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## The Effectiveness of Baby Massage in Increasing Infant's Body Weight

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### Abstract

Increasing body weight is an indicator for assessing baby growth. The baby's weight gain in the first year of life is based on whether the baby receives good nutrition from birth to the first six months. The weight gain per week ranges from 140-200 grams. Children 1-12 months experience rapid growth, so it is necessary to maintain the baby's weight according to age. They obtain optimal growth and development results from the interaction of several interrelated factors: genetic factors, nutrition, socio-economic status, health status, hormonal factors, environmental factors, cultural environment, parenting patterns, physical activity, and stimulation. Dietary factors play an essential role in the growth process because they influence the nutritional status of children. Stimulation factors are also critical to stimulate children's growth. *Massage* is a technique that combines the physical benefits of human touch with emotional benefits such as bonding and weight gain. This research aims to determine the relationship between baby massage and weight gain in babies at the Kasih Bunda Clinic in 2023. This type of research is the Shapiro-Wilk Test with a non-equivalent control group design and a pretest-posttest design. Then, measurements were taken before the pretest on both groups of respondents; then, measurements were carried out again (Posttest) to determine the difference in pretest and posttest body weight. The type of sampling uses purposive sampling. The results of the research were carried out with a confidence level of 95% ( $\alpha=0.05$ ), as proven by the p-value: 0.000 ( $p\text{-value} \leq 0.05$ ). In conclusion, a relationship exists between giving baby massages and increasing baby weight at the Kasih Bunda Clinic in 2023. It is hoped that health workers will make baby massage one of the counseling materials for mothers to support the increase in baby weight and teach them how to do proper baby massage.

**Keywords:** Baby Massage; Weight Gain

## INTRODUCTION

Weight gain is an indicator of a baby's health that can be used as a benchmark for growth. The increase in baby's weight in the first year of life if the baby gets good nutrition, namely from birth to the first six months, the weight gain per week ranges from 140-200 grams. Furthermore, at 6-12 months, weekly weight gain ranges from 85-400 grams, and body weight will increase by 3x birth weight in the first year (Irva, 2014).

Good growth and development result from the interaction of various interrelated factors, namely genetic, environmental, and behavioral factors, as well as valuable stimuli or stimuli. The problem of weight in babies is susceptible, as evidenced by 2017 World Health Organization (WHO) data, which states that the incidence of baby weight in the world is still below standard, namely more than 5%, with the prevalence of underweight in Southeast Asia being 26.9%. Meanwhile, the global prevalence of underweight is 14% (Carolin, 2020).

The problem with growth (weight gain) is a child's decreased appetite. Therefore, one of the recommended efforts is baby massage. The first massage experience that humans experience is when they are born through a routine birth canal. Baby massages have been done worldwide for a long time, including in Indonesia, and are passed down to this day (Harahap, 2020).

Salsabila's research (2022) found that massaging babies aged 1-12 months for 30 days with an intensity of 3 times for 15 minutes per week increased the average baby's weight from 3,780 grams to 4,305 grams.

Decree of the Minister of Health number 900/MENKES/SK/VII/2002 concerning Registration

and Practice of Midwives states that midwives have the authority to monitor the growth and development of babies by carrying out early detection and stimulating growth and development, including by massaging babies (Ministry of Health, 2020).

The 194 countries in the world, one country, namely Indonesia, has implemented baby massage by health workers to stimulate growth and increase body weight because it increases the production of the pituitary gland and the Growth Hormone (GH), thereby increasing bone and muscle growth. It is estimated that of more than 20 million babies worldwide, 15.5% have been massaged, so it can be concluded that baby massage can increase the baby's weight (Unicef, 2021).

Initial data, through the Kasih Bunda Clinic lookbook in December 2022, the number of babies aged 0-12 months who were weighed at the visit was 41 babies; there were 33 babies (76.6%) who experienced weight gain according to their age and eight babies (23.4%) do not experience weight gain according to their age. The results of interviews with five mothers whose children did not gain weight according to their age at the Kasih Bunda Clinic on January 11, 2023, with open questions and answers, obtained information that the baby's parents did not understand that other than nutritious food, massage could be done. Babies that they usually do can stimulate the baby's weight gain. Apart from that, mothers said that their children had difficulty eating, did not want to drink breast milk, and were fussy at night when sleeping, which disturbed their baby's sleep.

From the above background, researchers researched "The relationship between baby massage

and increased baby weight at the Kasih Bunda Clinic in 2023".

## METHOD

The method of this study was quantitative research and the Shapiro-Wilk design. The type of research is a control group and a treatment group.

The independent variable is baby massage, and the dependent variable is body weight. Samples were taken using an accidental technique by taking respondents who happened to be in the clinic when the research was conducted. The sample was the total population of healthy babies aged 0-12 months and parents who wanted to be research participants and were at the Kasih Bunda Clinic when the data was collected, namely 30 babies. The sample consisted of 2 (two) groups, namely 15 babies treated with intervention and 15 babies including controls.

Test data differences using a significance of 0.05. The statistical test used the Shapiro-Wilk test to determine whether the data was normally distributed. The results obtained after being tested with the Shapiro-Wilk test were usually distributed. Then, a t-test statistical test will be carried out to determine whether there is a relationship between baby massage and an increase in baby weight at the Kasih Bunda Clinic in 2023.

This study had obtained the ethical approval from the Health Research Ethics Committee.

## RESULT AND DISCUSSION

The results of research on the frequency distribution of respondents' characteristics at the Kasih Bunda Clinic in 2023 can be seen in the following table:

Table 1 shows 30 babies divided into two groups, namely 15 respondents in the intervention group and 15 respondents in the control group. Of the 15 respondents in the intervention group, there were 2 people aged 1 month (13%), aged 2 months there were 2 people (13%), aged 3 months there were 3 people (20%), aged 4 months there were 3 people (20%), aged 5 months there were 2 people (13%), aged 6 months there was 1 person (7%), and aged 7 months there were 2 people (13%). Thus, the majority of respondents in the intervention group were 3 and 4 months old and the minority were 6 months old.

Table 1 Characteristics of Respondents at the Kasih Bunda Clinic in 2023

No	Age	Treatment		Control	
	(months)	f	%	f	%
1	one	2	13	1	7
2	two	2	13	3	20
3	three	3	20	3	20
4	four	3	20	2	13
5	five	2	13	2	13
6	six	1	7	3	20
7	seven	2	13	1	7

Table 2 Normality Test for Baby Weight Data 0-12 Months at the Kasih Bunda Clinic in 2023

	Treatment	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk	
		Statistic	df	Sig.	Statistic	df
Infant Weight	Pre-Test Treatment	.112	15	.200*	.946	15
	Post-Test Treatment	.134	15	.200*	.945	15
	Pre-Test Control	.151	15	.200*	.950	15
	Post-Test Control	.186	15	.174	.911	15

Table 2 shows that of the 30 babies, namely 15 respondents in the intervention group before and after being given the intervention and 15 respondents in the control group before and after being weighed and then carrying out the Shapiro-Wilk test to determine whether the data was

normally distributed or not. The results obtained after being tested with the Shapiro-Wilk test were normally distributed. Then a t-test statistical test will be carried out to find out the relationship between baby massage and the increase in baby weight at the Kasih Bunda Clinic in 2023.

Table 3 Relationship between Baby Massage and Increase in Baby Weight at the Mother's Love Clinic in 2023.

Infant Weight	Weight Gain				Total	Percentage (%)	<i>p (Value)</i>
	Treatment		Control				
	f	%	f	%			
Weight Gain	15	50	14	47	29	97	<i>0,000</i>
Weight not up/fixed	-	-	1	3	1	3	
Total	15	50	15	50	30	100	

Table 3 shows that there is a relationship between baby massage and the increase in baby weight 0-12 month at the Kasih Bunda Clinic in 2023, the result is a p-value of 0.000 (<0.05), so Ho is rejected and Ha is accepted

Baby massage helps stimulate motor nerves, improve sleep patterns, help the digestive system, increase the child's emotional calm, and make the muscles healthy. Babies who are massaged correctly and regularly can grow healthier and develop more optimally (Soetjiningsih, 2011)

Baby massage is a massage that is done closer to fine strokes or tactile stimulation carried out on the surface of the skin, manipulation of tissues or organs of the body aims to produce effects on nerves, muscles, and the respiratory system and facilitate blood circulation. Baby massage can cause a decrease in levels of adrenaline hormones (stress hormones) a decrease in stress hormone levels will increase endurance, especially IgM and IgG, if the baby's immunity increases then the baby does not get sick easily (Syaukani, 2015)

This is by Roesli's (2013) analysis, which concluded that baby massage can increase body weight and growth, increase body immunity, increase the affectionate relationship between parents and children (bonding), and increase the amount of breast milk.

These results are in line with research by Irva (2014) with the Mann-Whitney test, which obtained a p-value of 0.01 ( $<0.05$ ) so that giving massage therapy affects the baby's weight gain. The results of the Wilcoxon test for the experimental group before and after giving massage therapy showed a p-value of 0.000 ( $p<0.05$ ), which means there was an increase in body weight; the increase in body weight that occurred was 700 grams during two weeks of massage.

Baby massage can increase beta endorphins, which affect the growth mechanism, besides that it also increases the tone of the vagus nerves which affects the absorption mechanism of breast

milk so that the baby will quickly hungry and breastfeeding more frequently on the mother, which also results in increased milk production. The effect of increasing body weight was also found in babies born at term. A study in China proves that there is an effect of infant massage for 10-15 mins a day since the baby was 15 days old. At 2 months of age, babies who were routinely massaged showed a difference in body weight compared to babies who were not massaged. In infants who were routinely massaged, the average weight gain for one month was 900 grams. Whereas in infants who were not given massage the average body weight for one month was 760 grams. (Lee HK,2016)

Supported by the results of Sunarsih's research, it was explained that there were differences in body weight in the two groups of infants studied. Massages on babies will increase serotonin neurotransmitter activity, which increases the capacity of receptor cells that bind glucocorticoid (adrenaline, a stress hormone), resulting in a decrease in adrenal hormone (a stress hormone), a decrease in levels of this stress hormone will increase endurance. Massage on babies will stimulate the vagus nerve, where this nerve will increase intestinal peristalsis to empty the stomach, so the baby is hungry quickly, so food intake will increase.<sup>16</sup> A research concluded that there was a significant difference in weight gain between term babies who were given massage stimulation, compared with babies who did not receive massage, the difference in the average body weight of babies who were

massaged and did not reach 440 grams.<sup>17</sup> The massage is performed on newborn for 15 minutes a day at home for a period of 4 weeks. The difference in weight gain was seen at 4 weeks of age. The effect of massage on growth is evidenced by research which shows that after regular infant massage is done every 2 times in 1 week for 4 weeks by the parents of each baby, the results show that most babies experience an increase in body weight of more than 1000. gram which was done on 11 babies, evidenced by the results of the p-value before =0.454 and the p-value after = 0.121.<sup>11</sup> Based on the results of the paired *t*-test, it was found that p-value =0.000, because the p value <  $\alpha$  = 0.05. Comparison of the mean value of body weight before infant massage was 2975 grams, and an increase in the mean value after infant massage was 3175 grams. Based on the results of the p-value and the average comparison between body weight before and after, the conclusion is that infant massage is proven to be effective in increasing baby weight.(Rosyida,2020)

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