

**THE EFFECT OF BABY MASSAGE ON THE SLEEP QUALITY OF 3-12 MONTHS
BABIES IN PRIVATE MIDWIFE JAMBI CITY**

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ABSTRACT

Introduction: Sleep needs in infants 3-12 months are not only in terms of quantity but also quality. Good quality sleep provides benefits to the fulfilment of physical and psychological needs. One method of meeting these needs is baby massage. A common reason for mothers to give baby massages is the child's habit of fussing at night and often waking up, and they say that after the massage, their child becomes calm at night. This study aims to analyze the effect of baby massage on the sleep quality of infants aged 3-12 months at private midwife Muji Kenali Asam in Jambi City.

Material and Methods: This pre-experimental study consisted of a one-group pretest-posttest design for a group of 68 infants aged 3-12 months. The questionnaire was compiled into a google form, and the link was distributed to each mother. Data processing consists of editing, coding, tabulating and statistical tests (Wilcoxon test) at the limit of significance value of 0.05.

Results: The study results that can be described are that most of the sleep quality of infants aged 3-12 months before the intervention was sufficient at 45.6%, and for poor quality, it was 27.9%. After the intervention, most infants aged 3-12 months were good in sleep quality by 45.5% and sufficient sleep quality by 52.9%. The results of the Wilcoxon test revealed the effect of infant massage on infant sleep quality with a significance value of $p\text{-value} = 0.001$.

Conclusion: Baby massage tends to improve the baby's sleep quality. Therefore Midwifery students need to acquire baby massage skills and promote the method to mothers, particularly those with babies 3-12 months.

Keywords: Baby Massage, Sleep Quality, Pre Experimental, Infants Aged 3-12 Months

INTRODUCTION

Infancy is a golden period for maximum growth and development of children and needs special attention [1]. Sleep is one of the factors that affect the growth and development of babies because, during sleep, the baby's brain growth reaches its peak and produces three times more growth hormone than when the baby wakes up [2].

As published by the World Health Organization (WHO) in 2012, about 33% of babies have sleep problems. In Melbourne, Australia, found that 32% of mothers reported repeated occurrences of sleep problems in infants [3]. In 2016, Sekartini reported that 80 children aged less than three years, 51.3% of them had sleep disorders [4]. Another study of 385 respondents in Jakarta, Bandung, Medan, Palembang and Batam reported that 44.2% of the night sleep hours were less than 9 hours, waking up more than three times and staying awake at night for more than one hour [5].

Sleep quality is influenced by several factors, namely appropriate rest needs, environment, physical exercise, nutrition and disease. Remember the importance of sleep time for babies, then the need for sleep must really be so as not to adversely affect its development. Quality sleep is determined by the presence of sleep disturbances, the baby is said to have sleep disturbances if the baby is awake at night for more than one hour [6].

Sleep has a significant effect on mental, emotional and physical health and the immune system [7]. The development of infant sleep is related to age and brain maturity, so the total amount of sleep needed is reduced, followed by a decrease in the proportion of Rapid Eyes Movement (REM) and non-REM. Sleep needs are not only seen from the aspect of quantity but also quality [8]. With good sleep quality, the baby's growth and development can be achieved optimally [9].

Sleep problems in children have various impacts, which have not been fully detailed, including growth disorders, cardiovascular disorders, cognitive function and daily behavior [10]. Several studies have stated that disruptive behaviour disorders, such as attention-deficit/hyperactivity disorder (ADHD), are sometimes caused by an undiagnosed sleep disorder [11]. Academic abilities at various age levels can also be affected by undetected sleep disturbances [12].

For the importance of sleep time for the development of the baby, then this need must be met entirely to avoid adverse effects on its development [13]. One of the efforts that can be done to improve the quality and quantity of baby sleep is massaging [14]. Baby massage is very beneficial for the health and development of babies. Regular baby massage will help reduce levels of stress hormones (catecholamines) and increase levels of immune substances in infants (immunoglobulins) while also stimulating digestive and excretory functions and increasing the baby's weight [15]. Massage can stimulate the release of endorphins that can reduce pain, so the baby becomes calm and reduces the frequency of crying. This massage also improves the quality and quantity of the baby's sleep [16].

An increase in the quantity of infant sleep after the massage is associated with increased levels of serotonin secretion [14]. *Serotonin* is the primary transmitter substance that triggers sleep by suppressing the activity of the reticular activating system and other brain activities [17].

Research conducted at the Touch Research Institute of America on 20 children massaged for 2x15 minutes within five weeks experienced 50% changes in brain waves compared to before the massage. These brain wave changes occur by decreasing alpha waves and increasing beta waves so that babies can sleep more soundly [18]. Based on research from the Warwick Medical School and the Institute of Education from the University of Warwick, examining nine kinds of baby massage movements performed on 598 babies under six months of age, the results showed that baby massage could make sleep patterns more regular because it is influenced by the sleep hormone melatonin which is influenced by baby massage performed [19].

The Muji Private Midwife is located in Kenali Asam, Jambi city, which provides baby massage services. An average of 25 babies is massaged per month. The results of interview with the baby's mother who came for baby massage, because babies like to wake up in the middle of the night, and the next day they like to cry and like to fuss. Based on this phenomenon, we are interested in examining the effect of infant massage on the sleep quality of infants aged 3-12 months in the Muji Private Midwife in Jambi City.

METHODS

The research method used in this study was a pre-experimental study with a pretest and posttest one group design conducted on infants at PMB Muji Kenali Asam Jambi City with 68 babies aged 3-12 months. Infants in the study who met the inclusion criteria set by the researcher, including infants aged 3-12 months, parents of babies willing to be respondents, babies who were breastfed and babies who were massaged three times during the study. The procedure for implementing baby steps in this study is guided by the baby massage procedure that has been used in previous studies [6,15,19] as follows: first, the researcher prepared baby oil, then a towel or blanket as a tool. The next step was to massage the legs, abdomen, and chest, massage the hands, face and finally massage the back. This procedure was carried out three days in a row, where every day, five babies received the intervention. Researchers measured sleep quality before implementing infant massage using a standardized questionnaire that has been tested for validity and reliability referring to Morrell's Infant Sleep Questionnaire (MISQ) [20] and A Brief Screening Problems (BSP) [21], and after three massages, the quality of sleep was measured again using the same questionnaire. No economic incentives were offered or provided for participation in this study. The study was performed in accordance with the ethical considerations of the Helsinki Declaration. This research has obtained ethical feasibility from the Health Research Ethics Commission of the Health Polytechnic of the Ministry of Health Jambi with LB.02.06/2/130/2020.

Statistical analysis

Data are presented as numbers and percentages for categorical variables. Continuous data are expressed as the mean \pm standard deviation (SD), or median with Interquartile Range (IQR). The Wilcoxon test was performed to evaluate significant differences between two dependent groups. All tests with p-value (p) $<$ 0.05 were considered significant. Statistical analysis was performed using SPSS app version 16.0

RESULTS

Research results are presented in the form of frequency distribution tables and inferential analysis tables. The characteristics of the baby are presented in the following table:

Characteristics	n	%
<i>Gender</i>		
Female	36	52.9
Male	32	47.1
<i>Age</i>		
3-5 month	30	44.1
6-8 month	18	26.5
9-11 month	12	17.7
12 month	8	11.7

Table 1 *Distribution of Babies by Gender, and Age*

Based on the table above, the gender of the respondents is almost the same, with the difference between women being less than men, mostly aged 3 – 5 months 44.1% and both aged 6 – 8 months 26.5%. This data shows that the babies who come to PMB Muji are mostly babies aged three months to 8 months.

Distribution of baby's sleep quality before and after a baby massage can be seen in the following table:

Sleep Category	Pre-test n (%)	Post-test n (%)
Poor	19 (27.9)	1 (1.5)
Sufficient	31 (45.6)	36 (52.9)
Good	18 (26.5)	31 (45.6)

Table 2. *Distribution of Respondents Based on Sleep Quality of Babies Age 3-12 Months before Massage*

Table 2 shows that the sleep quality of babies aged 3-12 months before baby massage was mostly of adequate quality, namely 31 respondents (45.6%). After stepping on the baby, most of the baby's sleep quality was adequate, namely 52.9%, there was an increase in good quality to 45.6%, only one

had poor sleep quality.

The results of the inferential test using the Wilcoxon test obtained the mean and standard deviation values as well as the p-value as presented in the following table:

Parameters	Pre-test	Post-test	Pre-test vs. Post test (p-value)
mean±SD	4.3235±1.740	5.3382±1.101	4.5 vs. 6.0, (0.001)
median (IQR)	4.5 (4-5)	6.0 (6-7)	

Table 3. *The effect of massage on the sleep quality of infants aged 3-12 months*

Before the intervention, the mean score is 4.3235, and after the intervention, the mean score found is 5.3382. The mean difference between before and after the intervention is 1.0182. It can be seen that there has been an increase in the quality of sleep for babies 3-12 months after massaged which is 1.0182. The results of the p-value showed that there was an effect of the baby's grip on the baby's sleep quality with sig. 0.001.

DISCUSSION

The sleep quality of infants aged 3-12 months before the massage mainly was adequate (45.6%) and less (27.9%). It is because many babies are fussy when they go to sleep (37%), babies look weak and cry when they wake up in the morning (73.5%), and babies always look fussy, cry and find it difficult to fall back asleep when they wake up (70.6%). The above situation occurs because the baby lacks sleep.

Inadequate sleep and poor sleep quality can lead to physiological and psychological balance disorders. Physiological impacts include decreased daily activities, fatigue, weakness, poor neuromuscular coordination, slow healing process and decreased immune system. At the same time, the psychological impact includes more unstable emotions, anxiety, and lack of concentration, lower cognitive abilities and combined experiences [22,23].

Many infants 3-12 months experienced less sleep. According to data obtained, 44.1% sleep less than 9 hours at night. Many factors may cause a baby to lack sleep, such as health status where an unhealthy baby will interfere with sleep, an uncomfortable environment such as too noisy, too hot, too cold, lighting that makes the baby sleepless and restless, psychological factors such as an anxious baby, there are scary sounds that make the baby feel scared which has an impact on sleeping often wakes up. The last is the dietary factor that also determines the baby's comfortable sleep or not. Babies who do not eat/are hungry or consume foods that contain gas cause bloating or drink too much at night, so they often wake up to urinate. In line with Wahyuni [24], babies who sleep enough without waking up frequently at night will be fitter and less fussy. Babies are said to have sleep disorders if they sleep less than 9 hours at night, wake up more than three times and wake up more than 1 hour.

Based on the results of data analysis after the baby was massaged, the sleep quality of infants aged 3-12 months mainly was of sufficient quality (52.9%) and good quality (45.6%). Only 1.5% of infants experienced poor sleep quality. According to respondents, most of the babies who had been massaged (94.1%) looked cheerful and fit when they woke up and most stated that the babies did not look weak and cried when they woke up in the morning (95.6%). The quality and quantity of baby sleep affect physical development and emotional development [4]. Babies who get enough sleep without waking up are fitter and less fussy the next day. Not only has that, but lack of sleep also had an impact on the baby's thinking ability. If the body is tired, the quality of thinking becomes low. As a result, the baby cannot respond well. Babies who are sleep deprived become fussier, whiny and have trouble sleeping. For this solution, the baby needs to be massaged.

The baby is fast asleep after the massage because through the massage and the brain waves can change. This change occurs by decreasing alpha waves and increasing beta and theta waves proven by EEG (Electroencephalography) [17]. As for one baby after being given a baby foothold but did not show good sleep quality, according to research studies, it may be caused by several factors such

as the habit of drinking milk before bed will also affect the quantity and quality of baby sleep. Meanwhile, the baby's bed environment is not comfortable, and the crowd in the family. The effect of the baby's sleep quality is seen from the difference in mean values before and after massage. The mean value of the baby's sleep quality before massage was 4.3235 and after massage the mean was 5.3382 with a mean difference of 1.0182, this means that the baby after massage experienced an increase in sleep quality by 1.0182 points. p-value shows the effect of baby massage on baby's sleep quality with sig. 0.001. Another study on the relationship of massage infants with pattern and sleep in infants concluded that the touches given during infant massage were associated with increased infant sleep quality as indicated by an increase in the number of infant sleep duration and a reduction in infant sleep disturbances [25]. In contrast to this study, a study in Yogyakarta found that there was no effect between Infant Massage on weight gain and infant sleep quality [26].

CONCLUSIONS

Infant massage affects the sleep quality of infants aged 3-12 months before and after the intervention with a mean difference of 1.0182, which means that massage can improve the quality of infant sleep by 1.0182 points with a p-value of 0.001 ($p < 0.05$).

LIMITATION

The limitation of this study is that it does not control other factors that can affect the quality of baby sleep, and than this intervention was only carried out in one place, namely at PMB Muji Kenali Asam Jambi City.

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CONFLICT OF INTEREST

The author(s) declares no conflict of interest.

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