EFFECTIVENESS OF BABY MASSAGE ON THE DEVELOPMENT OF INFANTS 3-12 MONTHS OF AGE

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Abstract. Early identification of developmental delays in infants during the first months of life allows for more effective intervention efforts. One way to prevent developmental delays in infants is to provide adequate stimulation through baby massage. This study was conducted to analyze the effectiveness of baby massage on the development of infants 3-12 months in Kamilla Clinic in Gresik Regency. This study is a type of quasi-experiment, by conducting a developmental assessment using the Developmental Scale on 33 infants aged 3-12 months who were selected inclusively. Each infant will be given a massage to determine changes in developmental scores after the intervention. The analysis used to determine the effectiveness of baby massage is the Paired T-Test. The results of the developmental score after the baby massage showed the lowest score of 7 points, there was an increase of 2 points from before the massage. The most improvement occurred in infants aged 6 and 9 months in the category of gross motor, fine motor, and social independence. The results of the analysis of this study indicate that baby massage is effective for improving development in infants aged 3-12 months with a mean of -0.515 with t= -3.55 and p= 0.001. Baby massage is proven to be an effective and fun stimulation method to help the development of infants aged 3-12 months.

Keywords: baby massage, infant, development

INTRODUCTION

The achievement of developmental milestones in the first year of life reflects the maturity and development of the central nervous system, which is strongly influenced by the baby's physical condition, family environment, quality stimulation, and stimulation. Early identification of developmental delays in infants during the first months of life allows for more effective intervention efforts, as the infant's brain has greater plasticity (Ferrara et al., 2022). One way to prevent developmental delays in infants is to provide adequate stimulation through baby massage (Lu et al., 2019).

Several factors can inhibit growth and development in infants so that infants cannot reach their genetic potential. Therefore, baby massage is an alternative stimulation for infant growth and development (Jayatmi & Fatimah, 2021). Systematic tactile stimulation of the body using hands is what is called massage. Massage involves the process of gently rubbing and stroking alternating parts of the body, which can be done using a variety of techniques (Kellet, 2020). Massage can be done with or without the use of oil, the oils often used are coconut oil, or olive oil (Chaturvedi et al., 2020; Meiranny & Susilowati, 2021; Priyadarshi et al., 2022).

To anticipate the impacts of unwanted growth and development, stimulation is necessary (Febriyanti et al., 2019). Baby massage provides several benefits to a baby's development and health. This massage practice can boost immune system response, improve digestive function and elimination processes, and play a role in practicing relaxation of the body. In addition, infant massage can also help reduce depression and tension in infants, increase their alertness levels, and reduce pain and problems such as abdominal bloating and colic. Other benefits include increased milk volume, better weight growth, and better concentration, as well as helping babies sleep better (Cendani et al., 2018). In addition, baby massage can also strengthen the bond of affection between parents and children (bonding), and improve blood circulation and breathing (Meiranny & Susilowati, 2021).

In the initial survey at Kamilla Clinic on 10 babies, it was found that there was 1 baby (10%) who had a developmental score of 7, 4 babies (40%) had a developmental score of 8, and 6 babies (60%) who had a score of 9. After further identification, it was found that babies who had a developmental score of 7 had a delay in gross motor points of 2 points and fine motor points of 1 point, while 4 babies who had a score of 8 were known to have a delay in gross motor 2 points, while in 6 babies who had a score of 9, the average had a delay in fine motor 1 point.

This study was conducted to determine the effect of baby massage on the development of infants aged 3-12 months at Kamilla Clinic to investigate the impact or benefits of baby massage on the

development of gross motor, fine motor, language, and social independence of infants in that age range. By conducting this study, the researchers hope to gain a deeper understanding of the effectiveness of baby massage as a stimulation method in promoting optimal infant development.

METHODS

This type of research is experimental, which aims to examine the impact of giving treatment to the subject or object of research using a quasi-experimental approach (because researchers cannot fully control the research model). This study was conducted at Kamilla Clinic in Kebomas District, Gresik Regency, with a sample consisting of 33 infants aged 3-12 months.

The sampling technique used in this study was purposive sampling, where subjects were selected from the population based on certain considerations. The inclusion criteria in this study were infants aged 3-12 months and in good health. Developmental data collection was obtained through observation using a developmental pre-screening questionnaire. The developmental pre-screening questionnaire used in this study was divided into 4 groups, for infants aged 3-4 months using a questionnaire for 3 months of age, for infants 6-7 months using a questionnaire for 6 months of age, for infants 9-10 months using a questionnaire for 9 months of age, and for infants aged 12 months using a questionnaire for 12 months of age.

Before the intervention, each infant had their temperature checked using a digital thermometer to ensure that they were not generally ill. The baby massage intervention was conducted for 30 minutes, twice a month with a two-week gap. After the baby massage, developmental data was checked using the same questionnaire as before.

Data were analyzed univariately and bivariately. Bivariate analysis used Paired T-test to test the hypothesis of whether there was a mean difference between developmental scores before and after baby massage.

RESULTS AND DISCUSSION

Descriptive data in this study are shown in Table 1.

Table 1. Sex, age, and infant development data

Data	∑	%	Min	Max	Mean	Std. Deviation
Gender						
Female	15	45.5	-	-	-	-
Male	18	54.5	-	-	-	-
Infant age (months)			3	12	7.76	3.26
3	5	15.2	-	-	-	-
4	4	12.1	-	-	-	-
6	3	9.1	-	-	-	-
7	4	12.1	-	-	-	-
9	5	15.2	-	-	-	-
10	5	15.2	-	-	-	-
12	7	21.2	-	-	-	-
Infant development score			-	-	-	-
Before Massage			5	10	8.09	1.10
After Massage			7	10	8.61	0.75

Description of descriptive data in Table 1. It shows that there were 15 (45.5%) female infants, and 18 (54.5%) male infants. The smallest age was 3 months, and the largest was 12 months, with an average age of 7.76. The results of developmental assessment before baby massage showed the lowest value of 5 and the highest was 10, with an average value of 8.09. While the results of the developmental value after baby massage showed the lowest value of 7 and the highest value of 10, with an average value of 8.61.

Normality test results with Shapiro Wilk

Table 2. Normality test results of development value data

Value_development	Shapiro-Wilk		
	Statistic	df	Sig.
Before Massage	0.989	33	0.093
After Massage	0.942	33	0.082

The analysis was based on the probability value (Sig.) which was compared with α 0.05. Table 2 shows the developmental value before the massage has a p-value = 0.093 and after the massage has a p-value = 0.082. These results indicate that the data used has a normal distribution because > α 0.05. So that it fulfills one of the requirements of parametric statistical testing.

Homogeneity test results

Table 3. Homogeneity test results of developmental score data

Value_development	Levene Statistic	df1	df2	Sig.
Before Massage	2.023	6	26	0.099
After Massage	1.054	6	26	0.415

Based on Table 3. It is known that the result of the Lavene test statistical value for the developmental value before massage is 2.023 with p= 0.099. While the Lavene test statistical value for the developmental value after the massage is 1.054 with p = 0.415. Each p-value shows a value > 0.05, so it can be concluded that the data comes from a population that has the same variance (homogeneous). The test for differences in developmental values before and after a massage can be done with parametric statistics with the Paired T-Test test because the requirements for normally distributed and homogeneous data have been met.

Results of the analysis of the effectiveness of baby massage on the development of infants aged 3-12 months

Table 4. Results of the analysis of the effectiveness of baby massage on the development of infants aged 3-12 months

Value_development		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% CI				
					Lower	Upper			
Pair 1	Before massage – After massage	-0,515	0,834	0,145	-0,811	-0,22	-3,55	32	0,001

Based on the results of Table 4. Shows that the mean value is -0.515 with t= -3.55 and p= 0.001. These results corroborate that there is a difference in developmental values before and after baby massage, so it can be concluded that baby massage is effective for improving development in infants aged 3-12 months.

Identification of developmental scores before the massage showed that more 9-month-old babies had deviations, and did not reach the gross motor development stage, namely not being able to pick up and hold each cube with each hand, not being able to support part of the body weight with both feet, not being able to sit without being supported, not being able to eat pastries alone. In addition, there are also delays in fine motor achievement in the form of not being able to move food or toys from one hand to the other and a lack of social independence.

Developmental delay in infants aged 3-12 months is a condition in which infants do not reach or reach late some of the developmental milestones expected for their age (Shafie et al., 2020). Every baby develops at a different pace, but several abilities and skills are expected to be achieved by a certain age. When babies experience developmental delays, this can be a sign that there are problems or obstacles in their development (Oyungu et al., 2021).

Factors that can cause developmental delays in infants aged 3-12 months can vary. Some possible causes include genetic or chromosomal problems, health problems or disorders, malnutrition, lack of

stimulation and interaction, and an environment that does not support the baby's development (Ferrara et al., 2022).

Therefore, it is important to do the right stimulation such as baby massage that has been done. The results of developmental scores after the baby massage showed the lowest score of 7 points, there was an increase of 2 points from before the massage. The most improvement occurred in infants aged 6 and 9 months in the categories of gross motor, fine motor, and social independence. The results of the analysis of this study indicate that baby massage is effective for improving development in infants aged 3-12 months.

The results of this study are in line with Palupi (2019) where the results show the average value of development is 7.50 with a value of Z = -2854 and p = 0.004 (Palupi & Pratiwi, 2018). Similarly, in Battya's research (2020), the p-value of the baby massage kit for gross motor development was 0.017. After being massaged using a baby massager, respondents showed improvement in gross motor development, where they became more able to roll over quickly (Battya et al., 2020). This research is also supported by Nyoman (2021) of 15 babies who were given baby massage, experienced an increase in development, with a p-value = 0.009 (Nyoman et al., 2021). And also research by Nasrah (2018) states that there is an effect of massage on infant development (p-value = 0.028) (Nasrah et al., 2018).

Baby massage's influence on the development of infants aged 3-12 months has been a topic of research and concern for health and parenting experts. Through baby massage, physical and emotional stimulation is provided using gentle and warm touch, which can have a positive impact on various aspects of infant development. Baby massage is an ancient yet highly effective form of stimulation in influencing a baby's development (Febriyanti et al., 2019). The gentle and affectionate touch during massage provides many benefits for the health and well-being of infants between the ages of 3-12 months. One of the main benefits of baby massage is that it stimulates and strengthens the infant's central nervous system, which plays an important role in their motor and cognitive development (Lu et al., 2019).

Gross motor development is one of the important areas in infant development (Taştepe et al., 2020). Gentle massage of the baby's arms, legs, and body can help improve crawling, standing, and walking. In addition, by stimulating the muscles, baby massage also helps develop fine motor skills, such as the ability to reach and hold objects. This is especially important for babies who are in the active exploration phase, as they will more easily learn and recognize their surroundings (Chaturvedi et al., 2020; Surtinah & Suharto, 2018).

Baby massage is not only beneficial for physical development, but it also has a positive impact on emotional development. The gentle touch and affection from parents or caregivers during massage can help strengthen the emotional bond between the baby and the parents. This is very important for the healthy emotional development and emotional well-being of the baby (Retnaningsih & Purwanti, 2023). Babies who feel loved and secure will have a strong foundation for developing confidence and positive social relationships throughout their lives (Sutherland, 2018).

Not only that, baby massage can also help stimulate cognitive development. Certain massage techniques can stimulate the area around the baby's mouth and face, which contributes to the development of their speech and language skills. Through baby massage, babies can be taught to be more aware of their bodies and the surrounding environment, which has a positive impact on their cognitive development (Purwasih, 2020).

With all the benefits mentioned above, baby massage is an effective and fun stimulation method to help the development of babies aged 3-12 months. However, keep in mind that baby massage should be done gently, carefully, and tailored to the baby's needs and comfort. In addition, always consult a doctor or pediatrician before performing a baby massage, especially if the baby has certain health conditions.

This study certainly has some limitations that need to be recognized. Some limitations that may exist in this study include: Every baby is an individual with unique and different developmental traits. Some babies may respond very well to baby massage, while others may not show significant changes. In addition, this study only took place over a limited period. This could limit the understanding of the long-term effects of baby massage on infant development.

CONCLUSION

In conclusion, baby massage effectively improves the development of infants aged 3-12 months. By providing affectionate touch and appropriate physical stimulation, parents or caregivers can help babies better reach their developmental potential. Baby massage is a fun and effective way to provide positive support for babies' optimal growth and development at this important age stage.

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