



The Effectiveness of Toddler Massage Implementation on Improving Sleep Quality in Children Aged 1 to 3 years with Sleep Pattern Disturbances in Pengadangan Village

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ABSTRACT

Sleep pattern disorders in children aged 1–3 years are common problems that may negatively affect growth, development, cognitive function, and overall well-being. One of the non-pharmacological interventions that can be used to address this problem is toddler massage, which promotes relaxation and is expected to improve sleep quality. This study aimed to determine the effectiveness of toddler massage in improving sleep quality among children aged 1–3 years with sleep pattern disorders in Pengadangan Village. This study employed a descriptive research design using a case study approach. Nursing care was provided over a period of four days. The toddler massage intervention was administered in three sessions, with each session lasting 15 minutes. The findings demonstrated a gradual improvement in sleep quality, as indicated by an increase in nighttime sleep duration from 7 hours to 10 hours, a reduction in the frequency of nighttime awakenings from 5 times to once per night, a decrease in nighttime wakefulness from 2 hours to 10 minutes, and a reduction in sleep onset latency from 45 minutes to 2 minutes. The child's sleep quality improved from the disturbed sleep category to the normal sleep category by the third and fourth days of the intervention. Toddler massage was effective in improving sleep quality among children aged 1–3 years with sleep pattern disorders in Pengadangan Village.

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I. INTRODUCTION

Toddlerhood is considered a golden age, a critical period, and a window of opportunity for child growth and development. During this stage, children require optimal and high-quality stimulation because their developmental potential greatly determines the success of subsequent developmental milestones. Insufficient stimulation during this period may hinder children's developmental achievements later in life [1].

Optimal growth and development during toddlerhood are influenced by various factors, one of the most important being good sleep quality. Sleep quality is a fundamental aspect underlying the developmental process. Sleep is not merely a period of physical rest but also a critical phase for numerous biological and psychological processes essential for toddlers. During sleep, the child's body undergoes cellular repair, strengthens the immune system, and processes information acquired throughout the day. Sleep also plays a vital role in synaptic formation, long-term memory consolidation, emotional regulation, and the development of brain structure and function, including the prefrontal cortex, which is responsible for decision-making and impulse control [4].

Poor sleep quality may impair children's physical growth and cognitive development. During sleep, the brain forms neural connections that are essential for

learning and skill acquisition while simultaneously secreting growth hormone at significantly higher levels than during wakefulness. Consequently, sleep disturbances may have detrimental effects on children's overall growth and development [9].

According to the World Health Organization (WHO), approximately 20–30% of preschool-aged children experience sleep disturbances or sleep-related problems. Similarly, data from the Indonesian Ministry of Health (MOH) indicate that the prevalence of sleep disturbances among young children ranges from 38% to 44.2% [5].

Sleep pattern disturbances are defined as a group of conditions characterized by abnormalities in sleep duration, sleep quality, or sleep timing (Benson, 2024). Several factors may contribute to sleep disturbances in children, including environmental changes, separation anxiety from parents, underlying health conditions, poor sleep habits, and excessive stimulation before bedtime.

If left untreated, sleep disturbances may adversely affect children's growth and development, leading to decreased concentration, behavioral changes, emotional disturbances, and reduced immune function [4].

One non-pharmacological approach to improving sleep quality in toddlers is toddler massage. Toddler massage is a complementary therapy involving gentle massage techniques administered to children aged 1–3

years to support their growth and development. This intervention promotes relaxation, improves sleep quality, enhances blood circulation, and stimulates appetite. Furthermore, toddler massage strengthens the emotional bond between parents and their children through positive physical touch [7].

A preliminary study conducted in Pengadangan Village revealed that several toddlers continued to experience sleep pattern disturbances, characterized by difficulty initiating sleep, frequent nighttime awakenings, and inadequate sleep duration relative to age-specific recommendations. Parents reported that these children were more irritable, difficult to soothe, and less active during the day due to poor sleep quality. These findings indicate that sleep disturbances among toddlers remain an important health concern requiring further attention to improve sleep quality in this community.

Based on this background, the researchers were interested in investigating the effectiveness of toddler massage in improving sleep quality among children aged 1–3 years with sleep pattern disturbances in Pengadangan Village. This study aims to evaluate toddler massage as a non-pharmacological promotive and preventive intervention for enhancing sleep quality during early childhood.

II. RESEARCH METHODOLOGY

This study employed a descriptive case study design. The case study was conducted on a 2-year-old child with a sleep pattern disturbance residing in Pengadangan Village.

The study aimed to explore the implementation of nursing care for a toddler with a sleep pattern disturbance through toddler massage as a non-pharmacological intervention to improve sleep quality. Nursing care was provided over four consecutive days, with the massage intervention administered for 15 minutes each day. Specifically, this study sought to evaluate the effectiveness of toddler massage in improving sleep quality among children aged 1–3 years with sleep pattern disturbances in Pengadangan Village.

The nursing care process consisted of assessment, nursing diagnosis, care planning, implementation, and evaluation. Data were collected through interviews with the child's parents, observation of the child's condition, physical examination, and documentation using a standardized nursing care assessment form.

Sleep quality was assessed before and after the intervention using the Brief Infant Sleep Questionnaire (BISQ). The assessed parameters included nighttime sleep duration, frequency of nighttime awakenings, duration of wakefulness during the night, and sleep onset latency.

Nursing diagnoses and care plans were established according to the Indonesian Nursing Diagnosis Standards

(SDKI), Indonesian Nursing Outcomes Standards (SLKI), and Indonesian Nursing Intervention Standards (SIKI).

The intervention consisted of toddler massage, administered according to the standard operating procedure (SOP) for 15 minutes per session over three consecutive days. The effectiveness of the intervention was evaluated by comparing BISQ scores obtained before and after the implementation of toddler massage to determine its effectiveness in improving sleep quality among children aged 1–3 years with sleep pattern disturbances in Pengadangan Village.

III. RESEARCH RESULTS

The patient, Child A, was a 2-year-old toddler presenting with a disturbed sleep pattern, characterized by difficulty initiating sleep at night, frequent nighttime awakenings (up to five times per night), a nighttime sleep duration of approximately 7 hours, and increased irritability during the day. An interview with the child's mother revealed that the child did not have a regular sleep schedule and frequently woke up during the night, resulting in inadequate rest. Prior to the implementation of toddler massage, the child's sleep quality was considered poor.

The nursing diagnosis established was Disturbed Sleep Pattern related to inadequate sleep habits, as evidenced by difficulty initiating sleep, frequent nighttime awakenings, sleep duration below the age-appropriate requirement, and daytime drowsiness accompanied by irritability.

The expected nursing outcome, based on the Indonesian Nursing Outcomes Standards (SLKI), was Improved Sleep Pattern (L.05045) (SLKI, 2018). Following the implementation of toddler massage for 15 minutes before bedtime each day for three consecutive days, the child's sleep quality improved. The child fell asleep more easily, and the frequency of nighttime awakenings decreased substantially. Additionally, the child experienced longer and more restful nighttime sleep, indicating an overall improvement in sleep quality compared with the pre-intervention condition.

The frequency of nighttime awakenings decreased from 3–4 episodes per night to one episode or no awakenings, while nighttime sleep duration increased to 9–10 hours, consistent with the recommended sleep duration for the child's age. Furthermore, the child appeared calmer, more refreshed, and more active during daytime activities.

The nursing intervention implemented was Massage Therapy (I.08248) according to the Indonesian Nursing Intervention Standards (SIKI, 2018). Toddler massage was performed using gentle massage techniques applied to the feet, hands, chest, abdomen, back, and face for approximately 15 minutes before bedtime. In addition, the parents received education regarding the importance of establishing a consistent bedtime routine and performing toddler massage regularly at home.

The evaluation findings demonstrated that the implementation of toddler massage was effective in improving sleep quality among children aged 1–3 years with disturbed sleep patterns in Pengadangan Village. Improvements were observed in sleep onset, nighttime sleep duration, frequency of nighttime awakenings, and the child's daytime behavior, indicating the positive effect of toddler massage as a non-pharmacological nursing intervention for sleep problems in toddlers.

Table 1. Sleep Quality Assessment Results Before and After Toddler Massage Based on the Brief Infant Sleep Questionnaire (BISQ)

Indicator BISQ	Day 1 (Pretest)	Day 2 (Posttest)	Day 3 (Posttest)	Day 4 (Posttest)
Nighttime Sleep Duration	7 hour	8.5 hour	9 hour	10 hour
Frequency of Nighttime Awakenings	5 times	3 times	3 times	1 time
Lama terjaga malam	2 hour	50 minutes	25 minutes	10 minutes
Waktu untuk tertidur	45 minutes	35 minutes	10 minutes	2 minutes
Kategori kualitas tidur	Tidur terganggu	Tidur terganggu	Tidur terganggu	Tidur normal

As shown in Table 1, the post-test assessment conducted on Day 4 indicated that the child's sleep quality had reached the normal category. These findings demonstrate that the implementation of toddler massage for three consecutive days had a positive effect on improving sleep quality among toddlers in Pengadangan Village.

IV. DISCUSSION

Based on the results of the sleep quality assessment using the Brief Infant Sleep Questionnaire (BISQ), a gradual improvement in sleep quality was observed following the implementation of toddler massage over three consecutive days. At baseline (pre-test), the child had a nighttime sleep duration of 7 hours, experienced five nighttime awakenings, remained awake for 2 hours during the night, and required 45 minutes to fall asleep. Accordingly, the child's sleep quality was classified as disturbed sleep.

Following the implementation of toddler massage, progressive improvements were observed. On the second day, nighttime sleep duration increased to 8.5 hours, the frequency of nighttime awakenings decreased, and sleep onset latency was reduced to 35 minutes; however, the child's sleep quality was still categorized as disturbed sleep. More substantial improvements were evident on the third day, with nighttime sleep duration increasing to 9 hours, nighttime awakenings decreasing to two episodes, nighttime wakefulness decreasing to 25 minutes, and sleep onset latency shortening to 10 minutes. At this stage, the child's sleep quality was classified as normal. By the fourth day, all sleep indicators demonstrated further improvement, including

a nighttime sleep duration of 10 hours, only one nighttime awakening, 10 minutes of nighttime wakefulness, and a sleep onset latency of 2 minutes, indicating normal sleep quality.

The observed improvement in sleep quality suggests that toddler massage is an effective non-pharmacological intervention for enhancing sleep patterns among children aged 1–3 years. Tactile stimulation provided through massage promotes relaxation by enhancing parasympathetic nervous system activity, reducing cortisol (the primary stress hormone), and increasing serotonin secretion, which is subsequently converted into melatonin, the hormone responsible for regulating the sleep–wake cycle. These physiological responses enable children to fall asleep more easily, sleep for longer durations, experience fewer nighttime awakenings, and spend less time awake after awakening during the night [8].

The findings of the present study are consistent with those reported by [10], who demonstrated that regular massage significantly improved infant sleep quality, as evidenced by increased sleep duration and reduced sleep disturbances following the intervention. Their study concluded that massage serves as an effective form of sensory stimulation that promotes better sleep quality in young children.

The present findings are also supported by [2], who evaluated sleep quality using the Brief Infant Sleep Questionnaire (BISQ). Their study found that most participants exhibited poor sleep quality before receiving massage therapy, whereas the majority experienced good sleep quality after the intervention, with statistically significant improvements ($p < 0.05$). These findings further support the effectiveness of massage in increasing sleep duration while reducing the frequency of nighttime awakenings.

Stronger evidence is provided by [3], who synthesized findings from multiple systematic reviews examining pediatric massage in children under five years of age. Their review concluded that pediatric massage consistently improves children's comfort, reduces irritability, promotes developmental outcomes, and enhances sleep quality through relaxation and improved physiological regulation.

In addition to improving sleep quality, toddler massage provides several other benefits that support child growth and development. Massage stimulates the vagus nerve, thereby improving gastrointestinal function, nutrient absorption, and appetite. Furthermore, toddler massage promotes physical growth, enhances blood circulation, strengthens the emotional bond between parents and children, reduces stress and irritability, and produces relaxation effects that support motor development and overall child well-being. Collectively, these benefits support the use of toddler massage as a safe, effective, and non-pharmacological intervention for promoting the health and development of young children [6].

V. CONCLUSION

Nursing care provided to a patient with arthritis-related pain demonstrated that warm saltwater soaking therapy administered over a period of 3×24 hours effectively reduced pain intensity and improved the patient's quality of life. Based on these findings, it can be concluded that warm saltwater soaking is an effective non-pharmacological nursing intervention for alleviating pain associated with gout arthritis.

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The implementation of toddler massage was found to be effective in improving sleep quality among children aged 1–3 years with sleep pattern disturbances in Pengadangan Village. The four-day intervention resulted in improvements across all sleep quality indicators measured using the Brief Infant Sleep Questionnaire (BISQ), including increased nighttime sleep duration, reduced frequency of nighttime awakenings, decreased nighttime wakefulness, and shorter sleep onset latency.

The change in sleep quality classification from disturbed sleep to normal sleep indicates that toddler massage is a safe, simple, and feasible non-pharmacological nursing intervention. It has the potential to serve as an effective complementary strategy for improving sleep quality and supporting the growth and development of toddlers.

REFERENCES

- [1]. Andini, F., Sari, Y., Tampubolon, M. M., & Nurchayati, S. (2023). Perkembangan Anak Usia Toddler Di Kecamatan Sail Pekanbaru. 2(2).
- [2]. Andriyanti, L., Kes, M., Keb, M., & Andriyanti, L. (2024). The Effect Of Baby Massage On The Sleep Quality Of Babies Aged 2-11 Months At Bantarangin Homecare Wonogiri. 1(1), 33–38.
- [3]. Benson, M. T. (2024). Laporan Kasus : Penanganan Pada Klien Lanjut Usia Dengan Gangguan Pola Tidur Menggunakan Terapi Benson. 3(2), 1–6.
- [4]. Chen, S., Lin, S., Wang, M., Cheung, D. S., Liang, J., Cheng, Z., Sum, C., & Yeung, W. (2024). Heliyon Pediatric massage therapy in infants and children under 5 years : An umbrella review of systematic reviews. Heliyon, 10(16), e35993. <https://doi.org/10.1016/j.heliyon.2024..e35993>
- [5]. Daulay, E. D., Yusrita, L., & Kusuma, A. (2024). PENERAPAN TERAPI SLEEP
- [6]. HYGINE PADA ANAK USIA The Implementation of Sleep Hygiene Therapy In Preschool-Age Children Who Experience megatasi insomnia adalah terapi perilaku , yaitu sleep hyGINE yang merupakan. 2(November), 329–335.
- [7]. Heriyanti, S. W., Purnamasari, K. D., Suminar, R., Galuh, U., & Java, W. (2025). Effectiveness of Baby Massage on the Growth and Development of Toddlers : A Scoping Review. 13(1), 15–24.
- [8]. Isasih, W. D., Ardian, J., & Jauhari, M. T. (2025). Effectiveness of Melongas Toddler Massage on Appetite and Sleep Quality of Stunting Toddlers. 6(1), 14–20.
- [9]. Mrljak, R., Danielsson, A. A., Hedov, G., & Garmy, P. (2022). Effects of Infant Massage : A Systematic Review.
- [10]. Qothrunnada, S., & Fitriyani, F. (2025). The Relationship between Sleep Quality and Growth and Development in Toddler-Aged Children. 13(2), 164–173. <https://doi.org/10.33992/jik.v13i2.4282>
- [11]. Swandari, R., & Suminar, E. (2024). FUNDAMENTAL AND MANAGEMENT The Differences In Quality of Sleep Among Babies Aged 3-12 Months Before and After A Baby Massage ' s Class. 7(2).