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## Improving the Quality of Baby Sleep by Giving Massage to Babies

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### ABSTRACT:

**Background:** The need for sleep is important for every individual. However, infants who experience sleep disturbances result in decreased sleep quality and affect their growth and development. One that can improve the quality of infant sleep by giving non-pharmacological therapy is baby massage. This study aims to analyze the effect of baby massage on infant sleep quality in Gandasari Village Area, Katapang District, Bandung Regency.

**Methods:** This type of research is a pre experimental design using a one group pretest-posttest design approach. The sample of this study amounted to 30 infants who were taken by the total sampling method. This research instrument used standar procedure operational and questionnaire and paired sample T test statistical test.

**Results:** The results showed that more than half of the respondents (63.3%) had poor sleep quality before baby massage, and more than half of the respondents (56.6%) had adequate sleep quality after baby massage. The paired sample T test statistical test shows that the significant value of p value = 0.000 <  $\alpha$  (0.05), so  $H_a$  is accepted where there is an effect of baby massage on infant sleep quality in Gandasari Village Area, Katapang District.

**Conclusion:** There is a significant influence between giving baby massage on infant sleep quality with p-value 0.000 < 0.05.

**KEYWORDS:** baby massage, infant sleep quality

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### INTRODUCTION

Infants or commonly referred to as babies are individuals aged from 0 to 12 months, divided into early neonatal period and advanced or late neonatal period. In the group of babies or infants who enter the age of 0 - 12 months, it becomes one of the phases that determine a person's survival in the future. Infants have the opportunity to pass through optimal growth and development during the golden period. Growth includes changes in height, weight, bone structure, and sexual characteristics that are quantitative in nature. Meanwhile, development such as motor, sensory, cognitive, and psychosocial development is qualitative. One of the factors that play a role in infants and can affect development in infants is rest or length of sleep. Deep sleep is very important for babies, because during sleep the baby's brain growth reaches its peak (Muawanah et al., 2019).

Sleep is one of the stimuli for brain growth, because with sleep in infants there will be a neuro-brain repair process or a repaired brain nervous system and about 75% of growth hormones are produced. Therefore, the quantity and quality of infant sleep must be maintained (Akib & Dwi Merina, 2020). The quality of a baby's sleep not only affects his physical development, but also his attitude the next day. Sleep also has a major effect on the mental, emotional, physical and immune systems in infants (Fatiha, 2021). Babies are said to experience sleep disturbances if at night the duration of sleep is less than nine hours, the frequency of waking up more than three times and the length of the waking hours is more than one hour. During sleep the baby always seems fussy, has difficulty falling back asleep and cries (Irianti & Karlinah, 2020).

Given the importance of sleep quality to development and growth in infants, their sleep needs must be properly met so as not to further worsen their development. One of the non-pharmacological therapies that can overcome sleep problems in infants is the provision of baby massage or baby massage (Rista Dian Anggraini, 2020). Baby massage has long been practiced throughout the world including in Indonesia and is passed down from generation to generation (Roesli, 2018). Baby massage is a therapy carried out by touch methods applied by ancestors who have been known from the healing arts used and practiced for centuries. The benefits of infant massage are that it helps in stimulating motor nerves, changing bad sleep patterns to good, helping the digestive process and providing emotional calmness, and also nourishing the body and its muscles. It is also very beneficial for increasing baby's growth and weight and increasing endurance.

According to (Sinaga & Laowo, 2020) the improvement in sleep quality in infants given massage is due to an increase in serotonin secretion levels produced during massage. Serotonin is the main neurotransmitter that controls the formation of sleep by inhibiting the activity of the reticular activation system and other brain functions. Massage can affect the release of sleep hormone

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(melatonin), so the baby can sleep regularly with this hormone and the baby is not restless. Melatonin is the main hormone produced by the pineal gland. The release of its secretion is stimulated by darkness and inhibited by light, melatonin will increase when at night, melatonin production will increase when receptors in human body cells receive a message that light intensity begins to decrease. Other benefits of melatonin are as a fat - and water - soluble antioxidant and strengthens the baby's immune system, relaxes muscles, and relieves tension in the baby.

Based on World Health Organization (WHO) data, 335 infants experience sleep problems. The study found that 30% of mothers reported the prevalence of sleep disorders in their infants. In Indonesia, around 44.2% of children experience sleep disturbances in the form of frequent nighttime awakenings (Susanti & Hety, 2020). Meanwhile, research according to (Sinaga & Laowo, 2020), on the effect of baby massage on the quality of sleep of infants aged 0 - 6 months at BPM Pera, Medan Tutungan District. The results obtained from 10 respondents before the baby massage was often fussy, became insomnia, often woke up at night, and the average respondent's sleep quality was 11 hours / day after completion of the massage there was a significant difference where the baby became relaxed, fit, when waking up became not fussy, the quality of sleep from 11 hours / day to 15 hours / day.

Based on the results of a preliminary study in May 2023. Data obtained from the Gandasari Village Area, Katapang District, Bandung Regency, the highest number of infant data is in RW. 05 which was born from April 2022 to May 2023 totaling 40 babies. The results of interviews from 8 mothers of infants, obtained data from 6 out of 8 parents who said that the baby was difficult to sleep at night, often woke up at night for more than an hour and total sleep per day was less than 13 hours, the mother had not been motivated to do baby massage then 2 out of 8 parents of infants said the amount of sleep was normal with an average of 16 hours per day, because the mother often did baby massage at the obstetrics clinic. Babies who do not have enough sleep hours will often cry and fuss. Fussing in babies is broadly speaking there are two groups such as babies crying without illness such as fatigue, thirst or hunger while there are also those who cry because of an illness such as fever, flu or cough. From the interview with the baby's mother, 6 out of 8 said their baby often fussed due to noise, wet diapers, colic, hunger and thirst. While 2 out of 8 mothers said their babies often fussed without cause. And on average, babies often fuss at night rather than morning, afternoon or evening.

## MATERIALS AND METHODS

This study used Pre Experimental Design using the One Group Pretest-posttest Design approach. The place of this research was conducted in Gandasari Village Area, Katapang District, Bandung Regency. The research time was conducted in May 2023 - July 2023. The independent variable (independent) of this research is Baby massage, the dependent variable (dependent) infant sleep quality. The sample in this study amounted to 30 infants with total sampling determination that met the inclusion criteria. Data collection techniques using SOP by providing baby massage training to respondent mothers and using infant sleep quality questionnaires that have been tested for validity and reliability obtained the results of the validity test  $r$  table is 0.374 and the reliability test of the sleep quality questionnaire obtained a Cronbah's alpha value of 0, 802. The reliability coefficient is  $> 0.60$ , so all questions used are reliable. Univariate analysis was used to analyze the variable frequency distribution of baby massage and infant sleep quality. Bivariate analysis in this study was to determine whether the effect was significant or not significant using the Paired Sample T Test  $p$  value  $< 0.05$ .

## RESULTS

Table 1. Distribution of Infant Characteristics in Gandasari Village Area, Katapang District, Bandung Regency

Respondent Characteristics	Frequency (n)	Percentage (%)
<b>Age</b>		
0 – 3 Months	10	33,3
4 – 6 Months	6	20,0
7 – 9 Months	7	23,3
10 – 12 Months	7	23,3
<b>Total</b>	30	100
<b>Gender</b>		
Male	14	46,7
Female	16	53,3
<b>Total</b>	30	100
<b>Health Status</b>		
Healthy	30	100
Sick	-	-
<b>Total</b>	30	100
<b>Baby Massage History</b>		

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Already	7	23,3
Not yet	23	76,7
<b>Total</b>	30	100

Based on table 1, it can be seen that less than half of the respondents (33.3%) were aged 0 - 3 months with more than half of the respondents (53.3%) being female. All respondents (100%) had a healthy health status and most (76.7%) had never been given baby massage and less than half of the respondents (36.7%) were breastfed.

**Table 2. Frequency Distribution of Respondents Based on Infant Sleep Quality Before and After Baby Massage**

Baby Sleep Quality	Baby Massage			
	Before		After	
	n	%	n	%
<b>Good</b>	0	0	11	36,6
<b>Enough</b>	11	36,6	17	56,6
<b>Poor</b>	19	63,3	2	6,67
<b>Total</b>	30	100	30	100

Based on table 2, it can be seen that more than half of the respondents (63.3%) had poor sleep quality before baby massage and more than half of the respondents (56.6%) had enough sleep quality after baby massage.

**Table 3. Effect of Baby Massage on Infant Sleep Quality in Gandasari Village Area, Katapang District, Bandung Regency**

Baby Sleep Quality	Baby Massage				P Value
	Before		After		
	n	%	n	%	
<b>Good</b>	0	0	11	36,6	0,000
<b>Enough</b>	11	36,6	17	56,6	
<b>Poor</b>	19	63,3	2	6,67	
<b>Total</b>	30	100	30	100	

Based on table 3 shows that the results of statistical tests using the Paired Sample T Test obtained p-value: 0.000  $< \alpha$  (0.05), it can be concluded that there is a significant influence between the provision of baby massage on the quality of infant sleep in Gandasari Village Area, Katapang District, Bandung Regency.

## DISCUSSION

### a) Infant Sleep Quality Before Baby Massage

The results of research on 30 infants in the Gandasari Village Area, Katapang District, Bandung Regency showed that more than half of the respondents (63.3%) had poor sleep quality before being given baby massage. The results of this study are in line with Pratiwi et al., (2021) with the research title "The Effect of Baby Massage on the Sleep Quality of Infants 1 - 6 Months" where the quality of sleep of less than half of the respondents (31.4%) showed that they had poor sleep quality before being given baby massage. This research is reinforced by research from Erlina et al., (2023) entitled "Baby Massage on Sleep Quality in Infants Aged 1 - 12 Months" which shows that most respondents (68%) before being given baby massage the baby's sleep quality is categorized as less, this indicates a sleep disorder in the baby.

Sleep quality in infants is a measure used to assess the ease with which infants can initiate and maintain sleep. Sleep quality for infants is good if the length of sleep time becomes balanced between night sleep and daytime sleep, where the quality of sleep should be the quality of sleep that fulfills the amount of sleep based on the amount of sleep needs according to age. The achievement of sleep quality in infants must be good and sufficient where it can restore body processes that occur when the person wakes up with the right amount of nREM and REM. The importance of sleep for infants aims to increase growth and development and needs to be considered so as not to affect their development. Sleep quality is determined by the presence of sleep disturbances, babies are said to experience sleep disturbances if the baby is awake at night for more than one hour Nasution et al., (2021).

The condition of sleep disturbance in infants will affect the growth and development of the baby. Prolonged sleep disturbances also have other impacts such as physical, emotional, psychological, social and health status changes. The health status obtained by the study in table 1 shows that infants (100%) are in good health, this indicates that there is no effect of sleep disturbance on the health status of infants. However, other problems must also be considered because the condition of sleep disturbances in infants which is one of the causes is babies who have never been massaged. Based on table 1 obtained baby massage history shows that (76.7%) infants have never been given baby massage. This is the reason why the respondent's mother does not want to give

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baby massage because the respondent's mother does not want her child why - why so that the quality of sleep in infants becomes less good or enough. Whereas giving baby massage is beneficial in helping to awaken the nervous system for motor and cognitive development in infants (Rambe, 2019). Based on research by Aco Tang, (2018) states that giving baby massage is proven to have an effect on improving the quality of infant sleep in infants aged 1 - 4 months. Babies who are massaged will get many benefits than babies who are not massaged.

According to the researcher's argument, infants who have been given baby massage will experience adequate sleep quality, this is because massage can change brain waves by decreasing alpha waves and increasing beta and theta waves which can affect the quality of infant sleep to be deeper. The quality of infant sleep is sufficient because the mother is still in the process of learning to give baby massage. The new experience gained by the mother has not been running optimally. However, the more the mother gives baby massage regularly in accordance with the provisions will have a positive impact, the quality of sleep will be better and optimal where the baby wakes up will feel more cheerful, fit, and no longer fussy. This is also influenced by several factors, namely according to the need for rest, environment, physical, exercise, disease, and nutrition. These factors can affect the quality and quantity of sleep in infants both within and from outside the infant itself. This opinion is also in line with the opinion expressed by (Muawanah et al., 2019) which explains that if several factors are problematic and cannot be handled, it will cause an impact on the baby which results in sleep disturbances in the baby which may affect growth in the baby. During the golden period, growth and development are also strongly influenced by nutritional factors. According to (Susanti & Hety, 2020) in Husaini (2012) through food humans get nutrients which are basic human needs to grow and develop.

Babies after birth should be given breast milk, but along with growth and development, complementary foods are needed. Babies who have difficulty sleeping or often wake up from sleep can be because they feel they are not full. Nutritional needs in infants play an important role because infants also need sufficient energy to meet the needs in their body. Based on table 1 shows that less than half (36.7%) of the types of nutrition provided by breast milk. Providing nutrition to infants which is divided into several types that can affect the quality of infant sleep, but the researcher here only wants to see based on the characteristics of the type of nutrition provided because it can also affect the infant's sleep process and as one of the fulfillment of nutritional needs in infants.

### b) Sleep Quality of Infants After Baby Massage

The results of research on 30 infants in Gandasari Village Area, Katapang District, Bandung Regency showed that more than half of the respondents (56.6%) had sufficient sleep quality after being given baby massage and also less than half (36.6%) after being given baby massage showed the achievement of infant sleep quality to be good. The results of this study are in accordance with the results of research conducted by Irayani Fahrul, (2023) which shows that after being given a baby massage shows an increase in more than half of the respondents. Respondents (55.6%). This research is also reinforced by research by Dessy Munlidia Sari, (2017) which shows that most respondents (75%) stated that after being given baby massage, the quality of sleep improved.

This improvement in sleep quality has a good impact on babies because it improves their growth and development. According to (Nurhayati, 2021) in Saputra (2012) inadequate sleep and poor sleep quality can result in disturbances in physiology and psychology. good sleep quality can occur due to the provision of baby massage. The activity of baby massage can increase the production of the hormone serotonin which is a transmitter that can suppress reticular activity and other brain activities. The process of serotonin into melatonin is what gives the baby the role of being able to fall asleep soundly and the need for quality sleep or rest is fulfilled (Sinaga & Laowo, 2020).

The importance of sleep time has many positive impacts on babies and is beneficial to restore one's condition to be refreshed, this is in accordance with the opinion of (Rista Dian Anggraini, 2020) in infants aged 0 - 6 months who need to get less than 16.5 hours of sleep per day. Where previously babies had difficulty falling back asleep for more than an hour and often woke up more than three times now become rare or not at all because of the provision of baby massage. Giving baby massage given through touch therapy by the mother will establish communication between mother and baby this provides good bonding. According to Cahyani & Prastuti, (2020) the mother's touch to her baby by giving a light massage immediately after birth is a continuation of body contact needed by the baby to maintain a sense of security and comfort. In the opinion of the researcher, the application of baby massage training is a good application because with baby massage training mothers get new experiences as well as build bonding to children besides that improving sleep quality in infants can also optimize the golden period or golden period that can be passed optimally in infants. From the results of the study it can be concluded that infants after being given baby massage will experience an increase in sleep quality that is more optimal towards good and sufficient. Infants will sleep longer with fewer wakes and during sleep become less fussy and fit and cheerful in the morning.

### c) The Effect of Baby Massage on Infant Sleep Quality in Gandasari Village Area, Bandung Regency District

The results of statistical testing of data using Paired Sample T Test obtained p-value:  $0.000 < \alpha (0.05)$ . This can be interpreted that there is an influence on the quality of sleep in infants before and after baby massage, with an average (mean) sleep quality before being given baby massage is (5.20) while the quality of sleep after being given baby massage has increased average (mean) to (7.13) so that  $H_0$  is rejected and  $H_a$  is accepted which means there is an influence of baby massage on the quality of infant sleep in Gandasari Village Area, Bandung Regency District.

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The results of this study are in accordance with the results of research conducted by Rohmawati Fauziah, (2018) the results showed that the quality of sleep of infants aged 3-12 months before being given baby massage was almost half enough, namely as much as (45.7%) and the quality of sleep of infants aged 3-12 months after baby massage was mostly good as much as (60.0%). Wilcoxon statistical test shows that the significant value of  $p$  value =  $0.000 < \alpha$  (0.05), so  $H_1$  is accepted. Conclusion: there is a significant influence between the provision of baby massage and the quality of sleep of infants aged 3-12 months in Ponkesdes Grogol Village, Diwek District, Jombang Regency which shows that there is a significant influence between the provision of baby massage and the quality of sleep.

The results of this study are also in line with Irayani Fahrul, (2023) which shows that the quality of sleep of babies 1 - 6 months before being given baby massage more than half (55.6%) is sufficient and after being given baby massage the quality of sleep of respondents (35.5%) is good. Wilcoxon statistical test shows that the significant value of  $p$  value =  $0.000 < 0.05$ , it means that there is an effect of baby massage stimulus on the quality of sleep of babies aged 1-6 months at Kartika Holisticare.

In accordance with research conducted by Noorbaya & Siti Saidah, (2020) The results showed that the quantity of baby sleep after massage reached (13.77 hours / day) compared to before massage (12.42 hours / day) with an average increase of 1.29 hours / day. Statistical test results show that there is an effect of baby massage on the quantity of sleep of infants aged 3-6 months with a value of ( $p = 0.000$ ). In addition, it can be concluded that there is a significant effect of baby massage on the quantity of sleep. Sleep is a part that cannot be separated in every individual person, sleep is a form of early adaptation in infants. In infants who are just entering the stage of life need more sleep time than people adults. These sleep needs must be considered and really fulfilled because it can affect the growth and development of the baby. Babies can be said to experience sleep disturbances if the baby often wakes up for more than an hour and has difficulty falling back asleep, so the baby's sleep quality is reduced. The quality of a baby's sleep can be seen in three ways, namely from their sleep, sleep comfort and sleep patterns. Babies who do not have sufficient sleep quality can be improved in one of the safe and comfortable ways is by baby massage which is a type of stimulation in the form of touch that can stimulate the function and structure of cells in the brain (Rifdi et al., 2020).

The benefits of the touch of baby massage done by the mother to the baby provide bounding attachment where in addition to providing adequate sleep quality the mother can also build a well-established emotional bond, besides that the mother can also feel firsthand how to massage her child directly. According to Nurhayati, (2021) in Field (2010) giving baby massage which is done for 15 - 30 minutes using lotion or oil can make babies sleep better so as to increase their intelligence and growth and development. It can be concluded according to research arguments from the results of this study and research conducted by previous researchers that baby massage has a significant effect on infant sleep quality.

## CONCLUSIONS

Based on the results of research conducted in May - July 2023 on 30 infants about the effect of baby massage on infant sleep quality in Gandasari Village Area, Katapang District, Bandung Regency. The research results that have been obtained are as follows:

1. Before doing baby massage that more than half of infants (63.3%) have poor sleep quality.
2. After baby massage more than half of infants (56.6%) have sufficient sleep quality.
3. There is a significant influence between giving baby massage on infant sleep quality in Gandasari Village Area, Katapang District, Bandung Regency with  $p$ -value:  $0.000 < \alpha$  0.05.

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