The Effectiveness of Infant Massage to Increase in Baby Weight in Bpm Inawati

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ABSTRACT
One of the factors in increasing the growth and development of babies is to provide stimulation. Baby massage has many benefits, one of which is increasing the baby's weight, that's because babies who are massaged will experience an increase in vagus nerve tone (10th brain nerve) which will cause an increase in levels of gastrin and insulin absorption enzymes, thus food absorption will increase, getting better which is why the weight of babies who are massaged will increase more than those who are not massaged. Data obtained from BPM Inawati, infants who were given massage from 0-3 months of age had weight gain > 140 grams per week, but there were still many babies who were never given massage. Objective: Knowing the effectiveness of baby massage on increasing baby's weight. The method was Quasi experimental with pretest posttest research type with Control Group Design. The sample in this study was all babies born at BPM Inawati in November-December 2021 as many as 30 people, the sampling technique was the total sample. The results show that the average baby weight before baby massage was done in the intervention group was 3,276.67 grams and in the control group was 3,511.67 grams. The average baby weight after baby massage in the intervention group was 5,922.33 grams and in the control group was 5,114.33 grams. There is an effectiveness of baby massage on increasing baby's weight (p.value 0.000). The conclusions and suggestions show there is an effectiveness of baby massage on increasing baby's weight (p.value 0.000). It is hoped that health workers, especially midwives, will provide baby massage training for postpartum mothers to do baby massage themselves at home.

INTRODUCTION
According to the World Health Organization (WHO) growth and nutrition disorders result in 42% of infant and under-five deaths. The results of the WHO census show that 49% of the 10.4 million infant and under-five deaths in developing countries are related to weight disorders and malnutrition. It is recorded that around 50% of infants and toddlers in Asia, 30% in Africa, 20% in Latin America suffer from weight disorders and malnutrition (WHO, 2017). Meanwhile, cases of infants and toddlers with weight disorders in Indonesia are also still very high, reaching 19.6% (Riskesdas, 2018).

Data obtained from the DKI Jakarta Provincial Health Office in 2020 cases of infants and toddlers with weight disorders as many as 6,047 (3.54%) of the total number of infants and toddlers as many as 170,777 people. Meanwhile, in East Jakarta in the same year, cases of infants and toddlers with weight disorders were 1,826 (3.65%) of the total number of infants and toddlers as many as 50,025 people (DKI Jakarta Health Office, 2021).

The problem that is often found in breastfeeding mothers is that they feel their child's weight is not increasing or just like that. This problem can arise at any time during the breastfeeding period. When parents experience this condition, they usually take shortcuts by giving their children additional food such as formula milk because they feel that breastfeeding is not able to increase their child's weight. Birth weight is the result of the interaction of various factors through a process that takes place while in the womb. Factors that can affect birth weight include internal environmental factors, namely maternal age, birth spacing, parity, hemoglobin levels, nutritional status of pregnant women, factors related to the use of health facilities related to the frequency of antenatal care or Antenatal Care (ANC) (Manuaba, 2018).

One of the factors in increasing the growth and development of babies is to provide stimulation. Baby massage has many benefits, one of which is increasing the baby's weight, that's because babies who are massaged will experience an increase in vagus nerve tone (10th brain nerve) which will cause increased levels of gastrin and insulin absorption enzymes, thus food absorption will increase, getting better which is
why the weight of babies who are massaged will increase more than those who are not massaged (Roesli, 2018).

Touch therapy or massage is a technique that combines the physical benefits of human touch with emotional benefits such as bonding. Massage activity creates a contact between children and parents. Children will feel calm and comfortable because the psychological impact of this massage is to express affection. Moreover, if the massage is carried out by giving a warmer so that physically the child’s body will feel warm, while psychologically, the relationship between the child and the parent becomes more intimate (Pratyahara, 2018).

Massage can optimize the growth and development of babies with high risk, namely babies who are in the process of pregnancy and birth have risk factors that can interfere with their growth and development. For example, birth weight less than 2000 grams. Baby massage can be classified as a touch stimulation application because in baby massage there are elements of touch in the form of affection, attention, sound, eye sight, movement and massage. This stimulation will stimulate the development of the structure and function of brain cells (Maharani, 2018). The advantage of baby massage is that it is able to establish affection with the closest people who massage, stimulate the blood circulation system, heart, respiratory, digestive and immune systems of infants and children, namely lowering adrenaline and increasing corticosteroids so that the baby will calm down and his immune system will increase. trains babies to be calmer in the face of stress, also encourages the growth of muscle structure and flexibility (Pratyahara, 2018).

The problem that occurs today, most mothers who have given birth do not massage their babies. The reason is because they do not know how to do baby massage, do not know the benefits of baby massage, and are also afraid that problems will occur with the baby if the massage is wrong. Lack of stimulation in the early days of a child’s life will stunt their emotional, social, physical and cognitive development (Nurlatifah, 2018).

A preliminary study conducted by researchers at BPM Inawati, from August to September 2021 found 40 babies aged 3 months with normal weight gain as many as 29 babies (72.5%), while 11 babies (27.5%) experienced weight gain abnormal (weight does not increase with age). Based on the results of a preliminary survey conducted by researchers at BPM Inawati, researchers received information from midwives that baby massage was often done on babies born normally. Infant massage is also taught to postpartum mothers to be done at home 2 times a day in the morning and evening before bathing in infants aged 0-3 months. Data obtained from BPM Inawati, infants who were given massage from 0-3 months of age had weight gain > 140 grams per week, but there were still many babies who were never given massage. On the increase in infant weight in BPM Isnawati in 2022.

METHODS

The research method uses a quasi-experimental research type with pretest posttest with control group design. Data collection was carried out using primary data, namely data obtained from observations. The data collection instrument used was an observation sheet. The population in this study were all babies born at BPM Inawati from November to December 2021 as many as 30 people (total sample). The analytical method used is univariate analysis and bivariate analysis with paired simple t test.

RESULTS AND DISCUSSIONS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group Type</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Min – Maks</th>
</tr>
</thead>
<tbody>
<tr>
<td>baby weight</td>
<td>Intervention</td>
<td>3276.67</td>
<td>5922.33</td>
<td>393,186</td>
</tr>
<tr>
<td>control</td>
<td>3511.67</td>
<td>5114.33</td>
<td>385,346</td>
<td>347,927</td>
</tr>
</tbody>
</table>

Based on the Table 1, the results showed that in the intervention group before being given baby massage the average baby weight was 3,276.67 grams and after being given baby massage the average baby weight
was 5,922.33 grams. In the control group who were not given baby massage, the average value of the baby's weight before was 3,511.67 grams and after that was 5,114.33 grams. The value of the standard deviation in the pre-test intervention group was 393,186 grams and the post-test was 306,448 grams, while in the control group the pre-test was 385,346 grams and the post-test was 347,927 grams. The minimum-maximum body weight in the pre-test intervention group was 2,800 grams - 4,100 grams and posttest was 5,450 grams - 6,500 grams, while in the control group the minimum-maximum values for pre test were 2,850 grams - 4,000 grams and post test was 4,530 grams - 5,680 grams.

### Table 2. Changes in Infant Weight in the Intervention Group and the Group Control Before and After Giving Baby Massage at BPM Inawati

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group Type</th>
<th>Mean Pre test</th>
<th>Std. Deviation Pre test</th>
<th>Difference Mean</th>
<th>Difference SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby weight</td>
<td>Intervention</td>
<td>3.276,67</td>
<td>393,186</td>
<td>2.645,66</td>
<td>86,738</td>
<td>0,000</td>
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<tr>
<td></td>
<td>control</td>
<td>3.511,67</td>
<td>385,346</td>
<td>1.602,66</td>
<td>37,419</td>
<td>0,000</td>
</tr>
</tbody>
</table>

Based on the Table 2, the baby's weight change test was given baby massage treatment from 0-3 months of age using the paired sample t-test, the results obtained that had a significant value of 0.000 (<0.05). These results mean that there is a change in the baby's weight before and after being given baby massage at BPM Inawati in 2022. In the mean difference column, it shows that babies who are given baby massage intervention from the age of 0-3 months show an increase in body weight > 140 grams per week. Meanwhile, infants who were not given baby massage treatment from the age of 0-3 months showed an increase in body weight <140 grams/week. From the data above, it can be concluded that the effectiveness of baby massage on increasing baby weight at BPM Isnawati in 2022.

### Discussion

**Average Baby Weight in the Control Group and the Intervention Group Before and After Baby Massage**

From the results of the study, it was found that in the intervention group before being given baby massage the average baby weight was 3,276.67 grams and after being given baby massage the average baby weight was 5,922.33 grams. In the control group who were not given baby massage, the average value of the baby's weight before was 3,511.67 grams and after that was 5,114.33 grams. The value of the standard deviation in the pre-test intervention group was 393,186 grams and the post-test was 306,448 grams, while in the control group the pre-test was 385,346 grams and the post-test was 347,927 grams. The minimum-maximum body weight in the pre-test intervention group was 2,800 grams - 4,100 grams and posttest was 5,450 grams - 6,500 grams, while in the control group the minimum-maximum values for pre test were 2,850 grams - 4,000 grams and post test was 4,530 grams - 5,680 grams.

According to WHO, the age of infants in the first few months of life, namely the age of 0 to 6 months is a very important age stage for infants to achieve optimal growth and development levels. The period of the first 1,000 days of life is a very important period because at this time the brain is experiencing rapid growth and development. In order to grow and develop optimally, all basic needs must be met, including nutrition, affection, immunization and stimulation. This stimulation is a baby massage that has enormous benefits, including increasing the baby's weight. The stimulation given must be adjusted to his age, where the massage pressure of infants aged 0-1 months is different from the age of 1-3 months, as well as for babies aged 3 months to 3 years. Needs that are not met in the first 1000 days of life will have a permanent impact. The impact is not only on physical growth, but also on mental development, intelligence and behavior (Fauziah, 2018).

The results of this study are in line with the results of Triyana Indrayani's research (2019) which says that the average weight change is 376 grams in the experimental group, and 120 grams in the control group.

According to Soetjiningsih (2017) babies who are born at term will experience a weight loss of about 5-10% in the first 7 days, and weight at birth will return on days 7-10. Similarly, Maryunani (2017) stated that the baby's weight in the first week of birth will experience a weight loss of about 10% of the weight at birth. In Perry Potter (2017), a normal neonate weighs between 2,700 grams to 4000 grams and
then loses 10% of birth weight in the first few days through respiration, urine, defecation, and low fluid intake. In the second week, the neonate’s weight will return to increase. The researcher's analysis, from the results of research, related journals and corroborated by the theory, is that before the research the researchers found that the baby was 0 days old with a birth weight of between 2700-3300 grams, while from journals that supported infants aged 0-3 months with a weight of body between 2600 grams - 3800 grams. This is supported by the theory that the age of 0-10 days without being stimulated is the same as the weight at birth, and this is normal.

According to the researcher's assumptions from the results of this study, it can be seen that changes in infant weight between those who were given baby massage treatment and those who did not show different results. 140 grams per week which is equal to 220.47 grams. Meanwhile, in the control group, infants who were not given baby massage treatment from 0-3 months of age had an average weight of <140 grams per week, which was 133.56 grams. From the results of this study, we can see that baby massage is very effective in increasing baby's weight gain.

**Changes in Baby's Weight in the Intervention Group and Control Group Before and After Baby Massage**

From the test of changes in baby's weight given baby massage treatment from 0-3 months of age using the paired sample t-test, the results showed that the results had a significant value of 0.000 (<0.05). These results mean that there is a change in the baby's weight before and after being given baby massage at BPM Inawati in 2022. In the mean difference column, it shows that babies who are given baby massage intervention from the age of 0-3 months show an increase in body weight > 140 grams per week. Meanwhile, infants who were not given baby massage treatment from the age of 0-3 months showed an increase in body weight <140 grams/week. From the data above, it can be concluded that the effectiveness of baby massage on increasing baby weight at BPM Inawati in 2022.

Baby massage is an art of health care and medicine that has been known since the beginning of human creation in the world and has been practiced since centuries ago from generation to generation by traditional birth attendants. Today's experts have been able to scientifically prove that touch therapy, especially baby massage, is beneficial. Baby massage has been shown to produce beneficial physiological changes that can be measured scientifically. These scientific measurements include measuring salivary cortisol levels, radioimmunoassay plasma cortisol levels, urine stress hormone or catecholamine levels, and electroencephalogram (EEG) examination. The positive biochemical impact that occurs in premature babies who are massaged is a decrease in stress hormone levels and an increase in levels of immune substances, especially IgG, IgA and IgM. While the positive clinical impact is increasing the number of toxic cells of the immune system, changing brain waves positively, improving blood circulation and breathing, stimulating digestive and excretory functions, increasing body weight, reducing depression and calm, making babies sleep soundly, reducing pain, , reduce bloating and abdominal pain, improve parent-baby relationship, increase the volume of breast milk. The benefits of baby massage in general are the strength and flexibility of the mind, body and emotions can be improved, sleep can be quality, bone, muscle and organ restructuring can be helped, old and new injuries can be healed, concentration and memory can be improved. In addition to the above benefits, there are other benefits such as increasing body weight, increasing growth, increasing body resistance, increasing baby's concentration and making babies sleep more soundly, fostering a bond of affection between parents and children, increasing breast milk production (Roesli, 2018).

The results of this study are in line with the results of Triyana Indrayani's research (2019) which said that the results of the t test obtained a P value = 0.000 which means P value <α, it can be concluded that in this study infant massage was effective in increasing changes in body weight of infants aged 3-6 months. at the Deho Posyandu in the working area of the Hamadi Jayapura Health Center in 2019. The results of this study are also supported by the results of Dewi's research (2020) which says that the statistical test results obtained a p value = 0.000, it can be concluded that there is a significant difference in baby weight before and after massage in the intervention group. From the results of this study, it is known that baby massage is very effective in increasing baby's weight. so that baby massage can be used as an intervention in midwifery care for babies so that baby's growth and development can be achieved optimally. According to the assumption of the researcher based on the results of the study that baby massage has many benefits, one of which is increasing changes in the baby's weight. In the results of this study, it can be proven that the average change in infant weight gain between those who were given baby massage treatment and those who did not show a very striking difference in weight gain was an average of > 140
grams per week. The benefits of baby massage in addition to increasing weight can also increase growth, increase body resistance, increase baby's concentration and make baby sleep more soundly, build a bond of affection between parents and children, increase milk production. The results also showed that between the intervention group and the control group the results of the paired sample t-test were obtained which had a significant value of 0.000 (<0.05). Both groups showed significant results because the intervention group and the control group both had baby weight gain from 0-3 months of age, but in this study the difference was the average weekly weight gain of babies. The results showed that the average weight gain of babies per week was 220.47 grams, which means the baby's weight in 1 week has increased > 140 grams, while in the control group it is only 133.56 grams, which means the baby's weight in 1 week has increased. < 140 grams.

CONCLUSION
The average baby weight before baby massage was done in the intervention group was 3,276.67 grams and in the control group was 3,511.67 grams. The average baby weight after baby massage in the intervention group was 5,922.33 grams and in the control group was 5,114.33 grams. There is an effectiveness of baby massage on increasing baby's weight (p.value 0.000).

REFERENCES


