

Research Article

The Effect Of Baby Massage Toward Baby Sleep Pattern: A Quasy Experiment Study

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Abstract.

Sleep provides a positive effect for the development of the baby because it can stimulate the growth of the baby's brain. This study aims to identify the effect of baby massage toward baby sleep patterns. The research quasy experiments with a sample number of 33 babies. The sampling technique used total sampling with data analysis t-dependent test and Mc Nemar test. The results in the sleeping position of babies before and after the massage where the time needed for the baby to fall asleep = 18.33 minutes (p value = 0.001), the total sleep for babies in 24 hours = 13.36 hours (p value = 0.008), the number of hours of sleep for infants at night = 9.78 hours (p value = 0.015), the frequency of babies waking at night = 3 times (p value = 0.008), and the majority of babies waking up did not cry (p value = 0.000). The results of this study prove that baby massage has an effect on baby's sleep patterns. Therefore it is important for midwifery officers to inform and teach baby massage techniques to the baby's parents so that it helps in overcoming the baby's sleep problems.

Keywords: Baby massage; baby's brain; baby sleep pattern

1. Introduction

Touch therapy, especially massage, produces beneficial physiological changes that can be measured scientifically, including the measurements of saliva cortisol levels, radioimmunoassay of plasma cortisol levels, urine stress hormone (catecholamine) levels, and EEG examinations (electro encephalogram, brain wave images) [1]. By doing the right massage, the baby will experience an increase in appetite and effectiveness in resting (sleeping). In addition, baby massage can also improve mental condition, increase intelligence and hone social interaction skills [2]. Baby massage will make the baby sleep more soundly and increase the concentration of alertness (alertness) or focus. This is because massage can alter brain waves. This conversion occurs by decreasing alpha waves and increasing beta waves, as well as theta which can be proven by using an EEG (electro encephalogram) [1]. Sleep is a problem that parents

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often complain about with their babies under one year old. Medical estimates suggest that more than a third of babies under one year old have sleep problems, while the results of the research show that half of babies who have sleep problems at the age of one will also have the same problem by the age of three [3].

Sleep gives a positive effect for the development of the baby because sleep is one of the stimulants of the growth of the baby's brain. If lack of sleep, the levels of white blood cells in the body will decrease, so that the effectiveness of the immune system decreases, the baby becomes easily sick and their growth is disrupted [4]. In Indonesia, it shows that out of 80 children aged less than three years old, 41 of them or 51.3% experience sleep disorders. Based on a study with 385 respondents in 5 cities; Jakarta, Bandung, Medan, Palembang and Batam, 44.2% of the night's sleep was less than 9 hours, woke up at night more than three times and long woke up at night more than one hour [5].

Based on research conducted by Widayanti, Rahayu and Suwoyo in 2006, the aim of the study was to determine the sleep patterns of babies who were massaged at the age of 3-6 months. From the results of the study, it was obtained that out of 15 babies aged 3-6 months who had received massage, 12 babies (80%) who slept regularly and 3 babies (20%) who slept irregularly. With a regular sleep pattern in the form of 2 naps (05.00-12.00 WIB) for \pm 2 hours, 1 time nap in the afternoon (13.00-18.00 hours) for \pm 2-3 hours and sleep each night \pm 7-7.5 hours [6]. Nur Asnah's research in 2011 showed that baby massage can increase the weight of premature babies, because massage can improve blood circulation and breathing, and increased levels of serotonin which make babies sleep soundly [7]. Therefore, researchers are interested in conducting a research entitled "The Effect of Baby Massage toward Baby Sleep Patterns".

2. Method

The design used in this study was a quasy experiment (one group pre-test and post-test design). The populations in this study were all mothers who had babies with the age of 3-12 months in the working area of *Puskesmas Batunadua*, Padangsidempuan City. The sampling technique used in this study was total sampling with a total sample of 33 babies. The research was conducted from January to March 2020 in the working area of *Puskesmas Batunadua*, Padangsidempuan City. The research instrument is an observation sheet in the form of demographic data which includes maternal age, mother's education, infant age and an observation sheet to assess the sleep patterns of babies before and after the massage. The massage is carried out for 3 consecutive

days. Data analysis is carried out after all data has been collected through several stages, namely, editing to check the respondent's data, then coding to maintain the confidentiality of the respondent's identity and making it easier to perform data analysis, then entering data (entry) into a computer and data processing with computerized techniques. Data testing was performed using statistical tests, namely the t-dependent test and the Mc Nemar test.

3. Result

3.1. Respondents Based on Demographic Data Characteristics

TABLE 1: Distribution of Respondents Based on Demographic Data Characteristics.

No	Characteristic	Frequency	Percentage (%)
1.	Infant age 3-5 months 6-8 months 9-12 months	10 10 13	30,3 30,3 39,4
2.	Maternal age <20 years old 20 – 35 years old >35 years old	3 27 3	9,1 81,8 9,1
3.	Education Elementary school Junior High School Senior High School College	5 11 14 3	15,2 33,3 42,4 9,1

This analysis is used to examine the effect of baby massage on the regularity of the baby's sleep patterns. By using the t-dependent test and Mc Nemar test which can be seen in the table below.

3.2. Respondents Based on Time Needed for Babies to Fall Asleep

Normal sleep cycle begins with a pre-sleep period in which the baby is only aware of drowsiness which gradually increases. This period usually lasts for 10-30 minutes. But if the baby has difficulty falling asleep, it will last an hour or more [8]. From these results, it can be seen that the time needed for the baby to fall asleep before massage on a normal scale was 27.48 minutes. But after the massage, the baby's mother only takes 18.33 minutes, which is a relatively short time. This is in accordance with Schanberg's statement that baby massage helps babies sleep quickly and increases alertness or concentration [4].

TABLE 2: Distribution of Respondents Based on Time Needed for Babies to Fall Asleep.

Variable	Mean	SD	Difference		P Value
			Mean	SD	
Time needed to put the baby to sleep before massage	27,48	18,33	9,151	14,07	0,001
Time needed to put the baby to sleep after massage	9,153	8,16			

3.3. Respondents Based on Total Baby Sleep within 24 Hours

In Stirling’s study, it was found that the total sleep of babies aged 3-12 months in 24 hours was 13 ¼ - 15 hours. Meanwhile, the results showed that the total sleep of the baby in the 24 hours before the massage was 12.31 hours, so it can be concluded that the quantity of sleep of the respondents was bad at the time before the massage. After the massage, the total sleep of babies in 24 hours was 13.36 hours; this shows an increase and improvement in the quantity of total good sleep for babies [9]. The results of this study were supported by research conducted by Widayanti, Rahayu, and Suwoyo who wrote that after children getting massage, the average quantity of children’s sleep increased with a total sleep time of two hours longer [6]. In Stirling’s study, it was found that the number of hours of sleep during the day was 2 ¼ - 5 hours. From the average value, it can be seen that there is an increase in the number of hours of sleep before and after the massage, namely 3.25 hours of sleep for babies during the day before the massage and 3.76 hours of sleep for babies during the day after the massage [9].

TABLE 3: Distribution of Respondents Based on Total Baby Sleep within 24 Hours.

Variable	Mean	SD
Total sleep in 24 hours before the massage	12,31	13,36
Total sleep in 24 hours after the massage	1,860	1,568

3.4. Respondents Based on Number of Sleeping Hours for Babies in the Afternoon

According to the researchers, these results indicate that by giving massage treatment to babies, the quantity of sleep is increased. This is in accordance with the opinion of Subakti, that babies whose muscles are stimulated by massage will be comfortable and sleepy. Most babies will sleep for a long time once the massage is done. But based on the results of the statistical test, it shows that there is no difference between babies

who are given massage treatment and babies who are not given massage treatment [2]. A crowded and non-conductive environment will affect the quantity of the baby's sleep, while internal factors include the baby's health condition. In Stirling's study, it was found that the number of hours of sleep at night was 10-11 ½ hours. Meanwhile, the results showed that the average number of hours of sleep for babies at night before the massage was 9.05 hours, thus it can be concluded that the quantity of sleep of the respondents was bad at the time before the massage. After doing the massage, the average number of hours of sleep for babies at night is 13.36 hours, thus it is clear that massage shows an increase and improvement in the quantity of baby sleep at night [9].

TABLE 4: Distribution of Respondents Based on Number of Sleeping Hours for Babies in the Afternoon.

Variable	Mean	SD	Difference		P Value
			Mean	SD	
Number of hours of sleep during the day before the massage	3,25	3,76	0,507	1,639	0,085
Number of hours of sleep during the day after the massage	1,412	1,017			

3.5. Respondents Based on Number of Sleeping Hours for Babies at Night

According to Roesli, the increase in sleep quantity in babies who are given massage is due to an increase in the levels of serotonin secretion produced during the massage [1]. Roekistiningsi, said that serotonin which is synthesized from the amino acid tryptophan will be converted into 5-hydroxytryptophan (5HTP) then into N-acetyl serotonin which ultimately turns into melatonin [10].

TABLE 5: Distribution of Respondents Based on Number of Sleeping Hours for Babies at Night.

Variable	Mean	SD	Difference		P Value
			Mean	SD	
Number of hours of sleep at night before the massage	9,05	9,78	0,727	1,621	0,015
Number of hours of sleep at night after the massage	1,146	1,214			

3.6. Respondents Based on the Frequency of Babies Waking Up at Night

The results showed that both babies who were given the massage before and after the massage would wake up when they slept at night. This is because babies feel hungry,

tired, and has a bowel movement. With the massage, the frequency of babies waking up is reduced when compared to babies who are not massaged. On average, babies who are massaged wake up 3 times at night while the average baby who isn't massaged wakes up 4 times at night. According to Graham, all babies, children, and even adults will wake up several times at night, and what babies go through will be more frequent compared to adults. Babies who are unable to sleep soundly will develop an irregular sleep pattern due to the baby's illness, eating difficulty, fussy and wakes up easily at night [11]. This can be resolved with baby massage, which according to Soedjatmiko, massage for babies is useful for helping the baby's immune system, helping train relaxation, making deep sleep, and helping regulate the digestive and respiratory systems. So that the things that cause the baby to wake up at night can be reduced [4].

TABLE 6: Distribution of Respondents Based on the Frequency of Babies Waking Up at Night.

Variable	Mean	SD	Difference		P Value
			Mean	SD	
Frequency of waking up at night before the massage Frequency of waking up at night after the massage	4,00 3,12	1,458 1,166	0,879	1,799	0,008

3.7. Respondents Based on Baby's Expressions when Waking Up

This is in accordance with Janis Graham's statement that the difference that appears between babies who sleep soundly and babies who wake up crying is that babies who are used to sleeping well, are able to go back to sleep after waking from sleep according to their own will, while babies who are not used to sleeping properly would not be able to [11,13]. Furthermore, baby's sleep can be helped by doing massage. The results of this study are supported by the results of research in Australia showing that babies who are touched / massaged with great affection are less likely to cry and get sick than babies who are not massaged. Massage improves circulation and boosts the immune system, also relieves pain and promotes relaxation and soothes a crying baby [12].

4. Conclusion

The results showed that the majority of respondents aged 9-12 months are 13 babies (39.4%), the majority of respondent mothers aged 20-35 years are 27 people (81.8%), the majority of respondents' education was high school are 14 people (42, 4%). The

TABLE 7: Distribution of Respondents Based on Baby's Expressions when Waking Up.

Baby's Expressions when Waking Up Before Massage	Baby's Expressions when Waking Up After Massage				Total		P Value
	Cry		Do not cry		N	%	
	n	%	n	%			
Cry	4	12,1	18	54,5	22	66,7	0,000
Do not cry	1	0,03	10	30,3	11	33,3	
Total	5	15,2	28	84,8	33	100	

results of statistical tests showed that there was a significant difference in the sleep position of babies before and after the massage where the time needed for the baby to fall asleep is 18.33 minutes (p value = 0.001), the total sleep for babies in 24 hours is 13.36 hours (p value = 0.008), number of hours of sleep for babies during the day are 3.76 hours (p value = 0.008), number of hours of sleep for babies at night are 9.78 hours (p value = 0.015), frequency of babies waking at night is 3 times (p value = 0.008), and the majority of babies waking up did not cry (p value = 0.000). The results of this study prove that baby massage has an effect toward baby sleep patterns. Therefore, it is important for midwifery officers to inform and teach baby massage techniques to the baby's parents so that it helps in overcoming their baby's sleep problems.

References

- [1] Roesli. Pedoman pijat bayi. Jakarta: Trubus Agriwidya; 2006.
- [2] Subakti Y. Keajaiban pijat bayi & balita. Jakarta: PT. Wahyu Media; 2009.
- [3] Graham J, Schaefer CE. Panduan sehat dan bijak menidurkan bayi. Jakarta: Prestasi Pustaka; 2004.
- [4] Prasetyono DS. Teknik-teknik tepat memijat bayi sendiri. Yogyakarta: Diva Press; 2009.
- [5] Conny, Tanjung MF, Sekartini R. Masalah tidur pada Anak. Sari Pediatri; 2004.
- [6] Widayanti M, Rahayu DE, Suwoyo. Hubungan pijat bayi dengan pola tidur bayi usia 3-6 bulan di BPS ny.nur musiah kota kediri. Malang; 1006.
- [7] Asnah NS. Efektifitas pijat bayi terhadap peningkatan berat badan bayi prematur di ruang perinatologi RSUD dr pirngadi kota medan. Jakarta : PERINASIA; 2011.
- [8] Potter PA, Perry AG. Fundamentals of nursing. 5th ed. St. Louis: Mosby; 2001.
- [9] Stirling S. Bayi tidur lelap. Jakarta: Erlangga; 2003.

- [10] Roekistiningsih MF, Laviana NL. Pengaruh pemijatan terhadap peningkatan kuantitas tidur bayi usia 4-6 bulan di kelurahan sumbersari kecamatan lowokwaru kota Malang. Malang: FKUB Digital Library; 2008.
- [11] Graham., J., Charles E. Schaefer. (2004). Panduan Sehat Dan Bijak Menidurkan Bayi. Jakarta: Prestasi Pustaka.
- [12] Heath, A., Nicki, B. (2008). Baby Massage. Jakarta: PT. Dian Rakyat.
- [13] A. Farihatun, D. Kania, A. Nurmalasari, and L. Nurliani, "The Effect of Energy Supplements on The Levels of Gamma Glutamyl Transferase (GGT) Enzymes," J. Phys. Conf. Ser., vol. 1179, p. 12189, 2019.