



Article

IMPROVING BABY SLEEP QUALITY WITH BABY MASSAGE: Pre-Experimental Research Method

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ABSTRACT

Sleep is a top priority for babies, so that the body can produce growth hormone and also the brain will grow 3 times from birth. In addition, sleep also provides benefits for the mental, emotional, physical health and immune system of the baby. The journal Pediatrics noted that about 33% of babies experience sleep problems, but they are not detected and not handled properly. Almost 72% of parents do not consider sleep disorders in infants as a problem, even though they can interfere with infant growth, cause impaired immune function, and endocrine system regulation (Sekartini & Adi, 2016). The purpose of the study was to determine the effect of baby massage on the sleep quality of infants aged 0-6 months at TPMB Rosliana – South Tambun in 2022. Pre-Experimental Research Method with one group pretest-posttest (Adiputra et al., 2021). The results of the study showed the effect of Baby Massage on the quality of sleep of infants aged 0-6 months at TPMB Rosliana With a p value of 0.001 where after massage there was an increase in the quality of baby's sleep, namely before massage harganya 13% of babies with good sleep quality, while after massage 78.3% of babies with good sleep quality.

I. INTRODUCTION

Sleep is a top priority for babies, because this is when neuro-brain repair occurs and approximately 75% of growth hormone is produced. When sleeping soundly, the baby's brain will develop and reach its peak because the body will produce three times more growth hormone than when the baby is awake (Kusumastuti et al., 2016). Apart from that, in the first year a baby's brain will grow 3 times its size at birth or around 80% of an adult's brain. Therefore, babies who sleep longer will achieve optimal growth and development and allow the body to repair and renew all cells in the body. Sleep also has a big effect on mental, emotional, physical health and the body's immune system (Tang, 2023).

Based on data included in the journal Pediatrics, it is recorded that around 33% of babies experience sleep problems (Tang, 2023). Often sleep disorders in children are not detected by parents and are not treated properly. In Indonesia, quite a lot of babies experience sleep problems, namely around 44.2%. However, almost or even more than 72% of parents do not consider sleep disturbances in babies as a problem. Even though it was considered a problem, they only thought of it as a small problem. In fact, sleep problems can disrupt the baby's growth, cause vulnerable immune function, and disrupt the regulation of the endocrine system (Sekartini & Adi, 2016)

Baby massage is also a type of stimulation that will stimulate the development of the structure and function of the cells in the brain. A child who receives targeted and regular stimulation will develop more quickly compared to other children who receive little or no stimulation. Giving massage to babies has a relaxing effect on babies which is expected to improve the quality of sleep in babies. Scientifically, massage stimulates hormones in the body, a substance that regulates functions such as appetite, sleep, memory and learning, regulating temperature, mood, behavior, blood vessel function, muscle contraction, regulating the endocrine system (regulating metabolism, growth, and puberty) and depression. Baby massage can also increase a baby's weight, help babies who cannot sleep well, have a lack of appetite, and are unable to concentrate (Herliana & Widaryanti, 2019).

II. METHODS

This research uses a Pre-Experimental research method design with a single group design with a time series (One Group Pretest-Posttest), namely a research design using one observation group before treatment and after treatment without any comparison group (Suhron, 2024). In this way, the effectiveness of the treatment can be known accurately by comparing the results before and after treatment (Adiputra et al., 2021).

This plan can be described as follows:

Group	Pre test	Intervention	Post Test
Experiment	N1	X	N2

Information :

N1 : Pretest Value (Before Massage)

X : Intervention

N2 : Posttest Value (After Baby Massage)

The population in this study were all babies aged 0-6 months who took baby massage classes at TPMB Rosliana Sumber Jaya Tambun for the period August – October 2022. Sampling was carried out using a total sampling technique with several criteria.

III. RESULT

The research results obtained from this research include:

Baby Characteristics Based on Gender

Table 1.
Frequency Distribution of Baby Characteristics Based on Gender

No	Gender	Frequency	Percentage (%)
1	Man	13	56,5
2	Woman	10	43,5
	Total	23	100,0

Based on Table 1, it is known that of the 23 babies who were respondents, 13 babies (56.5%) were male babies and 10 babies (43.5%) were female babies.

Characteristics of Babies Based on Age

Table 2.
Frequency Distribution of Infant Characteristics Based on Age

No	Age	Frequency	Percentage (%)
1	0-2 Months	12	52,2
2	3-4 Months	4	17,4
3	5-6 Months	7	30,4
	Total	23	100,0

Based on Table 2, it is known that of the 23 babies who were respondents, 12 babies (52.2%) were babies aged 0-2 months, 4 babies (17.4%) were babies aged 3-4 months and 7 babies (30.4%) were babies aged 5-6 months.

Characteristics of Babies Based on Health Status

Table 3.
Frequency Distribution of Infant Characteristics Based on Health Status

No	Health Status	Frequency	Percentage (%)
1	Healthy	23	100,0
2	Sick	0	0,0
	Total	23	100,0

Based on Table 3, it is known that of the 23 babies who were respondents, 23 babies (100%) were babies in healthy condition.

Sleep Quality of Babies Aged 0-6 Months Before Baby Massage at TPMB Rosliana Sumberjaya

Table 4.
Frequency Distribution of Baby Characteristics Based on Sleep Quality of Babies Aged 0-6 Months Before Baby Massage

No	Sleep Quality (Pre Test)	Frequency	Percentage (%)
1	Good	3	13,0
2	Not enough	20	87,0
Total		23	100,0

Based on Table 4, it is known that of the 23 babies who were respondents, 23 babies (100%) were babies in healthy condition.

Sleep Quality of Babies Aged 0-6 Months After Baby Massage

Table 5.
Frequency Distribution of Baby Characteristics Based on Sleep Quality of Babies Aged 0-6 Months After Baby Massage

No	Sleep Quality (Post Test)	Frequency	Percentage (%)
1	Good	18	78,3
2	Not enough	5	21,7
Total		23	100,0

Based on Table 5, after the baby massage was carried out, it is known that of the 23 babies who were respondents, 18 babies (78.3%) were babies who had good sleep quality and 5 babies (21.7%) were babies who had poor sleep quality.

The Effect of Baby Massage on Baby Sleep Quality

Table 6.
The Effect of Baby Massage on the Sleep Quality of Babies Aged 0-6 Months

Sleep Quality of Babies Aged 0-6 Months		Good	Not enough	P Value
Before doing a baby massage	N	3	20	0,001
	Percentage (%)	13,0	87,0	
After the baby massage	N	18	5	
	Percentage (%)	78,3	21,7	
Total N		23	23	
Total Percentage (%)		100,0	100,0	

Based on Table 6 before the baby massage was carried out, it is known that of the 23 babies who were respondents, 20 babies (87%) were babies who had poor sleep

quality and after the baby massage there were 18 babies (78.3%) who had poor sleep quality. Good. Based on the data above and according to the results of the Wilcoxon statistical test, a significant number or probability value (0.001) is obtained which is much lower than the significant standard of 0.05 or ($p < \alpha$), so H_0 is rejected and H_a is accepted, which means there is an effect before and after the massage. Infants on the Sleep Quality of Babies Aged 0-6 Months at TPMB Rosliana Sumberjaya Tambun Selatan in 2022.

IV. Discussion

Baby Characteristics According to Gender

Based on Table 1, it is known that of the 23 babies who were respondents, 13 babies (56.5%) were male babies and 10 babies (43.5%) were female babies. According to researchers, male babies are more at risk of experiencing urinary tract infections because they have not had a circumcision, which means that if the baby experiences this infection, the baby will feel pain when he urinates, this will certainly affect the quality of the baby's sleep. The baby will wake up and cry because it hurts when urinating, especially if the baby often urinates at night. This is in accordance with the opinion of (Batara et al., 2019) which states that before the age of 1 year, UTI occurs more often in boys, while after that girls are more dominant, this ratio continues to increase until school age. One of the factors causing UTI is circumcision, where in boys who have been circumcised the risk of developing a UTI decreases from 0.2 – 0.05% of boys who have not been circumcised. In uncircumcised boys, UTI occurs because the area under the skin of the prepuce is very sensitive to microlesions and a moist environment which can facilitate infection.

Characteristics of Babies According to Age

Based on Table 2, it is known that of the 23 babies who were respondents, 12 babies (52.2%) were babies aged 0-2 months, 4 babies (17.4%) were babies aged 3-4 months and 7 babies (30.4%) were babies aged 5-6 months. The research results showed that the majority of babies who had poor sleep quality before having a baby massage were in the category of babies aged 0-2 months. According to researchers, babies aged 0-2 months are still in the adaptation phase to adapt to the world outside the womb in many aspects, and babies cannot yet differentiate between day and night. This is in accordance with the opinion of (Subakti & Anggraini, 2023) which states that at the age of 3-6 months babies are starting to be able to differentiate between day and night and babies are easier to regulate when sleeping and drinking.

Characteristics of Babies According to Health Status

Based on Table 3, it is known that of the 23 babies who were respondents, 23 babies (100%) were babies in healthy condition. According to researchers, the baby's health status greatly influences the quality of the baby's sleep. In babies, problems or pain in the teeth, ears, skin, respiratory tract, digestive tract, urinary tract, muscles or bones can disrupt sleep. Apart from that, the baby's health status at the time of massage is a factor that influences the success of baby massage. This is in accordance with the opinion of (Subakti & Anggraini, 2023) which states that when a baby has a fever or is sick, the baby feels uncomfortable during massage, which can affect the success of the massage given.

Baby Sleep Quality

1. Sleep Quality of Babies Aged 0 – 6 Months Before Baby Massage

Based on Table 5, it shows that the sleep quality of babies aged 0-6 months before baby massage was carried out, most of the respondents had poor sleep quality, namely 20 respondents (87%). The questionnaire to measure the quality of baby's sleep contains 4 questions. The quality of sleep of babies aged 0-6 months before baby massage is supported by the high results in the questionnaire contained in question item number 4 reaching 73.9%, namely the statement "When my baby wakes up at night" with many answers "The baby is always fussy, crying and It's hard to fall asleep again." In the opinion of researchers, poor quality sleep in babies can make their immune system low, children cry easily, are fussy and can interfere with the baby's growth during their growth period.

Considering the importance of sleep time for a baby's development, his sleep needs must be truly met so that it does not have a negative effect on his development. According to (Haryanti, 2019) sleep plays an important role in increasing the baby's body's resistance to infection. If sleep is disturbed, the level of white blood cells in the body will decrease and the effectiveness of the baby's immune system will also decrease. So the baby gets sick easily and its growth will be disrupted. Babies who sleep less have stunted physical growth, compared to babies who sleep enough. This is because during sleep the baby's physical growth will be stimulated, and is closely related to the increase in weight, height and general physical health. Inadequate sleep and poor sleep quality can result in psychological balance disorders. The psychological impacts include more emotional instability, anxiety, lack of concentration, lower cognitive abilities and combining experiences. Babies who experience sleep disorders will experience the same disorders in the future, especially during the growth period. Factors that influence sleep quality can be caused by many things, such as health status, less conducive environment, physical activity, nutrition and medication.

2. Sleep Quality of Babies Aged 0 – 6 Months After Baby Massage

Based on Table 6, it shows that the sleep quality of babies aged 0-6 months after baby massage, the majority of respondents had good sleep quality, namely 18 respondents (78.3%). The questionnaire to measure the quality of baby's sleep contains 4 questions. The quality of sleep of babies aged 0-6 months after baby massage is supported by the high results in the questionnaire contained in question item number 3 reaching 91.3% with the question stating "After having a baby massage, when my baby wakes up at night, the average time he wakes up is " with many answers "< 1 hour". In the opinion of researchers, babies who get enough sleep at night without waking up for a long time at night will experience optimal growth and development, besides that the baby will be fitter and less fussy the next day after waking up. This is also in accordance with the opinion of (Tang, 2023) which states that during deep sleep the baby's brain will develop and reach its peak because the body will produce three times more growth hormone than when the baby is awake. Apart from that, in the first year a baby's brain will grow 3 times its size at birth or around 80% of an adult's brain. Therefore, babies who sleep longer will achieve optimal growth and development and allow the body to repair and renew all cells in the body. Sleep also has a big effect on mental, emotional, physical health and the body's immune system.

3. The Effect of Baby Massage on the Sleep Quality of Babies Aged 0 – 6 Months

Based on Table 7, it shows that the sleep quality of babies aged 0-6 months before baby massage was performed, most of the respondents had poor sleep quality, namely 20 respondents (87%), while the sleep quality of babies aged 0-6 months after baby massage was mostly poor. 18 respondents (78.3%) had good sleep quality. In this research, based on analysis using the Wilcoxon statistical test with the help of the SPSS 25 program at an error level of 5%, calculations were carried out to determine whether there was an influence between the variables, namely the independent variable and the dependent variable. Based on the data above and according to the results of the Wilcoxon statistical test, a significant number or probability value (0.001) is obtained, which is much lower than the significant standard of 0.05 or ($p < \alpha$), then the H_0 data is rejected and H_a is accepted, which means there is an effect before and after it is carried out. Baby Massage on the Sleep Quality of Babies Aged 0-6 Months at TPMB Rosliana Sumberjaya Tambun Selatan in 2022.

In the opinion of researchers, considering the importance of sleep for a baby's development, their sleep needs must be truly met so that it does not have a negative effect on their development. One way that can be used to meet these needs is by carrying out a non-pharmacological therapy, namely baby massage. Babies who are massaged will be able to sleep soundly, while when they wake up, their concentration will be fuller. Baby massage is health care in the form of touch therapy with certain techniques given to babies so that treatment and therapy can be achieved. The aim of giving massage to babies is to release endorphin hormones so as to provide a feeling of relaxation to the baby's muscles which will make the baby more comfortable carrying himself both physically and psychologically. Apart from being a therapy that provides many benefits, baby massage is a way of expressing a parent's love for their child, through skin touch which has a tremendous impact on the child's physical, emotional and growth development (Juwita & Jayanti, 2019).

Infant massage produces beneficial physiological changes that can be measured scientifically. Baby massage has positive biochemical effects, including reducing levels of stress hormones (catecholamines) and increasing serotonin levels and can change brain waves. Baby massage can make babies sleep more soundly and increase alertness or concentration. This change in brain waves occurs by decreasing alpha waves and increasing beta and theta waves which can be proven using EEG (electroencephalogram) (Ayuningtyas, 2019). This research is supported by several previous studies, namely research conducted by Blood Ifalahma and Anik Sulistiyanti (2016) on "The Effectiveness of Baby Massage on Baby Sleep Quality in Kadipiro Banjarsari Subdistrict, Surakarta".

However, from the research results, it was found that of the 23 babies who were respondents, there were 5 babies (21.7%) who after baby massage still had poor quality sleep. Researchers conducted interviews with mothers of babies who still had poor quality sleep after having a baby massage. From the results of the interviews, it was found that 2 babies after having a baby massage received an immunization schedule the next day so that after immunization the baby had a fever (temperature 38°C) and the baby probably experienced pain at the injection site so that the baby becomes more fussy and cannot sleep soundly, 1 baby's sleep quality is influenced by environmental conditions that are not conducive, because the weather is hot so the baby sweats easily and feels uncomfortable

when sleeping so the baby often wakes up and is fussy, while 2 Other babies' sleep quality is influenced by the Growth Spurt condition the baby is experiencing so that the baby often wakes up at night to breastfeed.

This is in accordance with the theory which states that the quality of sleep in babies can be influenced by several factors, including health status and the environment. A baby whose body is in a healthy condition allows him to sleep soundly, whereas for a baby who is in an unhealthy condition (sick) and feels pain, the quality of his sleep will be disturbed. Environmental factors can also affect the quality of sleep in babies, in a clean environment, warm and comfortable temperature, an atmosphere that is not noisy (calm), and lighting that is not too bright will make the baby sleep soundly, and vice versa if the environment is dirty, has a hot temperature, Crowded areas and very bright lighting can affect the quality of sleep (Tempo Data and Analysis Center, 2020).

Meanwhile, according to Faristasari et al., 2019, growth spurt will continue until the baby becomes a teenager. However, in babies this condition lasts $\pm$ 3 days and occurs at the age of 10-14 days, 3 weeks, 6 weeks, 3 months, 6 months and 9 months. During this period, babies experience very rapid physical and mental growth and development, so babies need extra calories to compensate. In breastfed babies, these extra calories are obtained by increasing the mother's breast milk production and the most effective way to increase breast milk production is for the baby to breastfeed more often. Thus, babies who are experiencing a growth spurt will become more fussy because it is triggered by frequent thirst, so they will breastfeed more throughout the day and wake up more often at night to breastfeed.

V. CONCLUSION

From the research results, it can be concluded that the majority of babies' sleep quality before the massage was poor, whereas after the baby massage, the majority of babies had good sleep quality. Baby massage affects the sleep quality of babies aged 0-6 years at TPMB Rosliana Sumberjaya Tambun Selatan in 2022.

To support and improve the results and application of the results of this research, further research and publication of the research results is needed, so that more and more people apply the results of this research by giving massage to their babies.

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