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Baby Massage On The Development Of Gross Motor Skills In Infants At 3-6 Months Of Age

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ABSTRACT

Infant development according to their age shows that 52.5% experience gross and fine motor disorders. Lack of stimulation in infants can cause developmental delays that impact subsequent stages. Several factors influence gross motor development, including biological, environmental, health, and psychosocial factors. The recommended stimulation is baby massage. This study aims to determine the effect of baby massage on gross motor development in infants aged 3-6 months at Midwife Sehati's Private Practice. This study uses a quasi-experimental design with a pre-test and post-test approach without a control group. The population of this study consists of 30 infants aged 3-6 months, and the sample includes 15 infants selected through purposive sampling. Baby massage is performed for 4 weeks with a frequency of twice a week. Data analysis in this study uses the Wilcoxon test. The study of the results showed that before the intervention, 15 infants (100%) had motor development categorized as questionable. After the baby massage intervention, 13 infants (86.7%) were categorized as normal, and 2 (13.3%) were questionable. The Wilcoxon test results with a p-value of 0.000 (<0.05) indicated that the hypothesis was accepted, suggesting that baby massage has a significant effect on gross motor development in infants aged 3-6 months at PMB Sehati Medan in 2026. The conclusion, baby massage performed by the researcher can support gross motor development in infants. It is suggested that healthcare professionals provide baby massage counseling to support gross motor development in infants.

Keywords: Infants, Massage, Gross Motor Development

INTRODUCTION

Baby massage is a massage technique used to stimulate touch and movement in babies, with the goal of improving health, comfort, and bonding between baby and parent. Baby massage can be performed on a baby's entire body, including the face, head, neck, back, abdomen, hands, and feet.(1)

The development of physical activity in babies occurs during the growth phase from 6 months of age. Motor skills consist of two types: gross and fine motor skills. Gross motor skills are body movements that involve most of the large muscles and other parts of the

body, resulting from the child's abilities. At 3 to 6 months of age, babies begin to reach various important milestones in gross motor skills, such as lifting their heads, rolling over, and kicking their legs more energetically. These gross motor skills are crucial because they form the foundation for a baby's physical growth and support other abilities such as hand-eye coordination and body stability.(2)

Infant developmental problems vary, including motor delays, language delays, behavioral problems, autism, and hyperactivity, which are common worldwide. Incidence rates range from 12 to 16% in the United States, 24% in Thailand, and 13 to 18% in Indonesia. These issues remain a serious issue that requires serious attention.(3)The high incidence of growth and development disorders in toddlers, especially motor development disorders, was found (27.5%) and in Indonesia development disorders vary from 12.8% to 16%, so it is recommended to carry out growth and development observations/screening on each child.(4)

Indicators of infant health can be seen from the growth and development of infants that are appropriate for their age. According to WHO data, 52.5% of toddlers experience problems with gross and fine motor skills. Based on the Ministry of Health. The problem of growth delays in Indonesia is still very diverse, even though the program to improve the quality of children is one of the government's focuses. The prevalence of developmental disorders is in the range of 12.8-16%, with 30% of infants experiencing mild delays in gross motor skills, such as the ability to roll over which should be at the age of 3-4 months but is experienced later than the age of 5 months. The percentage of toddlers who are not weighed has increased from 23.8% to 43.32%, so early detection by weighing is important. (5)

Based on North Sumatra health data in 2022, there were 298,156 live births, and given this high figure, it is crucial to provide stimulation during the golden age to prevent developmental delays. According to the North Sumatra Central Health Statistics Agency in 2022, in the city of Medan, of 34,633 babies, 3,573 babies experienced developmental delays. (7)

Babies with delayed gross motor development will have difficulty lifting their heads at 1-2 months of age. Even at 3-4 months, babies still struggle to lift their heads to a 45-degree angle, shortening the duration of head lifts. And by 6 months, babies still struggle to control their heads properly and cannot even hold them upright.(7)

Suboptimal gross motor skills can lead to decreased creativity in children in adapting, the inability of children to recognize their surroundings and will make it difficult for children

to be accepted in their environment. Furthermore, the impact of gross motor disorders in children can lead to a lack of interest in learning, mental retardation, impaired coordination development, a lack of ability to carry out activities independently, feelings of inferiority, jealousy and disappointment towards other children, and shame.(6)

Stimulation can stimulate infant growth and development, fostering the basic abilities of children aged 0-12 months. Appropriate stimulation of a baby's sense of touch positively influences psychosocial development and fosters bonding between mother and baby, fostering optimal growth and development. Stimulation can be provided whenever possible and as early as possible. This stimulation should be provided regularly and continuously, with affection, baby massage, and other methods. This will ensure optimal infant development. One method of stimulation frequently used by parents for babies is touch stimulation through baby massage.(8)

Baby massage, also known as touch therapy, is a technique that combines the physical benefits of human touch with emotional benefits such as bonding. Baby massage is also an alternative effort to achieve the simplest level of health that can be done at home. In addition, baby massage can also create a spiritual connection between child and parent. Baby massage can provide many benefits, including weight gain, stimulating development, increasing immunity, helping children to be more focused, improving sleep quality, increasing parent-child bonding, and increasing breast milk production.(9)

Research suggests that massage stimulates motor development because the kneading movements of infant massage can help strengthen the baby's muscles. Infant massage can have positive motor effects, including the ability to control and coordinate fingers, arms, trunk, and legs. Babies who have received spa treatments with infant massage appear fresh, healthy, and energetic, and their growth and development are faster than those who have never received spa treatments with infant massage.(10)

Based on an initial survey conducted by researchers at PMB Sehati on January 16, 2026, through interviews with several mothers who have babies aged 3–6 months. Of the 7 babies observed, 3 of them experienced delays in gross motor development, such as not being able to lift their heads 45° (age 3 months), not being able to move their heads left and right (age 4 months), and not being able to roll over (age 6 months). And based on interviews with clinic mothers After regular massage for 4 weeks, the baby's gross motor development can return to normal. The results show that some mothers already know the benefits of baby massage, but not doing baby massage regularly can have an impact on gross motor development, so further research is needed on the relationship. Based on the

above background, researchers are interested in conducting a study entitled "The Effect of Baby Massage on the Motor Development of Babies Aged 3–6 Months at PMB Sehati in 2026

METHOD

The research design used was a quasi-experiment using a pre- and post-test approach without control. This study used one treatment group without a control group, with the following stages: Pre-Test: Measurements were taken before giving baby massage. Intervention: Massage was given to babies aged 3-6 months with a massage duration of 15 minutes. Post-Test: Measurements were taken to determine changes or development of the baby's gross motor skills after the intervention. In this study, baby massage was given for 15 minutes for 4 weeks with a frequency of 2 times a week.

RESULTS

Univariate Analysis

Table 1. Frequency Distribution of Gender in PMB Sehati

No	Gender	Amount	
		F	**%**
1	Man	5	33.3
2.	Woman	10	66.7
	Total	**15**	**100**

Based on table 4.1 it is known that out of 15 respondents (100%) baby age 3-6 monthmale respondents as many as 7 respondents (46.7%), and 8 respondents were female (53.3%).

Table 2. Frequency Distribution of Infants Aged 3-6 Months in PMB Sehati

No	Age	Amount	
		f	**%**
1	3 months	4	26.7
2	4 months	1	6.7

3	5 months3	20.0
4	6 months7	46.6
Total	**15**	**100**

Based on table 4.2 it is known that out of 15 (100%) respondents baby age 3-6 majority month baby on age 6 the month, namely as many as 7 respondents (46.6%), and a minority of babies aged 4 months, namely 1 respondent (6.7%)

Bivariate Analysis

Table 3. Frequency Distribution of Pretest and Posttest Gross Motor Development in Infants at PMB Sehati

No	**DevelopmentGross motor skills**	***Pretest***		***Posttest***	
		F	**%**	**f**	**%**
1	Normal	0	0	13	86.7
2	Doubtful	15	100	2	13.3
	Total	**15**	**100**	**15**	**100**

Based on table 4.3, the frequency distribution of gross motor development in babies aged 3-6 months at PMB Sehati was 15 respondents (100%). It was found that before carrying out baby massage (pretest), the majority of respondents experienced delays in gross motor development (doubtful), namely 15 respondents (100%). Based on table 4.3, the frequency distribution of motor development gross motor development in babies aged 3-6 months at PMB Sehati was 15 respondents (100%), it was found that after carrying out baby massage (posttest) the majority of respondents experienced gross motor development (normal), namely 13 respondents (86.7%) and the minority experienced delays in gross motor development (doubtful), namely 2 respondents (13.3%).

Table 4. Data Normality Test Using Shapirowilk

No	**Group**	**Statistics**	**Df**	**Sig**
1	*Pretest*	0.643	15	0,000
2	*Posttest*	0,000	15	0.003

Based on table 4.4, it is known that df (degrees of freedom) before and after baby massage is 15 respondents, less than 50 respondents, so the normality test technique used is Shapiro-Wilk. Based on the normality test

Using Shapirowilk, the pretest sig value was 0.000 < 0.005 and the posttest sig value was 0.003 < 0.05, which means the data is not normally distributed.

Table 5. Wilcoxon test results on the effect of Baby Massage on gross motor development of babies aged 3-6 months at PMB Sehati

No	Variables	N	*Mean*	Standard deviation	*Min*	*Max*	*p-value*
1.	*Pretest*	15	7.47	0.516	7	8	0,000
2.	*posttest*	15	9.13	0.640	8	10	

Based on table 4.5, it can be seen from the 15 respondents studied that the average gross motor development in babies 3-6 months before (pretest) baby massage was 7.47 and the average gross motor development in babies 3-6 months after (posttest) baby massage was 9.13 with a standard deviation before baby massage was 0.516 and after baby massage was 0.516.

The infant's score is 0.640 and the minimum value before the infant massage is 7 and the minimum after is 8 and the maximum value before is 8 and the maximum after is 10. The results of the analysis using the Wilcoxon test on the pretest and posttest are p = 0.000 where <0.05 which means there is an effect of infant massage on the gross motor development of infants at PMB Sehati.

DISCUSSION

Baby Massage on gross motor development of babies aged 3-6 months at PMB Sehati

Based on the Wilcoxon test results shown in Table 4.5, it is known that the p-value is 0.000 which is smaller than α = 0.05. This indicates that there is a significant difference between the gross motor development of infants before and after the infant massage intervention. The average pretest score was 7.47 with a standard deviation of 0.516, while the posttest score increased to 9.13 with a standard deviation of 0.640. These results

prove that infant massage has a significant effect in improving the gross motor development of infants aged 3–6 months at PMB Sehati.

Gross motor skills are abilities that require coordination to create movements involving large muscles and form body postures. The results of the Wilcoxon study showed a Sig. (2-tailed) p value = 0.001 <α 0.05, which means H1 is accepted H0 is rejected, meaning there is a difference in Denver II values in the group of babies who underwent baby massage intervention. The Wilcoxon value was also obtained. Sig. (2-tailed) p value = 0.063 α 0.05, which means H1 was rejected H0 was accepted, meaning there was no difference in Denver II values in the group of babies who did not undergo baby massage intervention. The results of the Mann Whitney test showed a Sig. (2-tailed) p value = 0.000 <α 0.05, which means there was a difference in Denver II values in the experimental and control groups before the intervention (post test). (11)

Baby Massage or Baby Massage is a gentle touch therapy applied to certain parts of the body to relax muscles and improve blood circulation in the body so that it can provide a sense of comfort to the baby and can help the growth and development of motoric, mental and social in babies. The results of the study obtained a p-value of 0.000 <0.05 which shows that there is an effect of baby massage on motoric development in babies aged 3-6 months in the working area of the Antang Health Center, Makassar City.(12)

Giving meaning to the magic of “touch” and “interaction” as well as “baby massage techniques” in this book, is specifically designed to give your baby all the benefits of massage, while helping your baby fulfill his physical potential at every stage of development (from birth to sitting, standing, and moving).(13)These baby massage techniques offer all the benefits of loving touch and ensure your baby achieves full flexibility as they begin to move, allowing for optimal developmental exploration. Furthermore, baby massage has a calming effect, helping your developing child become "trauma-free," maintain excellent posture, and experience the confidence that comes with free movement.(14)

Baby Massage is one of the treatments included in the complementary method, complementary is a non-pharmacological therapy that can be used to improve the quality of a baby's sleep..The study was conducted in Salopokko Village with 10 respondents. The statistical test used in this study was the Wilcoxon test. The results showed that baby massage had an effect on infant sleep quality, with a p-value of 0.000 or <0.05, indicating that baby massage had an effect on infant sleep quality.(15)

Baby Massage stimulates the production of catecholamines (adrenaline and noradrenaline) which play a role in growth and accelerate the body's adaptation to external stimulation. In addition, massage stimulates growth (GH) which is important for bone and muscle development.(16)

According to researchers, after receiving massage twice a week for four weeks using recommended massage techniques, two infants' motor development was questionable. This was related to a lack of stimulation, parental involvement, and the environment. This was due to the babies rarely being placed on their stomachs, even though this is important for the neck, back, and arm muscles. Furthermore, parents were overprotective, fearful of challenging activities and carrying them too often.

Baby massage, conducted at PMB Sehati, is conducted regularly on Wednesdays and Fridays for infants aged 3 months and Thursdays and Saturdays for infants aged 5 and 6 months. This allows mothers with infants experiencing gross motor delays to benefit from baby massage. The more regularly mothers massage their babies, the more it will help their babies' gross motor development. This massage study was conducted twice a week for 4 weeks, with each massage lasting 15 minutes.

Based on the results of this study, the majority of babies who were previously in the "doubtful" category actually experienced a very significant improvement to the "normal" category. Some remained in the doubtful category due to factors such as lack of further stimulation and the role of overprotective parents who always carry their children. Babies who were massaged twice a week for 4 weeks regularly experienced an increase in gross motor development to normal. It can be concluded that there is an effect of infant massage on the gross motor development of babies aged 3-6 months.

CONCLUSION

Based on the results of the research conducted on "The Effect of Infant Massage on Gross Motor Development of Infants Aged 3-6 Months in the Independent Practice of Sehati Midwives, it can be concluded that the gross motor development of infants at PMB Sehati before the intervention was carried out experienced delays in the development of gross motor babies. After the intervention, the infants experienced appropriate gross motor development. The test results showed that there was an effect of infant massage on the gross motor development of infants aged 3-6 months at PMB Sehati.

SUGGESTION

The recommendations based on the results of this research are: That health workers provide counseling on the effectiveness of Baby Massage on the development of gross motor skills in babies to mothers who have not yet performed baby massage on their babies. Then it is recommended for future researchers to conduct further research on the effect of baby massage on motor development in babies, by considering other variables such as fine motor development, baby's emotions, or sleep quality. This aims to complement and expand the results of existing research, thereby providing a more comprehensive picture of the benefits of baby massage on the development of babies aged 3–6 months.

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