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Effectiveness of Baby Massage with Lavender Telon Oil on Infant Sleep Quality in Ciseureuh, Purwakarta (July–August 2024)

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ABSTRACT

Sleep is a vital physiological need for infant growth and development. Its quality depends not only on duration but also on the restorative benefits gained during rest. In Indonesia, infant sleep disorders remain common, while parental awareness is still limited. A simple non-pharmacological intervention is infant massage with *lavender telon* oil, which contains linalool and linalool acetate, known for their calming effects. This research aims to evaluate the effectiveness of infant massage with *lavender telon* oil on the sleep quality of infants aged 3–12 months at the *Ciseureuh Village Posyandu*, Purwakarta District. The research applied a quantitative approach using a pre-experimental one-group pre-test post-test design. The study population consisted of 32 infants aged 3–12 months, recruited through a total sampling technique. Data were collected using a validated and reliable questionnaire. Statistical analysis with a paired t-test showed a significant difference in infant sleep quality before and after the massage, with a p-value of 0.000 (<0.05). These findings confirm that infant massage with *lavender telon* oil effectively improves sleep quality in infants. In conclusion, infant massage using *lavender telon* oil can serve as a simple, safe, and affordable intervention to enhance sleep quality. The results of this study are expected to provide valuable insights for healthcare providers, community health workers, and parents in promoting optimal infant growth and development through effective, non-invasive strategies.

INTRODUCTION

Infancy is a golden time for a child's growth and development, so it needs special attention. Infancy is considered a critical period in personality development because it is a period in which the basics are established at the beginning of life (Bogaert et al., 2023; Cheatham, 2020; Coughlan et al., 2024). Monitoring the development of infants, toddlers, and preschoolers is carried out through Stimulation, Detection, and Early Intervention for Growth and Development (*SDIDTK*) activities. The provision of stimulus after the baby is born has an important effect on the development of motor skills and social adaptation during the baby's growth from infancy to adulthood. Stimulation plays a role in increasing the growth and development of the baby to develop optimally. In addition, stimulation given continuously on a regular basis can stimulate the development of brain cells and strengthen the connections between nerves that have been formed (Korompis et al., 2019; Setiawati et al., 2022; Wardani, 2023; Yatini & Saputri, 2023). One of the factors that affect the growth and development of babies is sleep and rest. The need for sleep is not only seen from the aspect of quantity but also quality. With good sleep quality, the growth and development of babies can be achieved optimally (Homina et al., 2023).

The prevalence of sleep problems in Indonesian children aged 0–12 months is quite high

(31%), and most parents do not recognize sleep problems in their children. The large gap between the prevalence of sleep problems and parents' perceptions shows that parental awareness of children's sleep problems in Indonesia is still low. The need for sleep is not only seen from the aspect of quantity but also quality. With good sleep quality, the baby's growth and development can be achieved optimally (Wardani et al., 2023). Sleep is one of the basic needs for a child's developing body. Sleep disorders in children can affect behavior and emotions, cause daytime sleepiness, reduce attention, increase fatigue, decrease physical activity, and impair memory. These problems need to be handled appropriately and effectively. In babies, sleep may contribute significantly to brain development, maintaining and regulating the vast abilities and information they record every day.

Sleep quality is a certain physiological state that a person attains while sleeping, restoring bodily processes upon waking. Good sleep quality is indicated by the number of hours the baby sleeps, the ability to fall asleep easily at night, waking up fit, and not being fussy (Candra, 2015). Sleep is a top priority for babies. When newborns, babies spend most of their time sleeping. A baby's growth and development are highly dependent on sleep; without it, optimal growth will not occur. During sleep, brain cells are repaired, and about 75% of hormones are produced. A baby's brain grows three times as much as at birth or reaches 80% of an adult's brain size in the first year. This condition only occurs once in a lifetime, so sleep needs must be fully met to prevent negative effects on development (Nilawati, 2022).

Massage accompanied by aromatherapy is the right stimulus to help babies sleep well. Aromatherapy disperses molecules that diffuse fragrance and stimulate the central nervous system, which is useful for relaxation and therapy. A study showed that a 30-minute massage at night for two consecutive weeks can help babies adjust their rest and activity cycles by 8 weeks of age. Melatonin is a natural sleep-regulating hormone released at night (Paramananda, 2023).

Lavender oil has great potential because it consists of several components. According to research, 100 grams of *lavender oil* is composed of several ingredients, such as: essential oil (13%), alpha-pinene (0.22%), camphene (0.06%), beta-myrcene (5.33%), p-cymene (0.3%), limonene (1.06%), cineol (0.51%), and linalool acetate (26.12%). Based on these data, it can be concluded that the main active components in *lavender oil* are linalool acetate and linalool (Ohorella, 2022).

The results showed that the sleep quality of babies aged 2–12 months before the baby massage was highest in the categories of good and sufficient sleep quality, with 14 babies (37.8%) in these categories. After the baby massage, the sleep quality of babies aged 2–12 months was mostly good, with 28 babies (75.7%). The conclusion was that there was an improvement in sleep quality before and after baby massage (Budiana, 2022).

Based on 2012 data, around 33 babies experienced sleep problems, and 25–30 toddlers suffered from sleep problems. Another dataset showed that 10 out of 359 mother-child pairs at ages 6, 12, 24, and 36 months reported sleep problems. Additionally, 55 percent of mothers reported that their babies had sleep problems, with most babies waking up 2.1 times per night for an average of 45.7 minutes per night (Yunita et al., 2020). Based on a preliminary test conducted by researchers at the *Posyandu* of *Ciseureuh Village*, Purwakarta District, by interviewing 10 mothers with babies aged 3–12 months, 8 complained that their babies had difficulty sleeping well and were often fussy during sleep, while 2 reported that their babies only woke up at night and could not sleep again.

Previous studies have shown that infant massage can be an effective intervention to improve sleep quality. For example, Soleha and Novitasari (2019) proved that baby massage with lavender aromatherapy can improve the sleep quality of babies aged 0–12 months. Similar findings were reported by Dewi and Larasti (2023), who stated that the use of lavender essential oil significantly improves the duration and quality of babies' sleep. In addition, research by

Raniah et al. (2021) confirms that infant massage with *lavender oil* positively affects sleep duration in babies. Meanwhile, Kalsm (2021) showed that the combination of baby massage with *lavender oil* can reduce infant insomnia levels. However, most of these studies were conducted in urban areas or modern health facilities, so there is still limited research examining the effectiveness of baby massage with *telon lavender oil* in community-based health services such as *Posyandu*.

The novelty of this research lies in its focus on testing the effectiveness of baby massage using *lavender telon oil*—not just pure lavender oil—and it was carried out at the *Posyandu* of *Ciseureuh Village*, Purwakarta. This study seeks to provide a real picture of simple interventions that are easily accessible to rural communities and can be applied regularly by cadres and parents to improve infant sleep quality. Thus, this research contributes to the scientific literature while providing practical solutions in community-based health services.

Based on the background described above, baby massage has many benefits for children's health, so researchers consider it necessary to conduct research on the effect of baby massage on the sleep quality of babies aged 3–12 months. The purpose of this study is to analyze the effectiveness of baby massage with *lavender telon oil* on the sleep quality of babies aged 3–12 months at the *Posyandu* of *Ciseureuh Village*, Purwakarta District. This research is expected to provide a deeper understanding of simple and easily applied interventions by health workers and parents in improving infant sleep quality.

The benefits of this research can be seen from three aspects. First, from a theoretical perspective, this research contributes to the development of obstetrics and child health sciences, especially regarding non-pharmacological methods in efforts to improve infant sleep quality. Second, from a practical standpoint, the results can serve as a reference for health workers and *Posyandu* cadres in providing baby health services through massage with *lavender telon oil* as a simple, affordable, and effective method. Third, from a social perspective, this research benefits parents and the wider community by increasing awareness of the importance of infant sleep patterns and encouraging active family participation in supporting optimal children's growth and development.

RESEARCH METHODS

This research is quantitative, using the pre-experimental method. The research design employed in this study is a one-group pre-posttest. According to Notoatmodjo (2018), the One Group Pretest Posttest research design is a pre-experimental design that does not use a comparison group (control), but includes at least the first observation (pretest), which allows testing for changes that occur after the experiment (program). This design was chosen by the researcher to determine the effect of baby massage with the aromatherapy of *lavender telon oil* on the sleep quality of babies aged 3–12 months at the *Posyandu* of *Ciseureuh Village*, Purwakarta District, Purwakarta Regency.

The population in this study consisted of all babies aged 3–12 months at the *Posyandu* of *Ciseureuh Village*, Purwakarta District, Purwakarta Regency, during the period of October–November 2024, totaling 32 babies. The sample in this study included babies aged 3–12 months at the *Posyandu* of *Ciseureuh Village*, Purwakarta District, Purwakarta Regency, for the October–November 2024 period. The sampling technique used in this study was total sampling. Total sampling is a technique where the number of samples is equal to the population (Sugiyono, 2014). Therefore, the sample in this study consisted of 32 babies aged 3–12 months.

RESULTS AND DISCUSSION

The characteristics of respondents based on age are one of the important factors that need to be considered. Age is an important factor in research because it can affect an individual's

response to the stimulus given in the study (Selvia, 2018). Babies at the age of 5-6 months are the age of babies with higher activeness because at that age the baby experiences a fairly rapid process of developing the baby's motor skills marked by the child starting to actively display his movement skills by rolling from the back to the stomach and vice versa, at that age the baby can also sit for a while without being supported, so that with the many movement activities carried out by the baby, the baby's body will experience fatigue so that the response that can be shown by the baby is fussy and unable to sleep (Rahmad, 2016).

Based on sex data in babies with high sex in male babies, in line with research conducted by Sulistyowati et al. (2021), it was stated that babies with male sex are more active and attractive, so the likelihood of experiencing fatigue and muscle injury is higher compared to female babies. Generally, male babies tend to be more active in physical activity during the day which causes the baby's sleep time to be reduced and easily tired compared to baby girls. Therefore, the potential for baby boys to experience sleep disorders is also more. Based on data on the health status of healthy babies, according to research Muawanah et al. (2019) it was stated that several factors that affect the quality of sleep in babies inside or outside the baby itself include nutritional factors, physical conditions, environment and disease. If the factors that affect the quality of sleep cannot be handled so that the baby is deprived of sleep which will have a bad impact on the baby emotionally, physically, cognitively and movement.

Based on the data obtained from the results of the mean value, standard deviation and standard error in the pretest, a mean value of 1.03 was obtained with a standard deviation of 0.177 and a standard error of 0.031, while in the posttest a mean value of 1.94 was obtained with a standard deviation of 0.246 and a standard error of 0.043. The results of bivariate analysis using the Paired T-Test in the pretest and posttest obtained the results of the sig value (P Value < 0.05) which indicates that there is an influence between the quality of the baby's sleep before the baby massage and the quality of the baby's sleep after the baby massage on the results of filling out the questionnaire. The results of the study are in line with the research of Kalsm (2021) which states that there is an effect of baby massage with lavender essential oil on the quality of baby sleep.

The results of the study showed an improvement in the quality of sleep in babies after baby massage. The baby was seen sleeping soundly after the massage. Babies after massage showed an improvement in the quality of their sleep. This happens because massage has a positive effect on the baby's health. The effect of this baby massage action controls stress hormones, so that the baby has effects such as easy sleep and feeling comfortable, relieving muscle tension so that the baby becomes calm and asleep. The results of this study are in accordance with Soleha & Novitasari (2019) who stated that baby massage can affect the quality of baby sleep. Massage can change brain waves, so baby massage will make the baby sleep better and improve alertness or concentration.

Massage can change brain waves by lowering beta waves and tetha which can be proven by using EEG (electro echephalogra). In addition, the administration of lavender aroma oil also affects the baby's sleep time, because lavender oil provides a calm and comfortable effect on babies, lavender oil has benefits to overcome insomnia. This is in accordance with Taufiq (2014) who stated that baby massage combined with telon lavender oil containing linalol acetate compound enters the skin and changes brain waves, enters the hypothalamus and increases the level of the hormone melantonin which can improve the quality of sleep of babies. In the massage process combined with lavender aroma oil is left for 6 hours without being cleaned, this is so that the lavender telon oil penetrates into the skin and the baby can inhale the scent of the lavender oil, because the content in lavender telon oil, namely linalool acetate has the function of relaxing and relaxing tense muscles, besides that the content can also make you sleep well and reduce insomnia (Soleha & Novita 2019).

In this study, researchers can assume that the improvement in the quality of sleep of babies

who have been given massage therapy is due to an increase in the level of serotonin secretion, which is produced when massage therapy is carried out, massage with lavender oil essential has a great effect on sleep quality, because lavender oil essential has the properties of providing calm, comfort and decomposing stress (sedative). The external compounds contained in lavender oil are very good and have benefits for relaxing and relieving tension, a baby who is massaged for approximately 30 minutes will feel more relaxed, sleep better, and longer. Therefore, babies who are massaged regularly will have better sleep quality than babies who are not massaged.

CONCLUSION

Based on the results of the study, it can be concluded that baby massage using *lavender telon oil* has been proven effective in improving the sleep quality of babies aged 3–12 months at the *Posyandu* of *Ciseureuh Village*, Purwakarta District. Regular massage can help babies sleep better, reduce fussiness, and increase comfort and relaxation, which positively impacts children's growth and development. These findings show that baby massage with *telon lavender oil* can be used as a simple, safe, and easy-to-apply non-pharmacological intervention for parents and health workers. As a suggestion, further research is recommended involving a larger and more diverse sample size, as well as comparisons of the effectiveness of *telon lavender oil* with other types of aromatherapy to strengthen the generalization of results. In addition, it is hoped that health workers and *Posyandu* cadres can promote the benefits of baby massage with *lavender telon oil* to parents as a promotive and preventive strategy to support the quality of sleep and optimal development of babies.

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