

## Differences In The Effect Of Baby Massage And Baby Spa On The Growth And Motoric Development Of Infants Aged 3 - 6 Months At Pmb Cakung Kelurahan, Jakarta Timur

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### Abstract

**Background :** The age of infants and toddlers is the golden age of the period of growth and development of a human being. To stimulate the growth and development of the baby, it is necessary to stimulate the baby. Baby massage and spa are activities to optimize the growth and development of babies.

**Research objective :** to determine the effect of baby massage and baby spa on the growth and motoric development of babies aged 3 to 6 months.

**Research Methods :** This study used a quasi-experimental and pretest and post-test design with a control group. The number of samples of infants aged 3-6 months was 60 babies, 20 babies for the baby massage group, 20 babies for the baby spa group (solus per aqua) and 20 babies who were not treated because their parents refused. The instruments used in this study were baby scales, tape measure and DDST II. Data analysis in this study was the Wilcoxon and Mann Whitney tests.

**The results of the study:** There is an influence of baby massage and baby spa interventions on the growth and motor development of infants aged 3-6 months with p-Value = 0.000 (<0.05). The Mann Whitney test results obtained a p-value of 0.000 (p-value <0.05 at  $\alpha$  = 5%), so that it can be concluded that there are differences in the growth and motor development of infants aged 3 to 6 months between the control group and the intervention group (who get baby massage and baby spa).

**Conclusions and suggestions :** It is hoped that baby massage and baby spa can optimize baby growth and development. There is a difference in the effect of giving baby massage and baby spa on the growth and motoric development of infants aged 3-6 months. So that giving actions like this can be routinely carried out to maximize the growth and development of the baby.

**Keywords:** Baby Massage, Baby Spa, Growth, Development.

### I. INTRODUCTION

Infancy is an important period in the growth and development period of a child. This is because this period will greatly determine the growth and development of a human being in the next stage of life. The period of the first 5 years of life is a period that is very sensitive to the environment. This period is a short period and cannot be repeated. This period is often referred to as the "golden period", "window of opportunity" or "critical period". During this baby-adjustment period, baby's abilities such as language skills, emotional, and other developments take place very quickly and this period becomes the main foundation for the development of the next stage, therefore, during this period special attention is needed to foster a child's growth and development (Palupi & Pratiwi 2019).

Growth is an increase in the size and number of cells and inter-cell tissue or an increase in size and physical structure of the body, part or all of which can be measured in units of length and weight (Direktorat Kesehatan Departemen Kesehatan, 2016).

Development is the increase in abilities, skills and functions of the body as a whole as a result of a more complex body maturation process which includes gross motoric, fine motoric, speech, language, socialization, as well as quantitative and qualitative and psycho motoric development. Development using the Denver Development Screening Test II (DDST II) (DENVER-II PowerPoint, n.d.).

The World Health Organization (WHO) states that there are 200 million more children under the age of 5 worldwide who do not reach their maximum growth and development potential, and most of them live on the continents of Asia and Africa. The WHO data shows that the problem with growth is not only undernutrition, but also stunting and overnutrition. The prevalence of malnutrition in children under five is 7.3%, obesity is 5.9% and stunting is 21.9% (World Health Organization (WHO), 2018).

Stimulation plays an important role in increasing the growth and development of the baby so that it can develop properly at most to support other factors. Continuous stimulation on a regular basis can stimulate the development of brain cells and strengthen the connections between nerves that are formed. Types of stimulation for babies' gross motoric skills that can be given are educational toys, tummy time exercises, baby gyms, brain gyms, baby massages and baby spas. Baby massage or baby massage can be given massage on the child's extremities to stimulate motoric development so that their development can run optimally. This is because massage in infants can stimulate the muscles, bones and organ systems to grow optimally. Treatment and stimulation are needed, including in the form of touch that is done properly and continuously so that children can achieve an optimal growth level. Baby massage or massage is a form of stimulation that can be given to babies (Naufal & Artika, 2019).

Baby spas (solus per aqua) for babies and children's bodies can be given by 2 methods namely swimming or bathing and with the massage method. Bathing is very effective for relieving baby's tiredness and boredom, bathing is the best choice for relieving fatigue, and swimming stimulates baby's movements. Playing in water, the baby's muscles grow properly, the joints have maximum activity, the body's growth becomes flexible and maximal (Naufal & Artika, 2019).

## **II. RESEARCH METHODS**

This research was conducted with a quasi-experimental approach and a pre-test and post-test research design. The samples used were babies aged 3 to 6 months with a total of 60 babies, 20 baby massage treatments, 20 baby spa treatments (solus per aqua) and 20 babies who were not treated because their parents refused. The study was carried out routinely 1 time per week for 4 times with a duration of treatment of 20 to 30 minutes, while the same baby spa intervention was carried out routinely 1 time per week for 4 times but the baby spa method was added to the swimming method which lasted 30 to 40 minutes. Massage and spa treatments for babies are carried out routinely with the aim that growth and development can be optimal.

And the motoric development of babies aged 3 to 6 months at PMB Cakung Village, Jakarta Timur. From the explanation above, the researchers wanted to know the differences in growth and motoric development in babies aged 3-6 months who had baby massage and baby spa at PMB Cakung sub-district, Jakarta Timur in 2022.

### III. RESEARCH RESULT

1. Distribution of characteristic frequencies in infants aged 3 to 6 months in the control group at PMB, Cakung sub-district, Jakarta Timur

**Table 1**  
**Frequency Distribution of Characteristics in Infants Aged 3-6 Months in the Control Group at PMB, Cakung Subdistrict, Jakarta Timur, 2022**

Characteristics of Respondents	Frequency (N)	Percent (%)
Age		
3 months	2	10.0
4 months	2	10.0
5 months	3	15.0
6 months	13	65.0
Total	20	100.0
Sex		
Man	14	70.0
woman	6	30.0
Total	20	100.0
Body Weight		
6 kgs	1	5.0
6.5 kg	3	15.0
7 kgs	2	10.0
7.5 kg	4	20.0
8 kgs	10	50.0
Total	20	100.0
Body Length		
58cm	2	10.0
60cm	2	10.0
62cm	3	15.0
65cm	12	60.0
66cm	1	5.0
Total	20	100.0
Circumference		
Head		
40cm	2	10.0
41cm	2	10.0
42cm	4	20.0
43cm	12	60.0
Total	20	100.0

Source: results of primary data processing (2022).

2. Distribution of characteristic frequencies in infants aged 3-6 months in the infant massage group at the PMB Cakung sub-district, Jakarta Timur

**Table 2**

**Frequency Distribution of Characteristics in Infants Aged 3-6 Months in the Infant Massage Group at PMB Cakung Subdistrict, Jakarta Timur in 2022**

Characteristic: of Respondent:	Frequency (N)	Perce nt (%)
Age		
3 months	3	15.0
4 months	2	10.0
5 months	3	15.0
6 months	12	60.0
Total	20	100.0
Gender		
Man	12	60.0
Woman	8	40.0
Total	20	100.0
Weight		
6.5 kg	4	20.0
7 kgs	2	10.0
7.5 kg	4	20.0
8 kgs	10	50.0
Total	20	100.0
Body Length		
60cm	3	15.0
62cm	2	10.0
64 cm	3	15.0
66cm	12	60.0
Total	20	100.0
Circumference		
Head		
40cm	3	15.0
41cm	2	10.0
42cm	2	10.0
43 cm	13	65.0
Total	20	100.0

Source: results of primary data processing (2022)

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3. Distribution of the frequency characteristics of infants aged 3 to 6 months in the baby spa intervention group at PMB, Cakung Village, Jakarta Timur

**Table 3**

**Characteristic Frequency Distribution in Infants Aged 3-6 Months in the Baby Spa Group at PMB, Cakung Subdistrict, Jakarta Timur, 2022**

<b>Characteristic Respondents</b>	<b>Frequency (N)</b>	<b>Percent (%)</b>
<b>Age</b>		
3 months	1	5.0
4 months	3	15.0
5 months	3	15.0
6 months	13	65.0
Total	20	100.0
<b>Gender</b>		
Man	11	55.0
Woman	9	45.0
Total	20	100.0
<b>Weight</b>		
6.5 kg	1	5.0
7 kgs	3	15.0
7.5 kg	3	15.0
8 kgs	13	65.0
Total	20	100.0
<b>Body Length</b>		
56cm	1	5.0
60cm	1	5.0
61cm	3	15.0
63cm	3	15.0
65cm	4	20.0
66cm	8	40.0
Total	20	100.0
<b>Head Circumference</b>		
40cm	1	5.0
41cm	3	15.0
42cm	3	15.0
43cm	13	65.0
Total	20	100.0

Source: results of primary data processing (2022)

4. Distribution of the frequency of body length growth in infants aged 3-6 months before and after infant massage at PMB Cakung sub-district, Jakarta Timur

**Table 4**

**Distribution of the Frequency of Body Length Growth in Infants Aged 3-6 Months Before and After Baby Massage at PMB Cakung Subdistrict, Jakarta Timur in 2022**

Baby massage	Body Length	
	Amount ( N )	Percentage%
Before	5	25%
After	15	75%
Total	20	100%

Source: Processed primary data, 2022

5. Distribution of the frequency of growth in body length of infants aged 3-6 months before and after having a baby spa at PMB, Cakung sub-district, Jakarta Timur

**Table 5**

**Distribution of the Frequency of Body Length Growth in Babies Aged 3-6 Months Before and After Baby Spa at PMB Cakung Subdistrict, Jakarta Timur in 2022**

Baby spas	Body Length	
	N	Percentage
Before	8	40%
After	12	60%
Total	20	100 %

Source: Processed primary data, 2022

6. Distribution of frequency Growth in weight of infants aged 3 to 6 months before and after infant massage at PMB, Cakung sub-district, Jakarta Timur

**Table 6**

**Frequency Distribution of Weight Growth in Babies Aged 3-6 Months Before and After Baby Massage at PMB Cakung Subdistrict, Jakarta Timur, 2022**

Baby massage Weight	N	Percentage
Before	4	20%
After	16	80%
Total	20	100 %

Source: Processed primary data, 2022

7. Frequency distribution of weight growth in infants aged 3 to 6 months before and after the baby spa at PMB Cakung sub-district, Jakarta Timur

**Table 7**

**Frequency Distribution of Weight Growth in Babies Aged 3-6 Months Before and After the Baby Spa at PMB Cakung Subdistrict, Jakarta Timur in 2022**

Baby spas Weight	N	Percentage %
Before	7	35%
After	13	65%
Total	20	100 %

Source: Processed primary data, 2022

8. Motoric development in infants aged 3 to 6 months before and after baby massage at PMB, Cakung sub-district, Jakarta Timur

**Table 8**

**Motor Development in Babies Aged 3-6 Months Before and After Baby Massage at PMB Cakung Subdistrict, Jakarta Timur in 2022**

Baby massage	Development motor			Mean	p-values
	N	Flat-	St. deviation		
Before	20	11.00	0.52	1.04	0.000
After	20	12.04	1.10		

Source: Processed primary data, 2022

9. Motoric development in infants aged 3-6 months before and after baby massage and baby spa at PMB Cakung sub-district, Jakarta Timur

**Table 9**

**Motoric Development in Babies Aged 3-6 Months Before and After the Baby Spa at PMB, Cakung Village, Jakarta Timur in 2022**

<i>Baby spas</i>	Development motor			$\Delta$ Mean p-value	
	N	Flat-Flat	St. deviasi		
Before	20	11.20	0.52	0.85	0.000
After	20	12.05	0.83		

Source: Processed primary data, 2022

10. Comparison of motoric development in infants aged 3-6 months after baby massage and baby spa at PMB Cakung sub-district, Jakarta Timur

**Table 10**

**Comparison of Motor Development in Babies Aged 3-6 Months after Baby Massage and Baby Spa at PMB Cakung Subdistrict, Jakarta Timur, 2022**

Group	Mean s	Median	Min – Max	95% CI
	Pre test post test	Pre test Post test		
<b>Control</b>	10.70 10.85	11.00 11.00	8.00 – 12.00	10.24 – 11.16
<b>Baby Massage</b>	11.00 12.55	11.00 13.00	9.00 – 12.00	10.57 – 11.43
<b>Baby spas</b>	11.20 12.05	11.00 12.00	10.00 – 12.00	10.95 – 11.44

Source: Processed primary data, 2022 Data Normality Test

11. Data normality test results (shapiro-wilk) in the baby massage and baby spa group before and after the intervention

**Table 11**

**Data normality test results (Shapiro-Wilk) in the baby massage and baby spa groups before and after the intervention**

Group values	Df	p-
Control	20	0.006
Baby massage <b>Before</b>	20	0.006
Baby spas	20	0.003
Control	20	0.003
Baby massage <b>After</b>	20	0.006
Baby spas	20	0.007

Source: primary data processing results, 2022



#### Bivariate Analysis

12. Differences in the effect of giving baby massage and baby spa on growth and motoric development in infants aged 3-6 months in PMB Cakung sub-district, Jakarta Timur

**Table 12**  
**Wilcoxon Test Differences in the Effect of Baby Massage and Baby Spa on Growth And Motoric Development in Babies Aged 3-6 Months at PMB Cakung Subdistrict, Jakarta Timur in 2022**

Group	Means		Difference Means	std. Deviation		std. Error Means		p-value
	Pre test post test			Pre test post test		Pretest post		
Control	10.70	10.85	0.15	0.98	0.99	0.22	0.22	0.083
Baby massage	11.00	12.55	1.55	0.92	1.10	0.20	0.25	0.000
Baby spas	11.20	12.05	0.85	0.52	0.83	0.12	0.18	0.000

Source: Processed primary data, 2022

13. Difference Growth And Motoric Development in Infants Aged 3-6 Months in the Control and Treatment Groups at PMB, Cakung Village, Jakarta Timur

**Table 13**  
**Mann-Whitney Test Differences in Growth and Motoric Development in Infants Aged 3-6 Months in Control and Treatment Groups at PMB Cakung Subdistrict, Jakarta Timur in 2022**

Group	Means		std.		Difference Means	p-value
	Pre test	Post test	Pre test	Post test		
Control	10.70	10.85	0.98	0.99	0.15	0.083
Baby Massage	11.00	12.55	0.92	1.10	1.55	0.000
Baby spas	11.20	12.05	0.52	0.83	0.85	0.000

Source: results of primary data processing, 2022

#### IV. DISCUSSION

This research was conducted with the aim of knowing growth and motor development in infants aged 3-6 months at PMB Cakung Village, East Jakarta. Through statistical tests it is known that the intervention of baby massage and baby spa is very influential in increasing growth and motor development in infants. Routine baby massage treatments are carried out once a week 4 times with a duration of 20-30 minutes while the same baby spa routine is carried out once a week 4 times, but added a swimming method in a baby spa with a duration of 30 -40 minutes. Baby massage and baby spa treatments are routinely carried out to improve the gross motor skills of babies aged 4 to 6 months (Suwanti et al, 2013).

The results of the analysis show that the growth in body length in babies aged 3-6 months before and after baby spa and baby massage at PMB Cakung Subdistrict, East Jakarta in 2022, there is an increase in body length after having a baby spa, namely as much as 60% and after baby massage there is an increase in body length body is quite significant, namely as much as 80%. So giving baby massage is very effective for the growth of baby's body length in PMB Cakung sub-district, East Jakarta in 2022.

Results of the data normality test with the (Shapiro-Wilk) baby massage and baby spa groups before and after the intervention. The Shapiro-Wilk test was carried out with the aim of knowing whether the data is normally distributed or not. Shapiro-Wilk test results on the measurement of the control group, baby massage and baby spa both pre test and post test p-value  $< 0.05$ , it was concluded that the data for all groups were not normally distributed, so the research data were processed using non-parametric statistical tests.

Differences in the Effect of Giving Baby Massage and Baby Spa on Growth and Motor Development in Babies Aged 3-6 Months. On the results of statistical tests using Wilcoxon, measurement of growth and motoric development in infants aged 3-6 months at PMB Cakung Village, East Jakarta.

In 2022, a p-value of 0.083 was obtained for the control group (p-value  $> 0.05$  at  $\alpha = 5\%$ ), so that it can be concluded that there is no difference in growth and motor development in infants aged 3 to 6 months at PMB, Cakung Village, East Jakarta, in 2022. In addition, the infant massage group obtained a p-value = 0.000 (p-value  $< 0.05$  at  $\alpha = 5\%$ ), it was concluded that that there are differences in the growth and motor development of infants aged 3 to 6 months in PMB Cakung Village East Jakarta in 2022 by giving baby massage. In addition, the baby spa group obtained a p-value = 0.000, it was concluded that that there are differences in growth and motor development in infants 3 to 6 months at PMB Cakung Village, East Jakarta in 2022 with baby spa gift.

This research is in line with Parwati and Wulandari's research in 2017. The development of babies who are stimulated in the form of baby massage shows the level of development in the pass and normal categories as assessed by the DENVER II form. In babies who were massaged twice a day the results were more optimal than in the control group. The results showed that 30% of the respondents had a bachelor's degree, which means that babies have the advantage of being able to carry out developmental tasks that older children should be able to do. Stimulation is an external factor that affects the baby's growth and development after birth, and is also a basic need for growth and development (sharpening) that must be fulfilled because it affects the mental psychosocial development of the baby, namely intelligence, skills, independence, creativity, religion, (Parwati dan Wulandari, 2017).

Differences in Growth and Motoric Development in Infants Aged 3-6 Months in the control and intervention groups. In the results of statistical tests using Mann-Whitney, measurements of growth and motoric development in infants aged 3 to 6 months in the control and treatment groups in PMB Cakung Subdistrict, East Jakarta in 2022 obtained a p-value = 0.000, it was concluded that there were differences in growth and motoric development in infants aged 3 to 6 months at PMB Cakung Village, East Jakarta in 2022 between the control group and the treatment (giving baby massage and baby spa). In addition, it was concluded that the treatment of giving baby massage and baby spa affects growth and motoric development in infants aged 3-6 months at PMB Cakung Subdistrict, East Jakarta in 2022.

## **V. CONCLUSION**

Characteristics of baby respondents aged 3 to 6 months in the infant massage intervention group PMB Kelurahan Cakung Jakarta Timur with 60.0% age, male sex 60.0%, 8 kg body weight 50%, body length 66 cm by 60.0%, and head circumference of 43 cm by 65.0%.

Characteristics in infants aged 3 to 6 months in the baby spa group in PMB Kelurahan Cakung Jakarta Timur with 6 months of age 65.0%, male sex 55.0%, body weight 8 kg 65%, body length 66 cm by 40.0%, and head circumference of 43 cm by 65.0%.

The results of pre-test measurements of growth and motoric development in infants aged 3 to 6 months at PMB Cakung Village, Jakarta Timur, obtained an average score of 11.20 for baby spa and an average score of 11.00 for baby massage.

The results of posttest measurements of growth and motoric development in infants aged 3 to 6 months at PMB Cakung Subdistrict, Jakarta Timur, obtained an average score of 12.05 for baby spa and an average score of 12.55 for baby massage.

The results showed that there were differences in growth and motoric development in infants aged 3 to 6 months at PMB Cakung Subdistrict, East Jakarta in 2022 by giving baby massage with p value = 0.000.

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