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THE EFFECT OF BABY MASSAGE WITH LAVENDER OIL ON QUALITY OF BABY SLEEP (AGE 6-12 MONTHS) IN MARUKANGAN VILLAGE, SANDARAN DISTRICT EAST KUTAI REGENCY

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ABSTRACT

Background: Sleep is a basic need of living things that is important for physical, emotional recovery, and strengthening the body. However, 33% of babies in the world are reported to experience sleep disorders that can affect their cognitive and physical development. One of the non-pharmacological interventions used to improve the quality of infant sleep is baby massage using lavender oil. Objective: This study aims to determine the effect of baby massage with lavender oil on improving the quality of sleep of infants aged 6-12 months in Marukangan Village, Sandaran District, East Kutai. Method: Quantitative research with a quasi-experimental research method using a pre-test and post-test with control group design, sampling using a purposive sampling method with a sample size of 52 infants divided into intervention and control groups. The intervention group was given massage therapy using lavender oil for 45 minutes, while the control group did not receive similar treatment. Data were analyzed using the Wilcoxon test. Results: The results showed a significant increase in the quality of infant sleep in the intervention group, infants experienced good sleep quality after being given therapy, namely with a p-value of 0.003 (p-value <0.05). In contrast, the control group showed a lower increase. This proves that baby massage with lavender oil is effective in improving the quality of baby sleep. Conclusion: Baby massage with lavender oil can be an effective complementary intervention to improve the quality of baby sleep. It is expected that this method can be applied by midwives and parents as a non-pharmacological solution to overcome baby sleep disorders.

Keywords*:* *Baby Massage*, *Lavender Oil,* Baby Sleep Quality.

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INTRODUCTION

Sleep is a basic need for living things that can provide a refreshing effect and restore body strength. In addition, sleep also repairs, strengthens, and restores important substances in the body and the brain to function more optimally (Zaen & Arianti, 2020). Every human being needs sleep, including babies. Babies aged 0-5 months will live their new lives with 80-90% sleep. Newborns usually sleep for 16-20 hours a day which is divided into 4-5 periods. At the age of 2 months, babies sleep more often at night than during the day. At the age of 3 months, babies will spend about 15-17 hours of sleep a day, with a time division of 8 hours for naps and 9 hours for night sleep. As the baby gets older, the hours of sleep also decrease(Akib & Merina, 2020).

The quality of a baby's sleep can be seen from three criteria, namely how they sleep, sleep comfort and sleep patterns.(Cahyani & Prastuti, 2020). Babies are said to have sleep disorders if they sleep less than 9 hours at night, wake up more than 3 times, and wake up for more than 1 hour. During sleep, babies look fussy, often cry, and have difficulty getting back to sleep.(Rosalina et al., 2022). Babies who get enough sleep and don't wake up often will be fitter and less cranky the next day.(Cahyani & Prastuti, 2020).

Based on WHO data, there are 335 babies experiencing sleep problems. From the research, it was found that 30% of mothers reported sleep problems in their babies. In Indonesia, around 44.2% of babies experience sleep disorders in the form of frequently waking up at night (Susanti & Hety, 2020). In Indonesia, based on research conducted on 493 children aged 0 - 36 months, it was found that 153 children (31%) had sleep problems, 79 children (16%) had less than 9 hours of sleep at night, 62 children (12.8%) woke up more than 3 times at night, and 20 children (4%) had more than 1 hour of waking hours each night (Retnosari et al. 2021).

In East Kalimantan, there is no specific data on the percentage of babies who experience sleep disorders, but in general, data in Indonesia shows that the prevalence of sleep disorders in babies aged 0-36 months reaches 31% (Irwanto, 2021). Based on a preliminary study conducted in Sandaran District, it was found that the result that in the village Marukangan has 60 babies aged 6-12 months, this number is more when compared to the number of babies aged 6-12 months in other villages in Sandaran District, na mely in Susuk Village there are 28 babies, Tadoan Village 33 babies and Manubar Pantai Village 54 babies. The sample used in the preliminary study was 7 samples, 5 respondents said their babies had disturbed sleep patterns, especially at night, including fussy babies, or babies who sleep more during the day. And 2 respondents said their babies had never had sleep disturbances either during the day or at night, babies woke up only when they were going to breastfeed.

Some complementary therapies can be done to overcome sleep problems and poor sleep quality in babies, one of which is Baby Massage using lavender oil. Baby Massage using lavender oil is a touch that can be an important stimulus in the growth and development of children. By doing a gentle massage on the baby, it will help relax the baby's muscles which makes them calm and makes them sleep soundly(Supardi et al., 2022). Improved sleep quality in babies who undergo Baby Massage is due to increased levels of serotonin secretion produced during massage. Massage can increase serotonin levels which will produce melatonin which plays a role in sleep and makes sleep longer and deeper at night. In addition, serotonin will also increase the capacity of receptor cells that function to increase glucocorticoids or adrenaline (hormonestress) (Cahyani, et al., 2020).This is proven by research conducted byArisman et al. (2024)where most babies aged 3 to 10 months experienced improved sleep quality after being massaged. Before the massage, out of 25 babies, only 3 babies (12%) had good sleep quality. However, after

massaging their babies, most of the babies surveyed reported improved sleep quality, with 20 babies (80%) considered to have good sleep quality.

Lavender oil has a positive effect on the quality of baby's sleep because it can stimulate the activity of brain function through the nervous system related to the sense of smell. The response to the scent of lavender can increase the production of neurotransmitters that play a role in restoring psychological conditions, helping babies feel more relaxed and comfortable before going to bed. In addition, lavender has been shown to be effective in relieving anxiety, stress, and depression, functions as a natural sedative with strong effects, and is able to restore muscle fatigue and improve blood circulation, thus providing optimal benefits for baby's health. (Kusuma, 2024).

In addition to Baby Massage using lavender oil, lavender oil itself affects the quality of baby's sleep. This is because lavender oil is able to stimulate the activity of brain function through the nervous system that is related to the sense of smell, with the response to the sense of smell being able to stimulate increased production of brain nerve mass (Neurotransmitters) related to the recovery of psychological conditions, in addition lavender is known to be effective against anxiety, stress, depression as a sedative that has a strong effect, restoring muscle fatigue and blood circulation (Kusuma, 2024).

In Marukangan Village, there is no specific therapy applied to treat sleep disorders in infants because some parents consider the problem as something normal and will improve on its own. In addition, the lack of parental knowledge about how to treat sleep disorders makes them not seek more effective solutions or interventions.

Based on the background of the problem above and previous research, the researcher is interested in conducting research with the title "The Effect of Baby Massage with Lavender Oil on the Quality of Sleep of Babies (Aged 6-12 Months) in Marukangan Village, Sandaran District, East Kutai Regency".

RESEARCH METHODS

This research is a type of quantitative research with a research method *quasi experimental* with a Pre test- Post Test with control group design. Respondentsshared into two groups, namely the intervention group and the control group, the intervention group received treatment while the control group did not receive treatment (Dharma, 2011 in Febriani, 2018). The population in this study were all babies aged 6-12 months inMarukangan Village, Sandaran District, East Kutai Regency with a total of 60 babies, data in December 2024. Sampling using the Purposive sampling method according to the criteria that have been determined in the study. Sampling formula minimal (lstari, 2014) used in determining the number of samples, namely using the Slovin formula so that the number of samples used is 52 samples.

Instruments instudy this uses *Standard Operating Procedure (*SOUP) *Baby Massage* and the Brief Infant Sleep Questionnaire (BISQ) assessment sheet. Data analysis with univariate and bivariate analysis using the Wilcoxon test because it uses an ordinal measurement scale and is 2 paired groups. While to determine the difference in results between the two intervention groups and the control group using the Mann Withney test.

The research instruments used in this study were demographic characteristics questionnaires and Brief Infant Sleep Questionnaire (BISQ) questionnaires. Demographic data include the child's initials, age, and gender. These demographic data aim to determine the characteristics of respondents, describe the frequency distribution and demographic

research of respondents. The Brief Infant Sleep Questionnaire (BISQ) questionnaire is an instrument created byDr. Avi Sadeh (2004)for screening the sleeping environment including activities carried out by parents, day and night routines, sleep problems in babies according to parents' opinions. *Brief Infant Sleep Questionnaire*(BISQ) has been tested for validity and reliability in various studies. The BISQ has been validated against actigraphy and sleep diaries, showing that this questionnaire has good sensitivity in documenting infant sleep patterns. In addition, the BISQ has a test-retest reliability test that shows consistent results in measuring infant and toddler sleep patterns. Studies also show that the BISQ has good internal consistency, so it can be used as an effective screening tool to assess sleep disorders in infants

Brief Infant Sleep Questionnaire(BISQ) used in this study is the Indonesian version translated by Herwanto et al. (2022) and modified by the researcher according to the research needs. Baby Massage uses Ebco lavender oil, the method of use of which is in accordance with the provisions provided by EBCO 2-3 drops for each massage movement.

The implementation began by collecting data from respondents who met the inclusion and exclusion criteria. The next stage on the first day was to assess the quality of baby sleep using a questionnaire, followed by providing Baby Massage therapy using lavender oil for 45 minutes with 5 repetitions in each session movement massage for the intervention group. Researchers in carrying out massages are really done personally and professionally in applying the Baby Massage theory to get accurate results. After the massage, on the second day of the next meeting, the baby's sleep quality was assessed again. While in the control group that did not receive a baby massage with lavender oil, a sleep quality assessment was carried out on the first day,then on the second day an assessment of the baby's sleep quality was carried out using a questionnaire that had been provided. The results of the data collection were presented in the form of a table and the percentage was then described in the research results and drawing conclusions.

Data analysis was conducted descriptively to determine the frequency distribution and presentation variables studied. Bivariate analysis was used to determine whether there was effectiveness of the intervention given to the treatment group, the measurement used the Wilcoxon test because the data was ordinal data, while to determine whether there was a difference in the pretest and posttest in both groups using the Mann-Whitney test.

RESULTS AND DISCUSSION

Results

Table 1. *Frequency distribution of respondent characteristics*

No	Respondent Characteristics	Amount	Percentage (%)
1	Characteristics Based on Age		
	a. 6 months	5	9.6
	b. 7 Months	6	11.5
	c. 8 months	11	21.2
	d. 9 Months	7	13.5
	e. 10 Months	5	9.6
	f. 11 Months	6	11.5
	g. 12 Months	12	23.1
	Amount	**52**	**100.0**
2	Characteristics Based on Gender		
	a. Man	21	40.4
	b. Woman	31	59.6
	Amount	**52**	**100.0**

Source: Primary Data (2025)

Based on the data in table 4.1, the results show that the age groups of respondents are spread across the age range of 6 to 12 months. The largest number of respondents is in the 12-month age group, which is 12 people or 23.1% of the total respondents. Meanwhile, the age groups with the fewest number of respondents are 6 months and 10 months, each with 5 people or 9.6%. Other age groups consist of 7 months with 6 people (11.5%), 8 months with 11 people (21.2%), 9 months with 7 people (13.5%), and 11 months with 6 people (11.5%). In addition, based on gender, the majority of respondents were female, which was 31 people or 59.6%, while male respondents were 21 people or 40.4%. These data show that the number of female respondents is greater than male respondents. Overall, the distribution of respondents in this study showed a fairly even variation in age, with a more dominant proportion of women than men.

Univariate Analysis

Sleep Quality of Infants in the Intervention Group and Control Group (Pre Test and Post Test)

Table 2. Quality of infant sleep in groups Intervention and control group (Pretest and Post Test)

	Pre-test intervention		**Post Test Intervention**		**Pre Test Control**		**Post Test Control**	
	N	%	n	%	n	%	n	%
Quality Sleep Well	9	34.6	21	80.8	8	30.8	13	50.0
Poor Sleep Quality	17	65.4	5	19.2	18	69.2	13	50.0
Amount	26	100.0	26	100.0	26	100.0	26	100.0

Source: Primary Data (2025)

Based on the data in table 4.2, the results showed that in the intervention group, before the intervention, only 9 respondents (34.6%) had good sleep quality, while 17 respondents (65.4%) experienced poor sleep quality. After the intervention was carried out, there was a significant increase, where 21 respondents (80.8%) reported having good sleep quality, and only 5 respondents (19.2%) still experienced poor sleep quality. Meanwhile, in the control group, before the intervention, 8 respondents (30.8%) had good sleep quality, while 18 respondents (69.2%) experienced poor sleep quality. After the study period was completed, there was a slight increase in sleep quality, where 13 respondents (50.0%) had good sleep quality, but the other 13 respondents (50.0%) still experienced poor sleep quality.

Bivariate Analysis

a. Infant sleep quality in the intervention group with the Wilcoxon Test

Table 3. Wilcoxon Post Test Analysis Results In The Group Intervention

	Posttest Intervention		**N**	**Mean Ranks**	**Sum Of Ranks**	***P-Volue***
	Frequency	**%**				
Good sleep quality	21	80.8				**0.003**
Poor sleep quality	5	19.2				
Negative Ranks			2	8.50	17.00	
Positive Ranks			14	8.50	119.00	
Ties			10			
Amount	26	100.0				

Source: Primary Data (2025)

Based on the data in table 4.3, the results of 26 respondents in the Intervention group, there were 21 respondents (80.8%) showing good sleep quality, while 5 respondents (19.2%) still experienced poor sleep quality. Further analysis showed that there were 2 respondents with Negative Ranks (where sleep quality decreased) with an average rating of 8.50 and a total rating of 17.00. Conversely, there were 14 respondents with Positive Ranks (where sleep quality increased) with an average rating of 8.50 and a total rating of 119.00. In addition, there were 10 respondents with Ties, namely respondents whose sleep quality remained the same before and after the intervention. With a p-value of 0.003, it shows statistically significant results. This means that the intervention carried out has a significant effect on improving the quality of respondents' sleep. So it can be concluded that Ha is accepted or there is an effect of baby massage with lavender oil on improving the quality of baby sleep.

b. Sleep quality of infants in the control group with the Wilcoxon Test

Table 4. Wilcoxon post test analysis results in the group Control

	Posttest Intervention		**N**	**Mean Ranks**	**Sum Of Ranks**	***P-Volue***
	Frequeny	**%**				
Good sleep quality	13	50.0				0.059
Poor sleep quality	13	50.0				
Negative Ranks			1	4.00	4.00	
Positive Ranks			6	4.00	24.00	
Ties			19			
Amount	26	100.0				

Based on the data in table 4.4, the results of 26 respondents in the control group, 13 respondents (50.0%) experienced good sleep quality, while 13 other respondents (50.0%) still experienced poor sleep quality. Further analysis showed that there was 1 respondent with Negative Ranks (decreased sleep quality) with an average rating of 4.00 and a total rating of 4.00. Meanwhile, there were 6 respondents with Positive Ranks (increased sleep quality) who also had an average rating of 4.00 and a total rating of 24.00. In addition, there were 19 respondents with Ties, which means their sleep quality did not change. So that the p-value of 0.059 was obtained indicating that Ha was rejected in the control group. So it can be concluded that there is no increase in the quality of infant sleep.

c. Differences in sleep quality of infants in the control group and intervention group

Table 5. *Mann-Whitney Test Analysis Results*

	Pre-test intervention		**Post Test Intervention**		**Pre Test Control**		**Post Test Control**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Good Sleep Quality	9	34.6	21	80.8	8	30.8	13	50.0
Poor Sleep Quality	17	65.4	5	19.2	18	69.2	13	50.0
Amount	26	100.0	26	100.0	26	100.0	26	100.0
Mann Whitney Post test	*P-Value* = 0.021							

Primary data source (2025)

The results of the Man-Whitney test obtained a p value of 0.021 (p <0.05) so Ha was accepted, which means that there was a difference in the quality of sleep of babies (aged 6-12 months) in the control group and the intervention group who were given baby massage therapy with lavender oil in Marukangan Village, Sandaran District, East Kutai Regency.

Discussion

Based on the results of the analysis before the baby massage with lavender oil. In the intervention group, most respondents experienced poor sleep quality, namely 17 respondents (65.4%) and good sleep quality as many as 9 respondents (34.6) while in the control group, most respondents also experienced poor sleep quality as many as 18 (69.2%) respondents and those who experienced good sleep quality were 8 (30.8%) respondents. Furthermore, based on the results of the analysis that dones after baby massage with lavender oil was done in the intervention group, the results showed that 21 babies (80.8%) experienced good sleep quality and 5 babies (19.2%) experienced poor sleep quality. While the post-test on babies who did not undergo baby massage with lavender oil (control group) showed that 13 babies (50.0%) experienced good sleep quality and 13 babies (50.0%) experienced poor sleep quality. So it can be concluded that there is a difference in the effect of baby massage with lavender oil on improving the quality of

sleep in babies in the intervention group as evidenced by a p-value of 0.003 or <0.05 and there was no change in sleep quality in the control group with a p-value of 0.059.

The increase in pretest and posttest sleep quality in several respondents in the control group can occur due to several factor that is environmental factors, the role of parents, the psychological effects of the baby, and natural developments that occur due to the increasing age of the baby. While the increase in sleep quality in the pretest and posttest in the intervention group occurred due to the influence of baby massage with lavender oil on improving the quality of sleep in babies (aged 6-12 months).

Inadequate sleep or poor quality sleep can result in physiological and psychological imbalances. Physiological impacts include decreased daily activity, fatigue, weakness, poor neuromuscular coordination, slow healing process and decreased endurance. While psychological impacts include unstable emotions, anxiety and lack of concentration.(Ministry of Health of the Republic of Indonesia, 2023).

Several complementary therapies can be done to overcome sleep problems and poor sleep quality in babies, one of which is baby massage using lavender oil. Baby Massage using lavender oil is a touch that can be an important stimulus in the growth and development of children. By doing a gentle massage on the baby, it will help relax the baby's muscles which makes them calm and makes them sleep soundly(Supardi et al, 2022).

Improved sleep quality in babies who are massaged is caused by increased levels of serotonin secretion produced during the massage. Massage can increase serotonin levels which will produce melatonin which plays a role in sleep and makes sleep longer and deeper at night. In addition, serotonin will also increase the capacity of receptor cells that function to increase glucocorticoids or adrenaline (a stress hormone) (Cahyani & Prastuti, 2020). *Baby massage* is a gentle stroking movement and stimulation given to the baby on the surface of the skin. Baby massage is useful for improving blood circulation, producing positive effects on tissues, organs, muscles and the respiratory system.(Sari et al., 2023).

In addition to Baby massage using lavender oil, lavender oil is an essential oil derived from lavender flowers, lavender oil contains chemical compounds such as linalool and linalyl acetate which have sedative, anti-depressant, antibacterial and antifungal effects and have ester chemical content, and have the effect of calming nervous tension, fatigue, stress, anxiety, and smoothing blood circulation. The advantages of lavender oil compared to other essential oils are its relatively very low toxin content, rarely causing allergies(Anggraeni et al., 2023). Lavender oil is extracted through a steam distillation process, where lavender flowers are steamed, the steam is captured, then the oil is separated and collected from the water (Supriyanto, 2021).

This is in line with research conducted byThe Goddess & Larasati (2023)doing baby massage with lavender essential oil, the research results showed an increase in the quality of baby sleep after being given a baby massage with lavender essential oil. This was also proven by researchTarigan & Adnin (2023) Research on the Effect of Baby Massage with Lavender Aromatherapy on Baby's Sleep Quality. The results of the study found an increase in the quality of baby's sleep after massage with lavender oil.

Researchers assume that there is an influence of baby massage with lavender oil on the quality of the baby's sleep, this is because the massage on the babygivecomfort and smooth blood circulation and increase the levels of serotonin secretion produced during massage, serotonin produces melatonin which plays a role in sleep and makes sleep longer and deeper at night. (Kusuma et al., 2024) and lavender oil provides a sense of relaxation to babies, this if combined can improve the quality of sleep in babies. (Raniah, et.al.2021)

Bivariate Analysis

Based on the analysis of the data obtained, the results were obtained from 52 respondents who were divided into 2 groups, namely 26 respondents in the intervention group and 26 respondents in the control group. After baby massage with lavender oil was carried out in the intervention group, the results obtained using the Wicoxon test showed that 21 babies experienced good sleep quality (80.8%) and 5 babies experienced poor sleep quality (19.2%) with a p-value of 0.003. While the post-test on babies who did not undergo baby massage with lavender oil (control group) showed that 13 babies experienced good sleep quality (50.0%) and 13 babies experienced poor sleep quality (19.2%) with a p-value of 0.003.experience poor sleep quality as many as 13 people (50.0%) with a p-value of 0.059, with a difference analysis using the Mann-Whitney test, a p-value of 0.021 was obtained. Baby massage is a gentle stroking movement and stimulation given to the baby on the surface of the skin. Baby massage is useful for improving blood circulation, producing positive effects on tissue, body organs, muscles and the respiratory system(Sari et al., 2023).

Benefit *baby* massage with lavender oil being associated with the dual effects of inhalation and touch.Massagewithlavenderoil proves that when massage is performed, absorption of essential oils occurs through the skin and then signals are sent to improve mood by promoting the release of neurotransmitters including encephaline, endorphin, serotonin (Raniah et al, 2021). The improvement in sleep quality in babies who receive baby massage using lavender oil is due to the increase in serotonin secretion levels produced during this time massage (Kusuma, et al. 2024). Massage can increase serotonin levels which will produce melatonin which plays a role in sleep and makes sleep longer and deeper.at night (Kusuma et al., 2024). Lavender oil provides a relaxing effect, in addition, serotonin will also increase the capacity of receptor cells which function to increase glucocorticoids or adrenaline (a stress hormone). (Cahyani, et al., 2020).

The gentle touch and pressure of baby massage causes the nerve endings on the surface of the skin to react. This stimulation activates the parasympathetic nervous system which plays the most active role in the sleep process. In addition, longer sleep duration is triggered by the release of oxytocin and endorphins when the baby is massaged. The endorphin hormone is a hormone to relieve pain and eliminate discomfort, while the oxytocin hormone functions to reduce stress levels in the brain so that the baby becomes calm and comfortable and the quality of sleep improves. (Cahyani & Prastuti, 2020).

This is in line with researchThe Last Supper (2021) who did baby massage with lavender essential oil, after the massage all participants experienced an increase in sleep quality with a p-value of 0.009 or $p < 0.05$. This is also in line with research by Research byKalsum (2021)who performed baby massage with lavender essential oil. The results of the study showed that there was a significant difference in sleep quality after treatment between the two groups, namely the treatment group and the control group with a p value = $0.000 < 0.0$.

Researchers assume that baby massage with lavender oil can improve the quality of baby's sleep because it has several benefits, namely providing a sense of comfort and relaxation to the baby. The stroking done during the massage makes the baby calmer and more comfortable and can help smooth blood circulation in the baby (Kusuma et al., 2024). Lavender oil itself can improve the baby's mood and reduce stress. A gentle touch on the

surface of the baby's skin can stimulate the parasympathetic nervous system which plays the most active role in the sleep process. Lavender oil aromatherapy plays a role in providing a calming effect so as to improve sleep quality. (Raniah et al., 2021).

The results of the study also showed an increase in the quality of sleep of infants in the intervention group to be good. Inadequate sleep quality and poor sleep quality can cause physiological and psychological imbalances. Physiological impacts include decreased daily activities, fatigue, weakness, poor neuromuscular coordination, slow healing process and decreased endurance. While the psychological impacts include emotions becoming unstable, anxious and unable to concentrate. So this must be addressed immediately.

CONCLUSION

The quality of sleep of babies (aged 6-12 months) in the control group and the intervention group mostly experienced poor sleep quality. However, after being given Baby Massage therapy with Lavender oil in the Intervention group, the quality of sleep increased to good and the quality of sleep of babies (Age6-12Month) in the control group did not experience an increase in sleep quality. So it can be concludedThere was a significant difference in sleep quality between the control group and the intervention group (ages 6-12 months) in Marukangan Village, Sandaran District, East Kutai Regency.

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