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The effect of baby massage and baby spa on weight gain in 3-9 month-old babies at Mahanum Clinic

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ABSTRACT

Child developmental disorders occur when genetic or environmental factors fail to meet a child's basic growth and development needs. Prompt detection and appropriate intervention can help improve the quality of a child's growth and development later in life. This study aimed to determine the effect of infant massage and baby spa treatments on weight gain in infants aged 3 to 9 months. This was a quasi-experimental study using a pre-test-post-test with a control group design. The subjects consisted of 20 infants in the case group and 20 infants in the intervention group at Mahanum Clinic. The results showed that the average weight gain in infants aged 3-9 months in the intervention group was 740.48 grams, while the average weight gain in the control group was 206.48 grams. The results of the Paired Sample T-test showed a p-value of 0.000 < 0.05, indicating that both baby spa and baby massage have an effect on the weight of babies aged 3-9 months. The results of the Independent T-test showed a p-value of 0.004 < 0.05, indicating that there is a significant difference between baby spa and baby massage on the weight of babies aged 3-9 months, with baby spa being superior to baby massage. It is recommended that midwives use baby spa as an appropriate health promotion strategy to increase infant weight.

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INTRODUCTION

The golden and critical period occurs from 0 to 24 months of age, so growth and development are continuous stages from birth to adulthood. Optimal growth and development according to a child's age is considered a healthy child. There are four sectors in development: gross motor skills, fine motor skills, personal social skills, and language skills. Three factors that influence a baby's growth and development are genetics and gender, hormonal factors, and environmental factors, both during pregnancy (intrauterine) and after birth. These environmental factors include maternal nutritional needs during pregnancy, birth history, postnatal nutritional management, environmental stimulation, trauma, illness, and other factors. Stimuli that can be provided as

tactile stimulation include baby massage and gym, which aim to stimulate muscles, bones, and organ systems to function optimally(Retnaningsih & Purwanti, 2023).

Additional benefits of infant massage include supporting exclusive breastfeeding, stimulating the baby's appetite, improving sleep quality, facilitating weight gain, boosting the immune system, and strengthening the parent-child bond. Infant massage increases vagus nerve activity, speeding up intestinal absorption and reducing hunger. Furthermore, massage can increase the levels of enzymes that aid in food absorption, such as gastrin and insulin. This promotes faster food absorption and increases the baby's weight gain (Ramadhani et al., 2025).

The importance of stimulation through infant massage is supported by the fact that touch can stimulate a baby's digestive system, improve appetite, reduce colic symptoms, and improve sleep quality. One important sign that stimulation is successful is optimal weight gain (Winarsih et al., 2022)(Ella & Agustin, 2024). Weight gain is a key indicator of infant growth and development, especially between 0 and 6 months of age, which is the golden period of development. The WHO and the Ministry of Health emphasize the importance of monitoring infant growth and development by regularly measuring weight as a means of early detection of nutritional and developmental problems (Lova, 2025).

Gross motor stimulation that can be given to babies includes providing educational toys, tummy time exercises, baby gym, brain gym, baby massage, and baby spa (Susmita & Handayani, 2024)(Silaban et al., 2024). One example of gross motor stimulation is a baby spa. The word "spa" comes from Latin and is an abbreviation of Solus Per Aqua, which means treatment or care using water (AZIZAH, 2020)(Maryati et al., 2021). Spa is a traditional method that uses a holistic approach, namely a comprehensive treatment that combines hydrotherapy (water therapy) and massage methods in an integrated manner to balance the body, mind, and emotions (Kusmini & Nurul, 2020).

According to previous research, Baby Spa affects infant growth, including height and weight. After a baby undergoes Baby Spa treatment, their muscles develop well, their joints function optimally, their height increases, and their bodies become more flexible. Moving in the water exercises all of a baby's limbs, as they engage all body parts, from the feet and hands to the head, although the movements are not yet perfect (Kurniawati et al., 2020).

In Baby Spa, all parts of the baby's body are moved and trained, from the feet and hands to the head (Purwanti, 2023). The baby's ability to coordinate their muscles improves because when swimming in water, the effect of gravity is less, allowing the baby to move more actively and all muscles can function optimally. Generally, Baby Spa begins with a massage followed by swimming (Andini & Puspita, 2025)(Fadilatin Dwi Aprilya et al., 2025). According to the American Massage Association, the method of giving a baby massage involves touching, moving, and applying pressure to the baby's body. The benefits include increasing the baby's appetite, resulting in weight gain, and making the baby appear healthier (RINI, 2024)(RINI, 2024). Furthermore, the baby's weight, height, and head circumference can also increase compared to babies of the same age who do not receive Baby Spa therapy (Prastiwi & Alindawati, 2022).

In a 2023 BPS report, of 178,973 infants, 1,362 were recorded as having low birth weight (LBW), and 449 infants were malnourished. The application of infant massage and baby spa treatments can be practical interventions to improve growth outcomes (AP et al., 2025)(Sanputri et al., 2025). Based on this background, this study investigates the effectiveness of massage therapy on the growth of children under 2 years of age (Statistik, 2021).

The selection of the 3–9 month age range is based on physiological and developmental considerations that are very important at this stage. At this age, the baby's nervous system, motor skills, and sensory responses are in a stage of accelerated maturation, making them very responsive to touch stimulation, rhythmic movements, and relaxation provided through baby spa and baby massage. Additionally, this age range is a crucial period for muscle tone development, sleep regulation, early emotional development, and weight gain, which are greatly influenced by

comfort, relaxation, and improved quality of interaction between the infant and caregiver. Therefore, the age of 3–9 months is the most ideal phase for assessing the effectiveness of early stimulation interventions on growth and development.

RESEARCH METHOD

This study was a quasi-experimental study with a pre-test, post-test, and control group design. This study aimed to analyze the differences in the effects of baby spa and infant massage treatments on infants aged 3-9 months, in terms of growth and development, between the intervention and control groups.

The subjects were 20 infants aged 3 to 9 months. The infants were divided into two groups: a case group consisting of 20 infants who received baby spa intervention, and a control group consisting of 20 infants who received infant massage intervention. Both groups received intervention twice weekly for 6 months. The subjects of this study were 40 infants aged 3-9 months. Twenty infants in the case group received the baby spa intervention, while 20 infants in the control group received the infant massage intervention. Both groups received the intervention twice a week for 6 months. The effect of the baby spa intervention on the control group and the effect of the infant massage intervention on the intervention group were analyzed using a paired sample t-test.

The differences in the effects of baby spa and baby massage on increasing infant weight gain will be analyzed using an independent sample t-test.

RESULTS AND DISCUSSIONS

Subject Characteristics

Table 1. Characteristics of research subjects based on infant gender and age

Characteristics		Group			
		Baby Spa (n=20)		Baby Message (n=20)	
		N	(%)	N	(%)
Umur Bayi :					
a.	3	3	(15%)	3	(15%)
b.	4	4	(20%)	4	(20%)
c.	5	3	(15%)	4	(20%)
d.	6	4	(20%)	3	(15%)
e.	7	2	(10%)	2	(10%)
f.	8	2	(10%)	2	(10%)
g.	9	2	(10%)	2	(10%)
Total		20	(100%)	20	(100%)
Gender					
a.	Male	9	45	6	(30%)
b.	Female	11	55	14	(70%)
	Total	20	(100%)	20	(100%)

Table 1 shows the sample size by infant gender and age. There were 15 male infants and 25 female infants in the control and intervention groups. The age distribution of infants in this study was 3-6 months. The majority of infants in the control and intervention groups (32 infants) were 12-15 months old.

This study examined the differences in the effects of baby spa and baby massage on weight gain in infants aged 3-9 months at Mahanum Clinic 2025. The study was conducted from March to September 2025, specifically over a six-month period.

Frequency Distribution of Average Weight Gain in Infants Aged 3-9 Months Before and After Infant *Spa* and Baby *Message* Group Interventions

Table 2. Frequency distribution of average weight gain in infants aged 3-9 months before and after infant spa and baby message group interventions 2025

Variable	Min	Max	Mean	SD
Intervention Baby Spa				
Pre Test	6000	8200	7047.62	632.154
Post Test	6500	8400	7788.10	740.254
Intervention Baby Message				
Pre Test	5200	6716.19	6716.19	1417.531
Post Test	5400	6922.67	6922.67	1491.502

Based on Table 2, the average weight gain before and after the intervention was 740.48 grams in the Baby Spa group, while the Baby Massage control group experienced an increase of 206.48 grams. The average weight gain for infants aged 3-9 months in the Baby Spa intervention group was better than the control group, with a difference of 334 grams. Based on the normality test, the results for both the pretest and posttest showed a sig value greater than 0.05, indicating a normal distribution.

Table 3. The effect of baby massage before and after intervention and the effect of baby spa before and after intervention on the weight of infants aged 3-9 months at Mahanum Clinic 2025

Variable	N	Min	Max	Mean	Δ Mean	T	p-value
Intervention Baby Message							
Pre Test	20	6000	8000	7247.60	540,42	-4.731	0.000
Post Test	20	6500	8400	7788.10			
Intervention Baby Spa							
Pre Test	20	5200	9800	6716.19	206,48	-5.170	0.000
Post Test	20	5500	10000	6922.67			

Table 3 Based on Table 3 above, it can be concluded that the mean difference in the Baby Massage group was smaller than the mean difference in the Baby Spa group. There was an effect of baby massage on infant weight, with a p-value of 0.000. The p-value in the Control Group, namely Baby Massage, was 0.000, meaning it was smaller than $\alpha = 0.005$. Therefore, it can be concluded that Baby Massage also has an effect on infant weight.

Tabel 4. The effect of baby massage and baby spa on body weight in infants aged 3-9 months

Group		Standard Deviation	p-value
	Baby Message	14,384	
Posttest	Baby Spa	15,806	0.004

Based on Table 4, the statistical results of the T-Test showed a p-value of 0.004 < 0.05, indicating a difference in the effect of baby massage and baby spa on infant weight.

Discussion

Respondent Characteristics

a. Gender, the study results showed that there were 25 baby girls and 15 baby boys. Infant massage was performed using pure coconut oil, with the majority of the baby girls (54.4%) receiving the massage. Meanwhile, the majority of the babies massaged using baby oil were also girls (54.4%). According to the Galenia MCC Team (2018), both boys and girls need optimal physical growth. However, girls' physical growth tends to stop earlier than boys'. From the explanation above, it's clear that boys grow slower than girls. This leads some parents to provide additional care to ensure their children grow optimally. The goal is to ensure their physical growth is not stunted, such as being too short or underweight.

b. Age, the results of this study showed that the majority of babies in the Baby Spa intervention group were 3-6 months old, with 14 (70%), while in the Baby Massage control group, the majority of babies were 3-6 months old, with 14 (70%). 3-6 months is the ideal age for babies to start exploring the pool. This is because their aquatic reflex, the ability to inhale before touching the water, is still present. Babies also have a natural instinct to float and dive, preventing them from swallowing water while underwater. By 3 months, babies have good control of their neck and nape, allowing them to hold their head upright. Babies have two reflexes that facilitate swimming: the Dive Reflex and the Swim Reflex. These reflexes allow babies to hold their breath and open their eyes while underwater. When diving, babies will move their arms and legs as if swimming, making them appear like natural swimmers. Baby spas can provide a sense of calm, comfort, and freshness, helping babies relax and sleep soundly. It is known that 75% of growth hormone is produced during sleep. The longer a baby sleeps, the more growth hormone is released.

Average Baby Weight

According to table 2, the average weight gain before and after the intervention in the Baby Spa group increased by 740.48 grams, while the Baby Massage control group only gained an average of 206.48 grams. The average weight gain for babies aged 3-9 months in the Baby Spa intervention group was better than the control group that only received baby massage, with a difference of 334 grams. Previous research showed the results of a paired samples T-test in the control group to examine the effect of Baby Massage on increased baby weight. The obtained significance value (2-tailed) was 0.069, which is higher than 0.05 (p-value), (Lova, 2025) While Baby Spa also saw an increase in weight, the pre-test results showed an average score of 46.25 and the post-test results showed an average score of 84.37. From this evaluation, it can be concluded that there was an improvement in the average scores of the participants, indicating an increase in their knowledge and understanding of the benefits of baby spa for the growth and development of babies (Andriani, 2025).

Babies who have undergone baby spa treatments show increased appetite, leading to greater weight gain. These babies appear healthier and experience improvements in weight, height, and head circumference compared to babies of the same age who did not receive baby spa treatments (Sari & Apriyani, 2022).

The Effects of Baby Spa and Baby Massage Before and After Intervention

Based on Table 3, it can be seen that the Intervention group had a greater average difference compared to the Baby Massage group. In addition, there was a significant effect after being given Baby Spa on baby weight, with a p-value of 0.000. In the Control group, namely Baby Massage, there was also an effect on baby weight, with a p-value of 0.000, which is smaller than the significance level of a = 0.05. Therefore, it can be concluded that Baby Massage also has an effect on baby weight. Previous research shows that giving Baby Spa and Baby Massage leads to a significant increase in baby weight. The results show an Asymp. Sig (2-tailed) = 0.000, which is less than 0.05, so the null hypothesis (H0) is rejected. This means there is a significant difference in the effect of providing Baby Spa and Baby Massage (Andini & Susanti, 2024). On average, the weight gain from bathing or swimming is 7.94 kg, with a standard deviation of 0.29. The average increase in weight before and after the therapy was 0.98 kg. This shows that the more regular the massage therapy is given and the more often bathing or swimming is done, the more the baby's weight increases. The t-test results show p=0.000 (Fauziyah et al., 2022). However, this is different from the results of the research conducted (Krisnanto & Natalia, 2019). It was found that there was no significant difference between baby massage and baby swimming in terms of increasing the baby's weight, with a p-value of 0.186.

The Effect of Baby Spa and Baby Massage on Body Weight in Infants Aged 3-9 Months

From Table 4, the statistical result of the T-Test shows a p-value of 0.004, which is less than 0.05. This means there is a difference in the effect of baby SPA and baby massage on the baby's weight. Three to six months is the right time for a baby to have a Baby Spa, after their neck and head control is good enough for them to hold their head up. Babies have two reflexes that help them swim well: the Dive Reflex and the Swim Reflex. These reflexes allow the baby to hold their breath and open their eyes while in water. When a baby dives, they move their arms and legs in swimming motions, making them look like natural swimmers. Baby Spa helps give the baby comfort, relaxation, and a sense of freshness, which makes them feel relaxed and sleep soundly. It's known that 75% of growth hormones are released while a baby is sleeping. The more hours a baby sleeps, the more growth hormone is released (Wahyuni et al., 2020)..

CONCLUSION

Based on the research results, it can be concluded that there is a significant influence between baby spa and baby massage on the weight of babies aged 3 to 9 months. Therefore, health workers are advised to promote and educate the public about baby spa and baby massage, especially parents of babies, to increase their babies' weight. This can be done by providing counseling accompanied by demonstrations, as well as distributing brochures, which can be distributed by health workers through integrated health posts (Posyandu). It is hoped that respondents or the public will have a better understanding of baby spa and baby massage stimulation, and make it an alternative choice for providing stimulation to their babies, thereby increasing their babies' weight and reducing the risk of low birth weight (LBW) and stunting. This study contributes to strengthening evidence-based midwifery policy by demonstrating that baby spa and baby massage are effective early stimulation interventions for increasing infant weight, and should therefore be considered as part of growth monitoring programs. Going forward, research needs to focus on long-term evaluation of the effects of these two interventions on other aspects of development—such as fine motor skills, social skills, and cognitive abilities—using a longitudinal design and a larger sample size. In addition, the results of this study provide a basis for policy recommendations for health workers and Posyandu to integrate baby spa and baby massage as routine services, including the development of standard procedures, cadre training, and structured education for parents to ensure that stimulation is carried out safely, measurably, and sustainably.

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