies who are massaged will experience increased vagus nerve tone (10th brain nerve), which can cause increased levels of gastrin and insulin absorption enzymes, thus better food absorption, therefore the weight of babies who are often massaged will increase than those who are not massaged (Roesli, 2011; in Elya, De., Ridwan, M., & Anggraeni, Y, 2018). According to Mutmainah, M. (2016).

Body weight is the result of an increase or decrease in all tissues in the body, including bones, muscles, fat, and body fluids. Currently, body weight is used as the best indicator to determine the nutritional status, growth, and development of children because it is sensitive to even small changes. Weight gain in infants during the first year of life is typically good if the baby receives adequate nutrition, particularly from birth to the first 6 months, with a weekly weight gain of 140-200 grams. The baby's weight is approximately double the birth weight by the end of the first six months. Between the ages of 6 and 12 months, the weekly weight gain increases by 85-400 grams. Birth weight at the end of the first year (Feronika, S., & Nasution, N, 2020).

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Research conducted by Yuliana, Suharto, and Handayani (2018) on infants aged 6-12 months found that the increase in weight of infants who were massaged for 4 weeks, done routinely, was higher than that of infants who were not massaged. This happens because stress hormones in infants decrease, allowing them to suckle more breast milk, which in turn increases breast milk production and body weight. There is a lesser increase in appetite and three infants with a constant appetite. Thus, the effect of massaging the infant more often, at a regular frequency, will continue to increase the infant's appetite.

It is known that babies who experience average weight gain typically receive adequate nutritional intake in the form of breast milk. Those who do not experience weight gain get nutritional intake in the form of MPASI, and some get breast milk but have also been given MPASI. This certainly affects the baby's digestive system, which is not yet able to properly digest nutrients in the form of complementary foods that do not meet the baby's nutritional needs, resulting in suboptimal growth. Additionally,

mothers do not breastfeed or provide breast milk to their babies every 2-3 hours, which certainly affects the process of fulfilling the baby's nutritional needs. Moreover, mothers who have given MPASI to their babies rarely breastfeed because they think that their babies need MPASI rather than breast milk, while babies aged 0-6 months should get exclusive breast milk; as explained earlier, several factors can affect weight gain in babies, including the mother's knowledge of nutrition, health status, baby psychology, and personal factors and preferences cannot be ruled out as confounding factors in this study. Socioeconomic status and food culture have a significant impact on the health status of babies. However, this study explicitly demonstrates that providing a baby massage can help optimize baby growth by increasing the baby's weight (Yuniati, 2017).

At the age of 6 months, babies typically become more active in moving as they begin to learn to sit and crawl. In addition, babies at this age have also begun receiving solid foods, such as MPASI. If the food intake is minimal, then the baby will use the energy for activities and growth, as daily activities also require a significant amount of energy. Therefore, it is essential to ensure that nutritional intake is healthy and balanced and also contains sufficient calories for optimal energy every day. These results show that baby massage is beneficial for baby growth. These results are beneficial for Baby Massage, specifically increasing appetite. Increased appetite will increase the baby's weight. The factors that can affect a child's growth to be normal or abnormal are not only influenced by providing baby massage stimulation but also by external (environmental) and internal (genetic) factors. External factors (environment) are supporting factors that determine the achievement of optimal genetic potential, namely prenatal environmental factors, factors that affect child growth before birth or while still in the womb, and postnatal environmental factors (after birth) consisting of nutrition, family or community culture, social status, family economy, sports, or physical exercise of children, health status and child stimulation. At the same time, internal factors (genetic) are congenital and pathological factors, gender, and race or ethnicity (Roesli, 2016).

CONCLUSIONS

There was a significant increase in weight in infants aged 3–6 months after being given infant massage intervention. Infant massage was carried out for 15 minutes once a week for 4 weeks regularly, and had a positive effect on infant weight gain with a p value of 0.007.

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