

Effectiveness of Infant Massage Using Aromatherapy Essentialoil of Ylang-ylang Flower on Sleep Quality Sleep Quality of Infants 6-12 Months at Posyandu Arjuna Neighborhood IV Sei Renggas Village

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Article Info	Abstract
<p>Article history: Received August 07, 2023 Revised August 28, 2023 Accepted October 07, 2023</p> <hr/> <p>Corresponding Author: Mahyunidar Sekolah Tinggi Ilmu Kesehatan As Syifa Kisaran, Indonesia Email: mahyu.nidar@yahoo.com</p>	<p>In Indonesia, 44.2% of children experience difficulties with sleep onset, yet 72% of parents perceive this to be a minor issue. Conversely, sleep disorders have been linked to adverse effects on infant growth, immune system function, and the regulation of the endocrine system. To enhance the quality of sleep and facilitate optimal child growth and development, infant massage may be a viable solution. The objective of this research is to investigate the potential benefits of infant massage using aromatherapy essential oils, specifically ylang-ylang flower, on the sleep quality of infants aged 6-12 months. The objective of this study is to determine the effectiveness of infant massage using aromatherapy essential oil of ylang-ylang flower on the quality of sleep of infants aged 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village. Methodology In this study, the researchers employed a quantitative research methodology. The results of the study are as follows: The results of the Wilcoxon test indicate a p-value of 0.000 ($p < 0.05$), which rejects the null hypothesis (H_0). This suggests that there is a statistically significant difference in the quality of sleep of infants aged 6-12 months before and after receiving a massage using aromatherapy essential oil ylang ylang flowers. In conclusion, the results of this study indicate that infant massage using aromatherapy essential oil of ylang-ylang flower is an effective method for improving the quality of sleep in infants aged 6-12 months. A significant difference was observed in the quality of sleep of infants aged 6-12 months before and after baby massage using ylang ylang essential oil aromatherapy, with a p-value of 0.000 ($p < 0.05$). It can thus be concluded that the use of baby massage with ylang ylang essential oil aromatherapy is an effective method for improving the quality of sleep in infants aged 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village.</p> <p>Keywords: <i>Babies, Sleep Disorders, Baby Massage, Ylang-Ylang Flower Aromatherap</i></p> <p>This article is licensed under a Creative Commons Attribution 4.0 International License.</p> 

1. INTRODUCTION

Sleep is a fundamental human need and is crucial for optimal health, particularly in children. Adequate sleep is essential for children's well-being and development. Disruptions in sleep patterns can lead to adverse effects on children's physical and mental health. Sleep disorders in children can influence their behavior, emotions, and cognitive abilities, resulting in decreased alertness, fatigue, reduced physical activity, and impaired memory. These disturbances can also manifest as irritability and tantrums [11].

In Indonesia, 44.2% of children experience difficulties with sleep, yet 72% of parents perceive this to be a minor issue. Conversely, sleep disorders have been linked to adverse effects on infant growth, immune system vulnerability, and disruption to the regulation of the endocrine system. To enhance sleep quality and optimize child growth and development, infant massage may be a viable solution. Improved sleep quality or duration in infants who receive

infant massage is attributed to elevated serotonin levels, the primary neurotransmitter involved in sleep regulation and the suppression of other brain functions. Sukwati's study demonstrated that 73% of infants exhibited enhanced sleep quality following massage [1].

A study conducted by Sekartini in 2004 revealed that 44.2% of children under the age of three experienced sleep disorders [4]. In the Yogyakarta area in 2018, 13.6% of infants who did not receive routine massage therapy exhibited sleep problems.

A significant proportion of children experience sleep disorders due to an inability to relax in an environment that is perceived as stressful and conducive to sleep. This is despite the fact that sleep plays a crucial role in brain development, parenting (learning) and nutritional processes. Furthermore, sleep is essential for child development as it allows for the optimal functioning of body cells and the production of hormones [9].

Novy Ramini H (2019) observed that despite the prevalence of baby shamans, many individuals are reluctant to massage their infants, suggesting that there is still a significant knowledge gap regarding the benefits of infant massage within the community. Furthermore, community health workers often lack sufficient knowledge about infant massage. Another factor that contributes to the preference for traditional healers is the adherence to customs that have been passed down from generation to generation. Additionally, traditional birth attendants (TBAs) are often perceived as more knowledgeable and experienced in performing infant massage, a practice that has been passed down for centuries.

To enhance the infant's well-being, tactile stimulation, such as massage, serves as a form of positive reinforcement that fosters a stronger bond between the parent and child. Consequently, experts advise that infant massage be conducted by the mother and father, rather than a massage therapist. The dearth of health workers and the lack of attention paid by health workers to infant massage perpetuates the mother's knowledge base, as there is no recommendation from health workers regarding the correct procedure for performing infant massage [8].

The results of the preceding research conducted by Suryanis and colleagues (2022) in Air Pacah Village, Padang, with a total sample size of 40 infants, were obtained through consecutive sampling. Of the infants, 35 (87.5%) exhibited improved sleep quality, while 5 (12.5%) demonstrated no improvement. This indicates that infant massage with the use of aromatherapy essential oils derived from ylang ylang flowers has a positive impact on the sleep quality of infants between the ages of 6 and 12 months. [13]

As stated by Natoatmodjo (2010), essential oils can be used externally, such as in massage oils, creams, air fresheners, and other similar applications (Ragil Sekar, 2021). Additionally, essential oils can be utilized directly. The plant utilized as an essential oil is a flowering plant, one variety of which is the ylang flower, which is a popular choice among the community due to its ability to calm the mind through its aroma. The ylang-ylang flower, scientifically known as *Cananga odorata forma macrophylla*, is a native plant of Indonesia, particularly the island of Bali. It is from this plant that ylang oil is derived. To date, *Cananga Odorata* remains a species that produces essential oil. Ylang-ylang essential oil contains a compound called linalool, a class of monoterpene that has anti-anxiety and relaxing effects. Ylang-ylang oil is a type of aromatherapy that has a balancing, relaxing effect that relieves tension, stress, rapid pulse, and rapid breathing. It is also useful for treating high blood pressure. (Notoatmojo, 2018)

A preliminary survey conducted by researchers at the Arjuna posyandu, environment IV, Sei Renggas village on January 1, 2023, yielded 20 mothers with infants aged 6-12 months. The sample included 20 mothers with infants aged 6-12 months. The infants presented with sleep disturbances. The mothers were interviewed and informed that aromatherapy can improve infant sleep quality. However, they lacked understanding of aromatherapy.

The data presented above piques the researcher's interest in pursuing a research project entitled "The Effectiveness of Baby Massage Using Aromatherapy Essential Oil of Ylang-ylang Flower on the Quality of Sleep of Infants 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village."

2. METHOD

In this study researchers used quantitative research, which used a pretest Posttest design. The sample in this study was part of the population, namely babies aged 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village. The sampling technique in this study was accidental sampling.

3. RESULTS AND DISCUSSION

Table 1. Infant Characteristics Data at Posyandu Arjuna Lingkungan IV Sei Renggas Village in 2022

No	Data	Frequency	Percentage (%)
1	Age		
	6 months	5	16,7
	8 month	10	33,3
	9 months	6	20,0
	10 months	4	13,3
	11 months	3	10,0
	12 months	2	6,7
	Total	30	100
2	Gender		

Man	13	43,3
Woman	17	56,7
Total	30	100

Based on the table above, data on the characteristics of infants aged 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village in 2023, the majority were 8 months old as many as 10 respondents (33.3%), and 17 babies (56.7%) were female.

Table 2. Sleep Quality in Infants Before Massage Using Aromatherapy Essential Oil of Ylang-ylang Flower

Sleep Quality of Infants 6-12 months Before Baby Massage	Freq	%
Good	0	0,0
Enough	13	43,3
Not Good	17	56,7
Total	30	100

Based on table 2 above, it is known that the quality of sleep of infants aged 6-12 months before baby massage using aromatherapy essential oil ylang ylang flower, the majority had poor sleep quality, namely 17 babies (56.7%).

Table 3 Sleep Quality in Infants After Massage Using Aromatherapy Essential Oil of Ylang-ylang Flower

Sleep Quality of Infants 6-12 months After Baby Massage	Freq	%
Good	18	60,0
Enough	11	36,7
Not Good	1	3,3
Total	30	100

Based on table 3 above, it is known that the quality of sleep of infants aged 0-12 months after baby massage using aromatherapy essential oil of ylang ylang flower, the majority have good sleep quality, namely as many as 18 babies (60.0%).

Table 4 Effectiveness of Baby Massage Using Aromatherapy Essential Oil of Ylang-ylang Flower on the Quality of Sleep of Infants 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village in 2022

Sleep quality of infants 6-12 months	N	Mean Rank	Z	p-value
Before - After	30	12,50	-4,428	0,000*

Based on the results of statistical tests using the Wilcoxon test, it is known that the p value is 0.000 ($p < 0.05$), meaning that H_0 is rejected, this means that there is a significant difference in the quality of sleep of babies aged 6-12 months before and after baby massage using aromatherapy essential oil ylang ylang flower. Thus it is concluded that baby massage using ylang ylang essential oil aromatherapy is proven effective in improving the quality of sleep of infants 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village.

3.1 Discussion

3.1.1. Sleep Quality in Infants Before Massage Using Aromatherapy Essential Oil of Ylang-ylang Flower

The findings revealed that the majority of infants aged 6-12 months, prior to receiving a massage utilizing aromatherapy essential oils, exhibited suboptimal sleep quality. Specifically, 17 out of the 30 infants studied (56.7%) demonstrated this pattern. A lack of sleep quality is indicated when a baby experiences disturbances during sleep, exhibits a duration of less than 16 hours, wakes up more than three times, and the duration of awakening is more than one hour. Additionally, the baby may display fussiness, crying, and difficulty falling back asleep during sleep.

A baby is said to have poor sleep quality or experience sleep disturbances if they sleep for less than nine hours at night, wake up more than three times, and the length of each awakening is more than one hour. During sleep, a baby may appear fretful, often cry, and may have difficulty resuming sleep (Vivian Nanny Lia Dewi, SST., 2021).

The data on the sex of babies with high sex ratios indicate that female babies are more active than male babies, which is consistent with the findings of [6]. This heightened activity level increases the likelihood of fatigue and muscle injury in male babies. In general, male infants tend to be more physically active during the day, which results in reduced sleep time and increased fatigue compared to female infants. Consequently, male infants are more susceptible to experiencing sleep disorders. [6]

A number of factors can contribute to sleep disturbances in children, leading to poor sleep quality. These include: (1) hunger and thirst, (2) discomfort or pain in the teeth, ears, skin, airway, or gastrointestinal tract, and (3) psychological problems related to the child's developmental stage, parenting style, temperament, activities, and environmental factors [12].

The quality and quantity of infant sleep can be observed through the infant's sleep patterns, the infant's comfort during sleep, and the infant's overall sleep experience. The development of infant sleep patterns is contingent upon age and the maturation of the brain. Consequently, the total amount of sleep required will decrease as the proportion of infants decreases. It is recommended that the infant's sleeping environment be adapted to their specific needs. Newborns aged 0-5 months typically exhibit a sleep pattern comprising 80-90% of their total sleep time. In the immediate postnatal period, the infant typically sleeps for 16 to 20 hours per day, divided into four to five periods. As infants reach the age of two months, they begin to exhibit a preference for nocturnal sleep over diurnal sleep. Newborns up to approximately three months of age will spend approximately 15 to 17 hours sleeping, with a division of eight hours for naps and nine hours of sleep at night. As infants mature, their sleep duration also declines. At 3-6 months of age, the frequency of naps decreases to approximately three per day and continues to diminish. The total amount of sleep per day ranges from 13-15 hours [13]

The findings indicated that infants who had not undergone massage exhibited suboptimal sleep quality. This may be attributed to the infant experiencing physical fatigue due to the infant's preference for being carried or held by parents or other individuals, which can lead to physical fatigue. Infants experiencing physical fatigue may have difficulty sleeping and may become easily fussy when attempting to fall asleep. During sleep, the infant may not sleep well and may wake up easily. Additionally, due to their age, infants often prefer to be carried by their parents, increasing their exposure to potential pathogens, which may negatively impact the quality of their sleep [10]

The findings of research conducted on the quality of sleep among infants aged 6-12 months indicate that the majority experience poor sleep quality, which can have adverse effects on growth and development. Furthermore, several additional factors influence the quality of sleep, including age-related factors associated with the onset of physical activity, gender, health status, and environmental factors such as bedding that is too stuffy or too hot. Infants with poor sleep quality and disturbances in sleep may experience sleep duration of ≤ 9 hours or frequent awakenings ≥ 3 times, with a duration of ≥ 1 hour and total sleep of ≤ 14 hours. Additionally, infants may exhibit fussing and weakness upon waking, as observed on the pretest checklist sheet. These factors can collectively impact the quality of infant sleep.

3.1.2 Sleep Quality in Infants After Massage Using Aromatherapy Essential Oil of Ylang-ylang Flower

The results demonstrated that the quality of sleep in infants aged 6-12 months following a baby massage incorporating aromatherapy essential oil ylang ylang was, on average, of a high quality, with 18 infants (60.0%) exhibiting optimal sleep outcomes. These results indicate that the quality of the infant's sleep after the infant massage was of a sufficient duration (≥ 9 hours), the infant woke up ≤ 3 times, and the infant was not fussy when waking up in the morning. Nevertheless, 11 infants (36.7%) exhibited adequate sleep quality, characterized by a nocturnal duration of ≤ 9 hours and ≥ 3 nocturnal awakenings, each lasting ≥ 1 hour, with no fussiness upon waking. The results of the study demonstrate that infant massage has a significant impact on the quality of sleep in infants aged 6-12 months. The application of aromatherapy essential oil ylang ylang flower through infant massage has been shown to enhance the quality of infant sleep, with infants sleeping for a minimum of 9 hours per night, waking up a maximum of 3 times, and the duration of each awakening being a minimum of 1 hour. Additionally, the infants exhibited no signs of fussiness upon waking.

The infant exhibited an improvement in sleep quality following the massage. This occurs because massage can have a beneficial impact on the infant's well-being. The effect of infant massage is to regulate stress hormones, thereby facilitating the onset of sleep and promoting a sense of comfort. A gentle massage can help relieve muscle tension, leading to a state of calm and sleep onset. Infants whose sleep quality is optimal are also influenced by their environment, which should be quiet and have a soothing atmosphere.

The data and theory of infant massage indicate that it can increase the time or amount of sleep of the infant, thereby ensuring that the infant's sleep is fulfilling and that the infant's growth and development are optimal. Sufficient sleep is essential for optimal growth and development in infants. Conversely, inadequate sleep can have adverse effects on the infant's physical and emotional well-being. During sleep, numerous hormones are secreted, and disruptions in this process can lead to physical and behavioral issues. Infants who do not receive sufficient sleep often exhibit fussiness and other signs of distress. This study demonstrates that infant massage is beneficial for both the infant and the infant's mother. The mother can utilize the knowledge gained to massage her own infant, thereby meeting the infant's sleep needs. Additionally, infant massage has been shown to have a positive impact on the mother-infant relationship. The mother's touch provides comfort and love to the infant, which can positively influence the infant's emotional and physical development.

Following a baby massage utilising aromatherapy essential oil derived from ylang ylang flowers, an increase in the quantity of sleep is observed. Additionally, the practice is beneficial for the infant as it fosters a sense of parental love and affection. The act of touch is of particular importance in infant development, as it forms the foundation for communication and mutual love and affection. The infant may experience a heightened sense of affection from the mother.

The researcher's assumption, based on the findings of a study on the sleep quality of infants aged 6-12 months, is that baby massage using aromatherapy essential oil of ylang ylang flowers has a positive effect on infant sleep. The study was conducted over a period of two weeks, with each session lasting 20 minutes. The participants were evaluated

after six treatments, and the results demonstrated a notable improvement in sleep quality. Specifically, the number of respondents with poor sleep quality decreased from 17 to 18, while the number of respondents with good and sufficient sleep quality increased from 11 to 12 and 11 to 13, respectively. The enhanced quality of infant sleep is evidenced by the checklist following the infant massage, which indicates that the infant is sleeping for ≥ 9 hours at night, waking ≤ 3 times, for ≤ 1 hour, and sleeping ≥ 14 hours per 24 hours. Additionally, the infant is not fussy or weak when waking. Therefore, infant massage is a soothing and gentle technique that can enhance endurance and alleviate muscle tension following physical activities such as learning to crawl and walk, thereby promoting relaxation and facilitating sleep.

3.1.3 Effectiveness of Infant Massage Using Aromatherapy Essential Oil of Ylang-ylang Flower on the Quality of Sleep of Infants 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village in 2022

The results of the data analysis indicate that the quality of sleep of infants aged 6-12 months has been affected by infant massage using ylang ylang essential oil aromatherapy. Specifically, the quality of sleep of infants who were previously less rested has improved following the introduction of massage using ylang ylang essential oil aromatherapy.

The results of the Wilcoxon test indicate a p-value of 0.000 ($p < 0.05$), which rejects the null hypothesis (H_0). This suggests that there is a statistically significant difference in the quality of sleep of infants aged 6-12 months before and after infant massage using ylang ylang essential oil aromatherapy. It can thus be concluded that infant massage using ylang ylang essential oil aromatherapy is an effective method for improving the quality of sleep of infants aged 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village.

The practice of infant massage using aromatherapy essential oils, such as ylang ylang, has been demonstrated to confer a number of beneficial effects, including enhanced concentration and improved sleep quality. The results of the study indicate that the quantity of sleep experienced by all respondents following a baby massage using ylang ylang essential oil aromatherapy has increased. The increase in the quantity of sleep in infants who were given the massage was due to an increase in serotonin secretion levels produced during the massage. Serotonin is the main transmitter that accompanies the formation of sleep. Additionally, melatonin is released during the massage, which plays a role in sleep and contributes to longer and deeper sleep at night. This is because melatonin is produced more in the dark when light entering the eyes is reduced [8].

Infant massage is a technique employed with the aim of facilitating the release of growth hormones, which are responsible for promoting growth and development in infants. The use of aromatherapy in baby massage, in particular the application of kenanga (*Cananga odorata*) essential oil, is based on the chemical compounds present in this oil. The primary active compound, linalool, has a relaxing effect and is believed to facilitate sleep.

Massage is typically referred to as "touch stimulation." Massage can be conceptualized as a form of tactile communication between mother and infant. Thus, infant massage can be regarded as an expression of affection between parents and children through the medium of touch, which can have a profound impact on the child's development. This is because touch and hugs are one of the basic needs of babies. Natural touching of the baby is essentially the same as the act of sequencing or massaging. If this action is carried out regularly and in accordance with the procedures and techniques of baby massage, this massage can be a therapeutic intervention that provides numerous benefits for the infant [3].

Aromatherapy is a form of alternative therapy that is considered to be a complementary therapy. Aromatherapy represents one of the medicinal arts, a cultural heritage that has its roots in antiquity. Aromatherapy employs the use of ylang ylang essential oil to enhance the vitality of the body, mind, and spirit. One particular type of aromatherapy that can be utilized in relaxation techniques for insomnia is ylang ylang essential oil-based aromatherapy. This specific type of aromatherapy has been observed to induce a relaxing effect on clients as they begin to enter a state of sleep, making it one of the safest forms of aromatherapy [2]

Ylang ylang essential oil represents one type of aromatherapy that contains a variety of natural compounds, including benzoic acid, geraniol, farnesol, geraniol, eugenol, linalool, and sadrol. Additionally, ylang ylang oil has been demonstrated to be effective in promoting balance, relaxation, and stress relief, as well as in reducing rapid pulse and breathing, through the use of massage and inhalation. Additionally, ylang ylang aromatherapy has been demonstrated to have a calming effect. A study conducted by Zulmi (2016) found that elderly individuals who received ylang aromatherapy exhibited an improvement in the quality of their nighttime sleep, with sleep duration exceeding that observed prior to the administration of aromatherapy.

This research is consistent with the findings of Suryanis et al. (2022), who produced aromatherapy oil products from kenanga essential oil (*Cananga odorata*) derived from the chemical compounds contained therein. Linalool is the primary active ingredient with a relaxing effect that facilitates sound sleep in infants when combined with baby massage therapy. The quality of sleep in infants who are massaged with *cananga odorata* essential oil aromatherapy is observed to change in children aged 6-12 months.

The essential oil of *cananga* massage has a relaxing effect on the central nervous system, which helps increase oxytocin production. Lavender is one of the aromatherapies that affects the amygdala in the brain and is able to produce a calming effect [13].

4. CONCLUSION

Based on the description of the results and discussion, it can be concluded that the quality of sleep in infants aged 6-12 months before baby massage using aromatherapy essential oil of ylang ylang flowers at Posyandu Arjuna Lingkungan IV Sei Renggas Village in 2023 the majority have poor sleep quality. The quality of sleep in infants aged 6-12 months after baby massage using ylang ylang essential oil aromatherapy at Posyandu Arjuna Lingkungan IV Sei Renggas Village, the majority has good sleep quality. There is a significant difference in the quality of sleep of babies aged 6-12 months before and after baby massage using ylang ylang essential oil aromatherapy, with a p value = 0.000 ($p < 0.05$). Thus it is concluded that baby massage using ylang ylang essential oil aromatherapy is proven effective in improving the quality of sleep of infants 6-12 months at Posyandu Arjuna Lingkungan IV Sei Renggas Village.

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