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Infant Weight Gain and the Effects of Massage Performed with Gentle Strokes or Tactile Stimulation of the Skin Surface (Infant Massage)

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ABSTRACT

Infant growth is an important indicators in assessing child health and development . One of the most commonly used parameters for evaluating infant growth is weight gain. Various factors May influence infant weight gain, including stimulation through infant Infant massage massage is a gentle tactile stimulation applied to the baby's skin to improve comfort , blood circulation , sleep quality , and growth . This study aimed to determine the effect of infant massage on infant weight gain.

This study employed a quantitative approach using a pre-experimental one-group pretest-posttest design . The sample consisted of 30 infants aged 1–6 months selected through purposive sampling. The intervention involved infant massage conducted three times per week for four weeks . Data were analyzed using the Paired Sample t- Test .

The results showed that the mean infant weight increased from 5.82 ± 0.84 kg before the intervention to 6.54 ± 0.88 kg after the intervention . Statistical analysis revealed a p- value of 0.000 ($p < 0.05$), indicating a significant effect of infant massage on infant weight gain.

Keywords : *Infant Massage , Infant Weight Gain, Tactile Stimulation , Infant Growth , Child Health*

1. INTRODUCTION

Infancy is a crucial period in human growth and development. During this period, rapid physical growth occurs, making optimal nutrition, stimulation, and care essential to support infant health. One indicator used to assess infant growth is weight gain for age.

Optimal weight gain in babies indicates that nutritional needs and growth are progressing well. Conversely, weight gain that does not meet standards can be an indicator of growth disorders or other health problems.

Early stimulation also plays a crucial role in supporting infant growth. One widely used form of stimulation is infant massage. Infant massage is a touch therapy that involves systematically applying gentle strokes and light pressure to the baby's skin.

Baby massage is believed to increase nerve activity. The vagus nerve , which influences increased gastric motility and nutrient absorption. Furthermore, infant massage

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can improve sleep quality, increase blood circulation, reduce stress, and strengthen the emotional bond between parent and baby.

Various studies have shown that babies who receive regular massage experience better weight gain than babies who don't. Therefore, infant massage is an easy, non-pharmacological intervention to support infant growth.

Based on this background, this study was conducted to determine the effect of baby massage on weight gain in babies aged 1–6 months.

2. RESEARCH METHODS

This research uses a quantitative approach with a pre-experimental design. one group pretest-posttest design , namely research that aims to determine the effect of infant massage on infant weight gain by comparing weight before (*pretest*) and after (*posttest*) the intervention. This design was chosen because it allows researchers to evaluate changes in infant weight after receiving tactile stimulation in the form of regular infant massage.

a. Location and Time of Research

The study was conducted at several integrated health posts (Posyandu) and independent midwife practices during January–April 2025. The study sites were selected based on the high number of infant visits for growth and development monitoring and the availability of maternal and child health education programs that support infant massage.

b. Population and Sample

The population in this study was all infants aged 1–6 months who participated in integrated health service post (Posyandu) activities in the study area. The study sample consisted of 30 infants aged 1–6 months selected using purposive sampling techniques based on predetermined criteria.

Inclusion criteria included infants being healthy, receiving breast milk or age-appropriate nutrition, having no congenital abnormalities, and having parental consent to participate in the study. Infants who became ill during the study period or did not fully participate in the intervention were excluded from data analysis.

c. Research Variables

The research variables consist of:

1) Independent Variables

Baby massage, namely tactile stimulation in the form of gentle stroking of the baby's skin surface which is carried out systematically according to baby massage procedures.

2) Dependent Variable

Infant weight gain is measured based on the difference in weight before and after infant massage intervention.

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d. Research Instruments

The instruments used in this study include:

1) **Digital baby scales** to measure baby's weight accurately.
2) **Infant massage observation sheet** to monitor the implementation of interventions.
3) **Maternal and Child Health Book (KIA)** as a source of data supporting infant growth and development.
4) **Weight recording form to document** pretest and posttest measurement results .

Measuring instruments are checked for suitability and accuracy to ensure the validity of the measurement results.

e. Data collection technique

Data collection is carried out in several stages, namely:

1) Conduct an initial weight measurement (pretest) before the intervention.
2) Provide infant massage intervention for four weeks with a frequency of three times per week.
3) Monitor and observe the implementation of baby massage to ensure the suitability of the procedure.
4) Conduct a final weight measurement (posttest) after all interventions have been completed.

f. Data processing

The data obtained is then processed through the following stages:

1) **Editing** , to check the completeness of the data.
2) **Coding** , namely giving a code to each respondent.
3) **Data entry** , namely entering data into a computer program.
4) **Tabulating** , which is arranging data in tabular form to facilitate analysis.

g. Data analysis

Data analysis was carried out using the SPSS program with the following stages:

1) **Univariate Analysis**

Used to describe infant characteristics and weight distribution before and after intervention in the form of frequency, percentage, average (*mean*), and standard deviation.

2) **Normality Test Shapiro-Wilk**

Conducted to determine the distribution of pretest and posttest data . Data is declared to be normally distributed if the *p*- value is > 0.05 .

3) **Bivariate Analysis**

Done using Paired Sample t- Test at 95% confidence level ($\alpha = 0.05$) to determine the effect of infant massage on infant weight gain. The decision-making criteria are:

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- *p*- value < 0.05 indicates that there is a significant effect of baby massage on baby weight gain.
- *p*- value > 0.05 indicates there is no significant effect of baby massage on baby weight gain.

Through this analysis, it can be seen that baby massage is effective as a form of tactile stimulation in supporting the growth and weight gain of babies aged 1–6 months.

3. RESEARCH RESULTS AND DISCUSSION

a. Results

Table 1. Characteristics of Babies Based on Gender

Gender	Frequency	Percentage
Man	17	56.7%
Woman	13	43.3%
Total	**30**	**100%**

The majority of babies in this study were male, 17 babies (56.7%), while 13 babies were female (43.3%).

Table 2. Distribution of Infant Age

Age	Frequency	Percentage
1–2 Months	8	26.7%
3–4 Months	12	40.0%
5–6 Months	10	33.3%
Total	**30**	**100%**

Most of the respondents were aged 3–4 months, as many as 12 babies (40%), which is a period of rapid growth in infancy.

Table 3. Baby's Weight Before and After Baby Massage

Variables	Mean ± SD
Before Massage	5.82 ± 0.84 kg
After Massage	6.54 ± 0.88 kg

The average weight of babies increased by 0.72 kg after receiving infant massage intervention for four weeks.

Table 4. Normality Test Results Shapiro-Wilk

Variables	p- value
Pretest	0.211
Posttest	0.146

A *p*-value > 0.05 indicates that the data is normally distributed and thus meets the requirements for conducting a paired test. Sample t- Test .

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Table 5. Paired Test Results Sample t- Test

Variables	Mean Difference	t-count	p- value
Pretest – Posttest	0.72 kg	8,925	0,000

Paired test results The sample t- test shows a *p*-value = 0.000 ($p < 0.05$), which means there is a significant effect of baby massage on baby weight gain.

b. Discussion

The study results showed that infant massage significantly influenced weight gain in infants aged 1–6 months. After four weeks of regular infant massage intervention, there was an average weight gain of 0.72 kg.

This weight gain can be explained by the physiological mechanisms that occur when babies receive tactile stimulation. Gentle touch on a baby's skin can stimulate nerve activity. The vagus gland plays a role in improving digestive tract function. This condition optimizes nutrient absorption, thus supporting the baby's weight gain.

Infant massage also improves sleep quality. Babies who sleep better have better metabolism and growth hormone secretion. Growth hormone plays a vital role in tissue formation and weight gain.

Infant massage also provides a relaxing effect that can lower stress hormone levels. Calmer babies tend to have better breastfeeding patterns, which can optimally meet their nutritional needs.

The findings of this study align with previous research that suggests infant massage can increase weight gain, improve sleep patterns, and support a baby's physical and psychological development. Therefore, infant massage can be a simple and safe intervention to support infant growth and development.

4. CONCLUSION AND SUGGESTIONS

a. Conclusion

Infant massage, performed through gentle stroking or tactile stimulation of the skin, significantly impacts weight gain in infants aged 1–6 months. There was an average increase in weight after four weeks of infant massage intervention. Thus, infant massage can be used as an effective non-pharmacological stimulation method to support infant growth.

b. Suggestion

1) Parents are advised to massage their babies regularly using the correct techniques to support their baby's growth.
2) Midwives and health workers need to provide education about the benefits and techniques of baby massage to parents.

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3) Posyandu can include infant massage training as part of the maternal and child health program.
4) Further research is recommended to use a control group and a larger sample size to increase the validity of the research results.

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