

COMPARISON OF BABY MASSAGE AND BABY GYM ON SLEEP QUALITY AMONG INFANTS AGED 3-6 MONTHS AT RAVINA MEDIKA CLINIC IN 2026

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ABSTRACT

Sleep quality is an important factor that affects infant growth and development. Sleep disturbances are common among infants and may negatively affect physical growth and neurological development. Baby massage and baby gym are non-pharmacological stimulation methods believed to improve infant sleep quality; however, evidence comparing their effectiveness remains limited. This study aimed to compare the effectiveness of baby massage and baby gym in improving the sleep quality of infants aged 3–6 months at Ravina Medika Clinic in 2026. A quantitative approach with a quasi-experimental design using a pretest–posttest two-group design was employed. The study was conducted at Ravina Medika Clinic, Purwakarta, from January to February 2026. A total of 40 infants aged 3–6 months were selected using purposive sampling and divided into two groups: the baby massage group (n=20) and the baby gym group (n=20). Sleep quality was assessed using the

Brief Infant Sleep Questionnaire (BISQ) before and after the intervention. Data were analyzed using descriptive and inferential statistics, namely the Wilcoxon Signed-Rank Test and Mann–Whitney U Test, with a significance level of $\alpha=0.05$. Before the intervention, the majority of infants had poor sleep quality, accounting for 70.0% in the baby massage group and 50.0% in the baby gym group. After the intervention, sleep quality improved in both groups. The Wilcoxon test showed that both baby massage and baby gym significantly improved infant sleep quality ($p<0.05$). The Mann–Whitney test demonstrated a significant difference between the two groups ($p=0.000$; $p<0.05$). The baby massage group had a higher mean rank than the baby gym group; therefore, baby massage was considered more effective in improving the sleep quality of infants aged 3–6 months.

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INTRODUCTION

Infancy is a critical period characterized by rapid physical growth, neurological development, and psychological maturation. During this period, the fulfillment of infants' basic needs, including adequate nutrition, stimulation, and sleep, is essential to support

optimal growth and development. Sleep is one of the fundamental physiological needs of infants because it plays an important role in physical recovery, brain maturation, memory consolidation, and the regulation of various physiological functions. Good sleep quality is not determined solely by the duration of sleep but also by sleep continuity, comfort, frequency of nighttime awakenings, and the infant's ability to maintain sleep for an adequate period.

Sleep disturbances remain a relatively common problem during infancy. Infants may experience various sleep-related problems, including frequent nighttime awakenings, difficulty falling asleep, short sleep duration, and difficulty maintaining continuous sleep. Poor sleep quality may affect not only the infant's physical condition but also daily activities, mood, and developmental processes. Several factors may influence infant sleep quality, including environmental conditions, health status, feeding patterns, physical activity, parental care, and the level of stimulation received by the infant. Therefore, appropriate efforts are needed to help improve infant comfort and support better sleep patterns through safe and non-pharmacological interventions.

One intervention that has been widely used to promote relaxation and comfort in infants is baby massage. Baby massage provides gentle tactile stimulation that may create a sense of security and relaxation while strengthening the emotional bond between infants and caregivers. Through appropriate massage techniques, infants may experience increased comfort, relaxation, and reduced physical tension, which can potentially support better sleep quality. Baby massage is also considered a simple intervention that can be performed regularly with proper techniques and supervision.

In addition to baby massage, baby gym is another form of stimulation that involves structured physical movements appropriate to the infant's age and developmental stage. Baby gym aims to stimulate muscle strength, flexibility, coordination, balance, and motor development. Physical activity through controlled movements may also help infants channel their energy and experience physical relaxation, which may contribute to improved sleep patterns. Although both baby massage and baby gym are commonly used as forms of infant stimulation, their mechanisms and approaches differ. Baby massage primarily emphasizes tactile stimulation and relaxation, whereas baby gym focuses more on movement and physical stimulation. Therefore, it is important to examine whether these two interventions produce different effects on infant sleep quality.

Based on preliminary data obtained from Ravina Medika Clinic, a total of 78 infants received baby massage and baby gym services in 2025. This indicates that both interventions are utilized by parents as part of efforts to support infant growth, development, and comfort. However, information regarding the comparative effectiveness of baby massage and baby gym in improving infant sleep quality, particularly among infants aged 3–6 months, remains limited in the local setting. This condition highlights the need for further research to provide evidence regarding the effectiveness of these interventions.

Therefore, this study was conducted to compare the effectiveness of baby massage and baby gym in improving the sleep quality of infants aged 3–6 months. The findings of this study are expected to provide scientific evidence that can support healthcare providers and parents in selecting appropriate non-pharmacological interventions to improve infant sleep quality and promote optimal growth and development.

RESEARCH METHODS

This study employed a quantitative approach with a quasi-experimental design using a pretest–posttest two-group design. The sleep quality of both groups was assessed using the Brief Infant Sleep Questionnaire (BISQ) before the intervention. The first group received baby massage, while the second group received baby gym. Sleep quality was then reassessed after the intervention. The study was conducted at Ravina Medika Clinic, Purwakarta, from January to February 2026. The study population consisted of infants aged 3–6 months who visited the clinic. The sample consisted of 40 infants, comprising 20 infants in the baby massage group and 20 infants in the baby gym group. The samples were selected using purposive sampling.

The inclusion criteria were infants aged 3–6 months, born at term, healthy, with a birth weight of $\geq 2,500$ grams, without congenital abnormalities, not undergoing medical therapy that could affect sleep, not routinely receiving baby massage or baby gym, and whose parents were willing to participate in the study. The interventions were administered for two weeks, twice a week, with each session lasting 5–10 minutes. The research instruments included the Brief Infant Sleep Questionnaire (BISQ), baby massage standard operating procedure (SOP), baby gym SOP, and monitoring sheets. BISQ scores were categorized into poor sleep quality (0–2), moderate sleep quality (3–4), and good sleep quality (5–8).

Univariate analysis was conducted to describe the distribution of the data. Data normality was assessed using the Shapiro–Wilk test. The Wilcoxon test was used to determine changes within each group, while the Mann–Whitney U test was used because the data were not normally distributed to compare the two groups.

RESULTS AND DISCUSSION

1. Sleep Quality Before the Intervention

As presented in Table 1, before the intervention, none of the infants in either group had good sleep quality. In the baby massage group, 14 infants (70.0%) had poor sleep quality and 6 infants (30.0%) had moderate sleep quality. In the baby gym group, 10 infants (50.0%) had poor sleep quality and 10 infants (50.0%) had moderate sleep quality. These findings indicate that sleep problems were still present among infants aged 3–6 months before the intervention.

Table 1. Sleep Quality Before the Intervention

Group	Poor n (%)	Moderate n (%)	Good n (%)	Total
Baby massage	14 (70.0)	6 (30.0)	0 (0)	20 (100)
Baby gym	10 (50.0)	10 (50.0)	0 (0)	20 (100)

Note: Data are presented as number (percentage). Sleep quality was categorized based on BISQ score.

2. Sleep Quality After the Intervention

As shown in Table 2, after the intervention, sleep quality improved in both groups. In the baby massage group, 17 infants (85.0%) achieved good sleep quality and 3 infants (15.0%) had moderate sleep quality. In the baby gym group, 13 infants (65.0%) achieved good sleep quality and 7 infants (35.0%) had moderate sleep quality. No infants in either group remained in the poor sleep-quality category. The greater proportion of infants with good sleep quality in the baby massage group indicates a larger descriptive improvement compared with the baby gym group.

Table 2. Sleep Quality After the Intervention

Group	Poor n (%)	Moderate n (%)	Good n (%)	Total
Baby massage	0 (0)	3 (15.0)	17 (85.0)	20 (100)
Baby gym	0 (0)	7 (35.0)	13 (65.0)	20 (100)

Note: Data are presented as number (percentage). Sleep quality was categorized based on BISQ score.

3. Normality Test

As presented in Table 3, the Shapiro–Wilk test showed significance values below 0.05 for the pretest and posttest data in both groups, as well as for the change score in the

baby massage group. Therefore, the data were considered not normally distributed and non-parametric statistical tests were used.

Table 3. Normality Test Results

Variable	Group	Shapiro-Wilk Sig.
Pretest	Baby massage	0.000
Pretest	Baby gym	0.000
Posttest	Baby massage	0.000
Posttest	Baby gym	0.000
Change score	Baby massage	0.001

Note: Shapiro-Wilk test; $p < 0.05$ indicates that the data are not normally distributed.

4. Comparison of Sleep-Quality Changes

As shown in Table 4, the Wilcoxon test showed that both baby massage and baby gym were associated with significant improvements in infant sleep quality ($p < 0.05$). The Mann-Whitney U test indicated a statistically significant difference in sleep-quality changes between the two groups ($p < 0.001$). The improvement was greater in the baby massage group.

DISCUSSION

1. Effect of Baby Massage on Infant Sleep Quality

The findings showed a significant improvement in sleep quality after baby massage. Before the intervention, 70.0% of infants in the baby massage group had poor sleep quality and none had good sleep quality. After the intervention, 85.0% of infants had good sleep quality and no infants remained in the poor category.

The improvement may be related to the tactile stimulation provided through baby massage. Tactile stimulation can provide comfort and relaxation and may support a calmer state before sleep. Baby massage may also strengthen interaction and bonding between infants and their parents or caregivers. These mechanisms may help infants fall asleep more easily and maintain sleep.

2. Effect of Baby Gym on Infant Sleep Quality

Baby gym also showed a significant improvement in infant sleep quality. Before the intervention, 50.0% of infants had poor sleep quality and 50.0% had moderate sleep quality. Following the intervention, 65.0% of infants had good sleep quality and 35.0% had moderate sleep quality, with no infants remaining in the poor category. Baby gym is an active stimulation activity involving infant movement and may support motor

development, muscle strength, and coordination. The structured movement provided during the intervention may also help infants expend energy and subsequently support better sleep.

3. Comparison of Baby Massage and Baby Gym Effectiveness

The Mann-Whitney U test demonstrated a statistically significant difference in sleep-quality changes between the baby massage and baby gym groups ($p < 0.001$). Descriptively, the proportion of infants with good sleep quality increased to 85.0% in the baby massage group and 65.0% in the baby gym group. Thus, baby massage showed greater improvement in sleep quality than baby gym in this study. The difference may be related to the nature of the two interventions. Baby massage provides direct tactile stimulation that may promote comfort, relaxation, and a sense of security, whereas baby gym primarily provides movement stimulation that is more closely related to motor development and physical activity.

Nevertheless, the finding should not be generalized as evidence that baby massage is universally more effective than baby gym. The study involved only 40 infants from one clinic and used purposive sampling. Factors such as sleep environment, room temperature, lighting, nutritional intake, and daily activity were not analyzed as potential confounding variables. These factors should be considered when interpreting the results.

CONCLUSION AND RECOMMENDATIONS

Before the intervention, poor sleep quality was found in 70.0% of infants in the baby massage group and 50.0% of infants in the baby gym group. After the intervention, the proportion of infants with good sleep quality increased to 85.0% in the baby massage group and 65.0% in the baby gym group. Both baby massage and baby gym were effective in improving infants' sleep quality based on the Wilcoxon test ($p < 0.05$). However, a significant difference was found between the two interventions based on the Mann-Whitney U test ($p = 0.000$), with baby massage demonstrating greater effectiveness.

RECOMMENDATIONS

Healthcare professionals may consider baby massage and baby gym as non-pharmacological stimulation methods to support infants' sleep quality while taking into account the infant's health condition and safety. Parents should be provided with education regarding proper techniques and supportive sleep environment factors. Further research is recommended to involve broader research settings or larger sample sizes and to consider

other variables, such as age, physical activity, environment, nutrition, and psychological factors.

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