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Effects of Tuina Massageand Johnson Massage on Weight Gain in Babies Aged 0-12 Months

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ABSTRACT

The first year of life is a crucial phase in a child's growth and development, where proper nutrition and sensory stimulation significantly influence physical outcomes, such as weight gain. Infant massage is one of the tactile stimulations that can help improve weight and overall well-being. This study aims to examine and compare the effects of Tuina massage and Johnson's massage on the weight gain of infants aged 0–12 months at the Patia Public Health Center, Pandeglang, in 2025. A quasi-experimental design with a one-group pretest-posttest approach was employed. Thirty infants were selected using purposive sampling and divided into two intervention groups, with 15 infants receiving Tuina massage and 15 receiving Johnson's massage. The massages were conducted three times over a two-week period. Data were collected using observation sheets and body weight measurements before and after the intervention. The results revealed that both massage techniques significantly increased infant weight. Infants who received Tuina massage experienced an average weight increase from 5,607 kg to 6,687 kg, while those who received Johnson's massage increased from 4,840 kg to 5,933 kg. Statistical analysis using the Paired Sample T-Test showed a significant difference between the two methods ($p = 0.025$), indicating that Tuina massage was more effective. In conclusion, both Tuina and Johnson's massage positively affects infant weight gain, with Tuina showing greater efficacy in promoting infant growth.

Keywords: Tuina massage, Johnson massage, infant weight gain, infants 0–12 months

INTRODUCTION

Infancy is a golden and crucial period in human development. This period is called a critical period because children are sensitive to their environment. It is also called a golden period because the time from birth is very short and cannot be repeated. Infancy is a golden period in a child's growth and development, so it requires special attention. A child's growth and development depend on both internal and external factors. One of the most important

factors after birth is adequate nutrition, which has a significant impact on a child's growth and development, especially in the early stages of life, from birth to 12 months.(Aisy & Kurniasari, 2022).

Data from the World Health Organization (WHO) in 2020 stated that the prevalence of low birth weight babies worldwide is 15 to 20 percent, or approximately 20 million births per year. Low birth weight is more common in developing countries than in developed countries. The prevalence of stunting and malnutrition is a significant global problem for infant weight. More than 22% of children under five worldwide suffer from stunting or malnutrition, a direct result of inadequate nutritional intake.(Fitriyanti et al., 2024).Globally, the infant mortality rate in 2022 ranged from 0.7 to 39.4 deaths per 1,000 live births. The causes of neonatal deaths include premature birth, birth complications (asphyxia/birth trauma), neonatal infections, and congenital abnormalities. In Indonesia, the number of infant deaths reached 20,882 in 2022 and increased to 29,945 in 2023. The highest rates of infant mortality are due to low birth weight (LBW) or prematurity and asphyxia.(Health Workers & Ministry of Health, 2023). Based on the results of the 2020 Long Form Population Census of the Central Statistics Agency (BPS) of Banten Province, the infant mortality rate (IMR) in Banten Province in 2020 was 16.15 per 1,000 live births, and the infant mortality rate in Pandeglang according to BPS (Central Statistics Agency) in 2020 was 17.95 per 1,000 live births.(Central Statistics Agency, 2020). In Pandeglang, there were 15,333 toddlers aged 0-59 months who did not gain weight in 2024 (Health Office, 2024).

In the first week, the baby's weight after birth will decrease by approximately 10% (ten percent) of its birth weight. After the end of the first week, the baby's weight will return to its original weight (at birth) until the tenth to fourteenth day. Although it is normal for a baby to lose weight in the first week of life, if the baby's weight does not increase by the age of two weeks, the baby will experience a metabolic disorder that will impact its growth and development.(Gasma & Sukarta, 2023).

Optimal infant growth and development requires stimulation. This stimulation is tactile and can be achieved through infant massage. Infant massage is considered a form of tactile stimulation that can support and maximize the growth and development of infants and toddlers. Tactile stimulation through infant massage can stimulate the muscles, bones, and organ systems of the body to function optimally.(Ximenes et al., 2024).

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Massage is one of the methods of modern health science that has scientifically proven that touch therapy and massage on babies have many benefits, especially if done by the baby's parents themselves.(Carolin et al., 2020)Research on the effect of infant massage on infant weight gain found that the control group gained 6.16%, while the massaged group gained 9.44%. Recently, research in Australia, conducted by Lana Kristiane F. Flores, has shown that babies who are massaged by their parents tend to gain weight and have better emotional and social relationships. However, the medical science of infant massage is still not widely known by the public.(Fitriyanti et al., 2024).

One of the emerging massage techniques is Tui Na massage. Tui Na massage is a holistic treatment that can help alleviate nutritional issues in children. If your child has difficulty eating, try Tui Na massage, a type of holistic treatment that uses a system of massage methods designed to help improve blood circulation. This method is a simple form of acupuncture that can be performed on toddlers without the use of needles; it focuses on the spleen and digestive system by applying pressure along the body's meridian points, or energy flow pathways.(Himawati & Wigati, 2023).

Research conductedFarida et al. (2018) showed that 20 premature babies who were massaged for 3x15 minutes every day for 10 days experienced a daily increase of 20% - 47% more than babies who were not massaged. Research on full-term babies aged 1-3 months who were massaged for 6 weeks experienced a higher weight gain than the group of babies who were not massaged.

From the research conductedXimenes et al. (2024), the results of this study indicate that before Tui Na massage, all babies aged 6-12 months had a constant weight of 30 babies, that is, after Tui Na massage, most of the babies had increased weight, amounting to 27 babies. This shows that there is an effect of Tui Na massage on weight in babies aged 6-12 months with a p-value of 0.001. Likewise with the results of other studies conducted byNingsih & Ramadhena (2023),The Wilcoxone Signed Test results obtained a p-value of 0.000 <0.05, so it can be concluded that there is an effect of tuina massage on weight gain in toddlers at TPMB D, Karawang Regency. Therefore, tuina massage is effective in increasing weight in toddlers.

Research conducted byGasma & Sukarta (2023)There was a significant effect between Johnson's infant massage and infant weight (p = 0.003). This study shows that Johnson's

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infant massage is effective in influencing changes, especially in increasing infant weight. Therefore, it is hoped that infant massage can be continued in health institutions, both hospitals and community health centers, as an effort to improve infant growth and development.

The short-term effects of infant massage are that babies who receive regular massages are usually more relaxed and calm. The long-term effects of massage on muscle tissue include increased blood circulation and improved muscle alignment, which can improve organ function.(Merida & Hanifa, 2022). Meanwhile, the negative impacts that arise when baby massage is done incorrectly and not in accordance with medical provisions, the effects that arise are swelling, such as bruising, pain in the baby so that the baby becomes fussy, shifted tendons, injury, and can even cause death in the baby. Therefore, most parents are reluctant to perform baby massage, because they are afraid of the risks of baby massage on their child. These risks of baby massage are usually caused by negligence of the massage practitioner in the massage, incorrect massage, and lack of knowledge of the masseuse.(Fauziah & Wijayanti, 2018).

METHOD

This study used a quasi-experimental design with a one-group pretest-posttest approach to assess the effect of infant massage intervention on weight gain. The intervention group was not selected randomly, but rather based on a purposive sampling technique. A total of 30 infants aged 0–12 months at the Patia Community Health Center were divided into two groups: one receiving Tuina massage and one receiving Johnson massage, each consisting of 15 infants. The intervention was carried out three times over two weeks. Weight measurements were taken before and after the intervention using the same scale.

Data were collected through observation sheets, questionnaires, and infant health plan records. The independent variable was infant massage intensity, while the dependent variable was weight gain. The instruments used included observation sheets, scales, and questionnaires. Data analysis was conducted in two stages: univariate analysis to describe the characteristics of the respondents, and bivariate analysis using the Paired Sample T-Test to determine the effect of the intervention with a significance level of $p < 0.05$. The Shapiro-Wilk normality test was performed prior to the bivariate analysis to ensure normal data distribution.

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RESULTS

Univariate Analysis

Table 1.Frequency Distribution of Massage Respondent Characteristicsbaby Tuina and Jhonson

Baby Characteristics	Frequency	Percentage (%)
Gender		
Woman	16	53.3%
Man	14	46.7%
Baby's age		
0 months - 3 months	10	33.33%
3 months - 6 months	20	66.67%
6 months – 12 months	0	0%
Parental Education		
Elementary School	1	3.3%
JUNIOR HIGH SCHOOL	5	16.7%
SENIOR HIGH SCHOOL	18	60%
College	6	20%
Parent's (Mother's) Occupation		
housewife	20	66.7%
Private	3	10%
Self-employed	5	16.7%
civil servant	2	6.7%

Based on table 1 above, looking at 30 respondents, it can be seen that the number of respondents based onGendernamely 16 men or 53.3%, and 14 women or 46.7%. Based onbaby's agenamely 0 months - 3 months as many as 10 people or 33.33% and 3 months - 6 months as many as 20 people or 66.67%. Based on the tableParental educationnamely 1 person or 3.3% of elementary school students, 5 people or 16.7% of junior high school students, 18 people or 60% of high school students, and 6 people or 20% of tertiary education students. Based on the tableParents' jobnamely 20 housewives or 66.7%, 3 private sector or 10%, 5 self-employed or 16.7%, and 2 civil servants or 2%.

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Table 2. Frequency Distribution of Massage Respondent CharacteristicsTuina and Johnson babies based on Baby Massage Intensity

Baby Massage Intensity	Frequency	Percentage (%)
Frequently (twice a month)	13	43.3%
Rarely (once a month)	17	56.7%
Amount	30	100%

Based on table 2Baby Massage Intensitynamely Often (2 times a month) as many as 13 people or 43.3%, and Rarely (1 time a month) as many as 17 people or 56.7%.

Table 3. Frequency Distribution of Massage Respondent CharacteristicsTuina and Jhonson babies based on weight gain

Weight Gain	Frequency	Percentage (%)
Still	4	13.3%
Go on	24	80%
Not Up	2	6.7%
Amount	39	100%

Table 4. Frequency distribution of average baby weight before and after Tuina baby massage

Baby Massage Group	N	Mean	Elementary School	min	max	95%
Before Massage (kg)	15	5,607	0.7601	4,000	5,000	0.799
After Massage (kg)	15	6,687	0.7328	7,000	8,000	1,361

Based on Table 4 above, from 15 massage respondents, it can be seen that there was an increase before and after tuina massage. Before tuina massage, the average baby weight was 5.6 kg, and after massage, the baby's weight increased to 6.7 kg. With a 95% confidence level, the average weight after tuina massage increased from 0.799 to 1.361 kg.

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Table 5. Frequency distribution of average baby weight before and after Johnson baby massage

Baby Massage Group	N	Mean	Elementary School	min	max	95%
Before Massage (kg)	15	4,840	0.5974	4,000	5,000	0.102
After Massage (kg)	15	5,933	0.8308	7,000	8,000	1,096

Based on Table 5 above, from 15 respondents who received Johnson's massage, it can be seen that there was an increase before and after Johnson's massage. Before Johnson's massage, the average weight was 4.8 kg and after Johnson's massage, 5.9 kg. With a 95% confidence level, the average weight after Johnson's massage was 0.102 kg to 1.096 kg.

Bivariate Analysis

Table 6. Normality Test

Group	N	Kolmogorov- Smirnov	Shapiro- wilk
		Sig	
Before massage	30	0.069	0.082
After Massage	30	0.134	0.109

Based on Table 6 above, it is known that the significant value for the data before and after massage in both the Kolmogorov Smirnov test and the Shapiro Wilk test is >0.05, so it can be concluded that the research data is normally distributed.

Table 7. Average Difference in Infant Weight Before and After Tuina Massage and Johnson Massage Interventions

Group	N	Mean	Elementary School	Sig
Tuina Massage				
Before massage	15	5,607	0.7601	0.00
After massage	15	6,687	0.7328	0.00
Johnson Massage				

Before massage	15	4,840	0.5974	0,000
After massage	15	5,933	0.8308	0.000
Difference		0.754	1,1634	0.025

Based on table 7 above, the mean value after Tuina Massage was 6.687 kg and the mean after Johnson Massage was 5.933 kg. From the data above, the sig value is 0.025 <0.05, so according to the basis for decision making in the Paired Samples T Test, it can be concluded that there is a difference in body weight after Johnson Massage and after Tuina Massage. From these data, it can be concluded that babies who received Tuina massage had a greater weight gain compared to babies who received Johnson massage with a difference of 0.754 kg.

DISCUSSION

The Effects Before and After Tuina Massage on Infants Aged 0-12 Months at Patia C ommunity Health Center, Pandeglang, in 2025

Based on Table 4 above, it can be seen that the number of respondents based on babies wh o received tuina massage was 15 babies with an average body weight before the massage o f 5.607 kg and after the massage of 6.687 kg. This data proves that tuina massage has a sig nificant effect on increasing the baby's weight after the massage.

According toWulaningsih et al. (2022)Tuina massage combines massage techniques such as rocking, rotating, pulling, rubbing, kneading, sliding, and vibrating specific focal points that influence the development of energy in the body. Tuina is a massage technique specifically designed to address infants' decreased appetite and improve blood circulation and digestion in the spleen. Compared to acupuncture, this procedure applies more pressure to the body's meridians, or channels for energy flow. Research has shown thatXimenes et al. (2024)shows that there is an effect of Tuina massage on body weight in infants aged 6-12 months with a p-value of 0.001.

The results of this study are also in accordance with the research conductedFitriyanti et al. (2024) The Wilcoxon signed ranks test showed a significance value of 0.000 and 0.001, which is less than 0.05. It was concluded that there was a significant effect after giving baby massage twice a week for 1 month. Therefore, it can be concluded that the hypothesis is

accepted, thus it can be said that there is a difference in weight gain between the experimental and control groups.

According toPuspita et al. (2024) Eating difficulties in children are at high risk of developing malnutrition as they age. This can be identified and addressed early by assessing the nutritional status of children with eating difficulties that affect weight gain to prevent one of its complications, malnutrition. Efforts to address eating difficulties and weight gain issues can be carried out through pharmacological and non-pharmacological approaches.

A non-pharmacological method, namely Tuina massage, can be used to treat people who are fussy eaters according toKursani et al. (2020) Tui Na massage has shown promising results. If you massage your toddler with Tui Na, they will feel better and sleep better. It will give them the energy they need to play and explore when they are awake, and because children get hungry quickly when they are active, massaging them will help them eat more. As a toddler's appetite increases, the vagus nerve (a branch of the brain's nervous system that extends from the neck and chest to the abdomen) becomes more active, speeding up the peristaltic system that moves food along the digestive tract. Hunger due to digestion will also improve. Tui Na massage has a significant impact, as studies have shown that the average weight of toddlers increased from 11.62 to 11.81 kilograms (kg), a difference of 0.18 kilograms (or 180 grams).

According to researchers, tuina baby massage is effective, as evidenced by significant weight gain over time. Patients' willingness to receive massage leads to gradual weight gain due to a smoother metabolism. Therefore, massage is essential for maintaining a healthy diet and a smoother metabolism.

The Effects Before and After Johnson Massage on Infants Aged 0-12 Months at Patia Pandeglang Community Health Center in 2025.

Based on table 5, it can be seen that the number of respondents based on the babies who received Johnson massage was 15 babies, there was a significant increase in body weight where the babies before Johnson massage had an average body weight of 4,840 kg increasing to 5,933 kg after Johnson baby massage. Thus, Johnson massage has a significant effect on increasing the baby's body weight.

Baby massage is the oldest and most popular touch therapy known to man, which is also a

modern health care art and medicine that has been practiced for centuries. Touch will stimulate blood circulation and will increase energy because more fresh oxygen waves will be sent to the brain and the whole body.(Wulaningsih et al., 2022).

Child development is a crucial issue that requires careful consideration. Head circumference and weight measurements can be used to indicate growth, while motor skills, social and emotional intelligence, linguistic proficiency, and cognitive abilities can be used to indicate development. Child growth and development are influenced by several variables, one of which is the child's nutritional status. A child's nutritional status can be improved by implementing a healthy diet. A healthy diet can include consuming quality foods, meaning they must be nutritious and varied, as well as consuming sufficient amounts of food and following proper eating habits. When these eating habits are implemented, nutritional status can be achieved. The average young child. Interventions given during the 1000 HPK period can significantly influence a child's development and will have an impact throughout their life. From birth until the child reaches two years of age, fulfilling nutrition through appropriate feeding practices is an effort to optimize child growth.(Himawati & Wigati, 2023).

According to the research conductedGasma & Sukarta (2023)showed that the average weight of massaged babies increased by 990 grams with a standard deviation of 357,305 and a 2-tailed significance value of <α (0.05) meaning Ha is accepted and H0 is rejected. Conclusion, Johnson's baby massage method increases the weight of babies with normal birth weight. It is recommended to use Johnson's baby massage method.

Based on the researcher's assumption, that there is an effect of Johnson's baby massage on increasing the baby's weight because baby massage can stimulate key nerves, called the vagus nerve, which connects the brain with important parts of the body, with massage can stimulate all sensory and motoric that are useful for growth and development especially the baby's weight. Thus, weight gain is more optimal compared to babies who are not massaged. Johnson's baby massage provides good benefits for the growth and development of babies so that the baby's growth and development are more optimal through touch will make the baby feel comfortable and stimulate blood circulation.

The Effect of Weight Gain on Infants Given Tuina Massage and Johnson Massage on Infants Aged 0-12 Months at Patia Pandeglang Community Health Center in 2025.

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The results of the bivariate analysis showed that there was a significant difference between the weight gain of infants in the tuina massage group and the Johnson massage group. In Table 4, before the Tuina Baby Massage, the mean value was 5.607 grams and after the Baby Massage, the mean value was 6.687. Meanwhile, the mean value of infants who received Johnson massage before the massage was 4.840 grams and increased to 5.933 grams after the Johnson massage. From the data above, it can be concluded that both Tuina massage and Johnson massage have an effect on increasing infant weight.

According to research conducted byXimenes et al. (2024)Based on the results of research and analysis on the effect of Tui Na massage on the weight of babies aged 6-12 months, it can be concluded that most of the respondents aged 6-9 months were 73%, namely 22 babies from 30 baby samples taken. The average weight of respondents after Tui Na massage showed a significant effect of weight gain, namely 90%, amounting to 27 babies and a small number of babies with constant weight, amounting to 3 babies, namely (10%). The results of the study showed that there was an effect of Tui Na massage on weight in babies aged 6-12 months with a p-value of 0.001.

This is also in accordance with researchGasma & Sukarta (2023)The average weight gain for Johnson's infant massage was fifty-three percent. Statistical tests using the Mann-Whitney U test showed no significant difference in weight gain in LBW infants between the Indian and Johnson's massage methods. The conclusion of this study is that both Indian and Johnson's infant massage methods can increase weight gain in LBW infants.

Based on research assumptions, normally a baby's weight will increase if the mother always provides breast milk properly and according to schedule, but the baby's nervous system is not yet perfect, so stimulation needs to be given so that the metabolism in the baby's body can coordinate well with weight which will increase according to the baby's age.

The Effect of Difference in Comparison of the Effect of Weight Gain of Babies Given Tuina Massage and Johnson Massage on Babies Aged 0-12 Months at Patia Pandeglang Community Health Center in 2025.

Based on table 7 before the Tuina Baby Massage and Johnson Baby Massage were carried out, there was a difference of 0.754 grams. Where the babies who received the Tuina Massage had a greater influence in increasing their body weight compared to the babies who received the Johnson Massage.

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The variation in weight gain of subjects is highly dependent on various factors, including the quality of food consumed and psychological influences. These influences will affect the production and quality of breast milk, which is the source of nutrition for babies. The study found that when babies were massaged, they felt comfortable and, after 12 minutes of the massage, began to yawn due to drowsiness. Then, when the babies were bathed, they would cry, not only because they were cold but also because they were thirsty. This thirst response indicates that the massage had a positive physiological effect, resulting in them immediately breastfeeding eagerly due to thirst and falling asleep soundly. When the baby's mouth touched the nipple, their eyes immediately closed and they sucked eagerly.(Kasmawati & Jumrana, 2024)

According to research conducted byXimenes et al. (2024) Toddlers can gain weight with Tui Na Massage. Compared to toddlers who don't receive Tui Na massage, those who receive it tend to gain weight. For children whose appetite improves with frequent Tui Na massage, the likely cause is a problem with their digestive system or the spleen's ability to function normally. The digestive organs in the stomach can't immediately absorb incoming food, causing a buildup of nutrient-rich bloating. Toddlers' complaints of feeling full, feeling sick when fed, and other issues can have the side effect of decreased appetite, a common concern among parents today. Increased hunger in toddlers is a potential side effect of Tui Na Massage treatment, which works by increasing blood flow to the spleen and digestive system.

The same thing applies to the research that was carried outNingsih & Ramadhena (2023)The results of the Wilcoxone Signed Test obtained a p-value of 0.000 <0.05, so it can be concluded that there is an effect of tuina massage on weight gain in toddlers at TPMB D, Karawang Regency. Tuina massage is effective for increasing weight in toddlers.

Based on the researchers' assumptions that infant massage provides significant benefits for infant growth and development, weight gain in the tuina and Johnson massage groups is due to the benefits of infant massage for weight gain and growth. Regular stimulation can stimulate the vagus nerve, which increases intestinal peristalsis, increasing gastric emptying, thus stimulating the baby's appetite, encouraging them to eat more heartily and in sufficient quantities, improving concentration, and promoting deeper sleep.

CONCLUSION

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Based on the results of research conducted at the Patia Pandeglang Community Health Center in February 2025, it can be concluded that both Tuina massage and Johnson massage have a significant effect on weight gain in infants aged 0–12 months. Tuina massage showed an average weight gain from 5.607 kg to 6.687 kg, while Johnson massage from 4.840 kg to 5.933 kg. There is a significant difference between the two massage methods, with Tuina massage providing a greater weight gain than Johnson massage, namely an average difference of 0.754 kg, so Tuina massage is considered more effective in supporting infant weight gain.

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