

EFFECTIVENESS OF INFANT MASSAGE THERAPY IN REDUCING COLIC SYMPTOMS AMONG INFANTS AT LIA NURMALA MIDWIFERY PRACTICE JAMBI 2026

Syahrina Yanti¹, Subang Aini Nasution², Kristine Evitaloka³

yantisahrina16@gmail.com, subang.aini@unaja.ac.id, kristineevitaloka83@gmail.com

¹Program Studi Sarjana Kebidanan, Fakultas Kedokteran dan Ilmu Kesehatan, Universitas Adiwangsa Jambi

²Program Studi Sarjana Kebidanan, Fakultas Kedokteran dan Ilmu Kesehatan, Universitas Adiwangsa Jambi

³Program Studi Sarjana Kebidanan, Fakultas Kedokteran dan Ilmu Kesehatan, Universitas Adiwangsa Jambi

uploaded:15/09/2026 revised:21/09/2026 accepted:21/09/2026 published:30/09/2026

ABSTRACT

Infantile colic is a common source of discomfort during early infancy and may affect feeding, sleep, and family well-being. Infant massage is a gentle, non-pharmacological approach that may help relieve discomfort and promote relaxation. This study aimed to determine the effectiveness of infant massage therapy in reducing colic symptoms among infants aged 1–4 months at PMB Lia Nurmal, Jambi City, in 2026. A quantitative pre-experimental study was conducted using a one-group pretest–posttest design. Sixteen infants with colic symptoms were selected from a population of 64 infants through purposive sampling. Colic symptoms were assessed before and after a 20–25-minute infant massage session using an observation instrument with five indicators and a total score ranging from 0 to 15. Data were analyzed using descriptive statistics, the Shapiro–Wilk test, and a paired t-test at a significance level of 0.05. The mean colic symptom score decreased from 7.94 (SD = 1.389) before the intervention to 1.31 (SD = 1.448) after the intervention, with a mean reduction of 6.63 points. The paired t-test indicated a statistically significant difference between the pre-intervention and post-intervention scores ($p < 0.001$). Infant massage may therefore be considered a supportive non-pharmacological approach for reducing colic symptoms when performed gently and appropriately by trained personnel. Future research should involve larger samples, control groups, and multiple healthcare settings to provide stronger and more generalizable evidence.

Keywords : *Infant Massage; Infantile Colic; Colic Symptoms; Non-Pharmacological Intervention.*

INTRODUCTION

Infancy is an important period of growth and development that requires careful attention to comfort, health, and the fulfillment of basic needs. During this stage, several body systems are still maturing, making infants more susceptible to conditions that may affect their daily comfort. One condition commonly encountered during infancy is colic. Infantile colic is generally characterized by recurrent episodes of intense crying without an easily identifiable cause. It is frequently

observed from approximately two weeks to four months of age and may be accompanied by signs of discomfort, such as drawing the legs toward the abdomen, clenched fists, facial flushing, abdominal bloating, and increased gas in the digestive tract.

Although colic is not considered a condition that directly threatens an infant's health, its associated symptoms can interfere with the comfort of both infants and their families. Prolonged crying may make it difficult for infants to sleep or may

result in disrupted sleep. Gastrointestinal discomfort can also make infants more fussy and interfere with feeding. For parents, particularly mothers who provide intensive day-to-day care, these circumstances may contribute to physical exhaustion and emotional strain. Therefore, managing infantile colic involves more than simply reducing crying; it also aims to promote greater comfort and well-being for both infants and their families.

Based on the literature reviewed for this study, the prevalence of infantile colic has been estimated at approximately 30–60%, while the figure reported in Indonesia is around 40%. The underlying causes of colic remain incompletely understood and may involve several factors, including allergies, lactose intolerance, alterations in the gastrointestinal microbiota, gastrointestinal maturation, parental anxiety, and feeding or soothing practices. This multifactorial nature highlights the importance of appropriate management that considers the individual condition of the infant and prioritizes safe approaches.

One non-pharmacological approach commonly used to help relieve discomfort in infants is infant massage therapy. Infant massage involves gentle, rhythmic tactile stimulation applied to the infant's body. Physical contact through massage may promote relaxation and a sense of comfort. In the context of colic, massage, particularly around the abdominal area, provides physical stimulation that may support gastrointestinal comfort. Infant massage may also serve as a positive tactile experience while encouraging closer interaction between infants and their parents.

Several previous studies have reported potential benefits of massage for colic-related complaints. Çetinkaya &

Başbakkal, (2012) , for example, examined infant massage combined with lavender aromatherapy and reported a reduction in colic symptom scores following the intervention. Akdogan & Yildiz, (2025) also reported a difference in the occurrence of colic following I Love You (ILU) massage, while Ertem & Özyazıcıoğlu, (2025) found a significant association between infant massage techniques and colic complaints. These findings provide a basis for considering massage-based stimulation as a potential non-pharmacological approach to help alleviate colic symptoms.

Nevertheless, the previous studies referenced in the thesis differed in terms of intervention characteristics and research contexts. Yasiroh et al., (2024) used a combination of infant massage and lavender aromatherapy, whereas Hana Anisah Ritonga & Sri Alem Br. Sembiring, (2023) specifically investigated ILU massage. Mansouri et al., (2018) focused on the association between massage techniques and colic complaints. These differences indicate the need for further observation of changes in colic symptoms before and after infant massage therapy is administered as a standalone intervention among infants experiencing colic symptoms in a midwifery care setting. The present study addresses this need in the context of care provided at PMB Lia Nurmala, Jambi City, thereby offering empirical evidence regarding changes in colic symptoms following infant massage therapy within routine midwifery practice.

The novelty of this study lies in its direct assessment of changes in colic symptoms among infants aged 1–4 months through pre-intervention and post-intervention measurements within a single

group, without combining infant massage with other complementary therapies. This approach provides an empirical description of changes in colic symptom scores following the implementation of infant massage therapy according to a predetermined procedure. The study was conducted among infants presenting with colic symptoms at PMB Lia Nurmala, Jambi City, and is therefore expected to contribute additional empirical evidence concerning the use of infant massage as a non-pharmacological approach within midwifery care.

The research question addressed in this study is whether colic symptoms decrease among infants following infant massage therapy. Based on the theoretical considerations and findings of previous studies, the hypothesis is that colic symptoms differ before and after infant massage therapy. Accordingly, this study aimed to analyze the effectiveness of infant massage therapy in reducing colic symptoms among infants at PMB Lia Nurmala, Jambi City, in 2026 by comparing colic symptom scores before and after the intervention.

RESEARCH OBJECTIVE

This study aimed to determine the effectiveness of infant massage therapy in reducing colic symptoms among infants aged 1–4 months at PMB Lia Nurmala, Jambi City, in 2026 by comparing colic symptom scores before and after the intervention.

RESEARCH METHODS

This study employed a quantitative approach using a pre-experimental method. A one-group pretest–posttest design was applied, in which colic symptoms were

assessed before and after the intervention in the same group of infants. This design was used to examine changes in colic symptom scores following infant massage therapy. The study was conducted at PMB Lia Nurmala, Jambi City, in August 2026.

The study population comprised all infants aged 1–4 months attending PMB Lia Nurmala, Jambi City, with a total of 64 infants. A sample of 16 infants was selected using purposive sampling, based on predetermined criteria aligned with the study objectives. The inclusion criteria were mothers with infants aged 1–4 months receiving care at PMB Lia Nurmala, mothers who agreed to allow their infants to participate in the study, and infants presenting symptoms of colic. Infants who were currently ill or had congenital conditions were excluded from the study.

The intervention consisted of infant massage therapy administered by a trained professional, namely a midwife who had completed infant massage training and held a relevant certification. Before the intervention, the researcher explained the study objectives and procedures to the mothers and obtained informed consent. The initial assessment (pretest) was conducted for approximately 10 minutes. Each infant then received massage therapy for approximately 20–25 minutes in accordance with the standard operating procedure used in the study. Following completion of the intervention, the infants underwent a second assessment (posttest) for approximately 10 minutes using the same instrument.

The massage therapy was performed systematically and involved several body areas, including the legs, abdomen, chest, arms, face, and back. The abdominal massage consisted of a sequence of

techniques, including gentle abdominal stroking, thumb movements parallel to the navel, the sun and moon technique, and the I Love U technique. The intervention followed the infant massage SOP specified in the research instrument and was administered for 20–25 minutes by a certified professional.

Colic symptoms were assessed using an observation sheet consisting of five indicators: crying duration, abdominal bloating, frequency of passing gas or bowel movements, the infant's response when being held, and facial expression. Each indicator was rated at four levels: absent (score 0), mild (score 1), moderate (score 2), and severe (score 3). The total colic symptom score ranged from 0 to 15 and was treated as ratio-scale data. The same instrument was used for both pre-intervention and post-intervention assessments.

The data were analyzed using univariate and bivariate analyses. Univariate analysis was conducted to describe colic symptoms before and after the intervention using the mean, minimum, and maximum values. Before the bivariate analysis, data normality was assessed using the Shapiro–Wilk test. The test yielded significance values of 0.294 for the pre-intervention assessment and 0.051 for the post-intervention assessment, indicating that both datasets were normally distributed. The differences in colic symptom scores before and after the therapy were subsequently analyzed using a paired t-test at a significance level of 5% ($\alpha = 0.05$). Statistical significance was determined based on the p-value, with $p < 0.05$ indicating a statistically significant difference between pre-intervention and post-intervention scores.

RESULTS

This study involved 16 infants aged 1–4 months who met the study criteria and received infant massage therapy at PMB Lia Nurmala, Jambi City, in August 2026. The respondent characteristics included maternal age, infant age, and infant sex.

Table 1. Respondent Characteristics

Characteristic	Category	n	%
Maternal age	<20 years	2	12.5
	20–35 years	14	87.5
	>35 years	0	0
Infant age	1 month	2	12.5
	2 months	5	31.2
	3 months	6	37.5
	4 months	3	18.8
Infant sex	Male	6	37.5
	Female	10	62.5
Total		16	100

As shown in Table 1, most mothers were aged 20–35 years (87.5%). Among the infants, the largest proportion was 3 months old (37.5%). Female infants accounted for a larger proportion of the sample (62.5%) than male infants (37.5%).

Colic symptoms were assessed before the infant massage therapy was administered. The pre-intervention assessment showed a mean colic symptom score of 7.94, with scores ranging from 5 to 11.

Table 2. Colic Symptoms Before Infant Massage Therapy

Variable	Mean	Minimum	Maximum
Colic symptoms before therapy	7.94	5	11

Following infant massage therapy, the mean colic symptom score decreased to 1.31, with scores ranging from 0 to 5.

Table 3. Colic Symptoms After Infant Massage Therapy

Variable	Mean	Minimum	Maximum
Colic symptoms after therapy	1.31	0	5

Descriptively, the mean score decreased by 6.63 points compared with the pre-intervention assessment. This reduction indicates a lower level of observed colic symptoms following the intervention.

Before conducting the bivariate analysis, data distribution was assessed using the Shapiro–Wilk test. The significance values were 0.294 for the pre-intervention assessment and 0.051 for the post-intervention assessment. Both values were greater than 0.05, indicating that the data were normally distributed. Therefore, the analysis was continued using a paired t-test.

Table 4. Changes in Colic Symptoms Before and After Infant Massage Therapy

Assessment	Before therapy	After therapy	Mean difference
	y	y	e

Mean $\pm$ SD	7.94 $\pm$ 1.389	1.31 $\pm$ 1.448	-
Mean difference (95% CI)			6.63 (5.99-7.27)
t			22.10
df			15
p-value			<0.001
Cohen's dz			5.53

The paired t-test yielded a p-value of 0.000 ($p < 0.05$), indicating a statistically significant difference in colic symptom scores between the pre-intervention and post-intervention assessments. The mean reduction of 6.63 points shows that colic symptom scores were lower after infant massage therapy than before the intervention.

DISCUSSION

Colic Symptoms Before Infant Massage Therapy

The findings showed that before infant massage therapy was administered, the mean colic symptom score among the 16 infants was 7.94, with scores ranging from 5 to 11. This finding indicates that the infants included in the study experienced varying levels of colic symptoms. The difference between the minimum and maximum scores suggests that the degree of discomfort experienced by the infants was not uniform.

From a physiological perspective, colic symptoms in infants may be associated with discomfort occurring alongside the ongoing maturation of the gastrointestinal system Shamir, (2013). Such discomfort may be expressed through excessive crying or fussiness, abdominal discomfort, and particular behavioral responses (Halpern & Coelho, 2016; Kim, 2011) . In this study, colic symptoms were assessed using several observational

indicators with a total score ranging from 0 to 15. Higher scores represented a greater number or severity of observed symptoms. The characteristics of the respondents also provide context for these findings. Most infants were 2–4 months old, with the largest proportion being 3 months old (37.5%). At this stage, infants are still undergoing early developmental processes, and their responses to discomfort may be expressed through behavioral changes, particularly crying and fussiness. However, this study was not designed to examine the association between infant age and the severity of colic. Therefore, these characteristics are presented only to describe the study population and should not be interpreted as causal factors.

The pre-intervention findings establish that the respondents had observable and measurable colic symptoms before receiving the therapy. Accordingly, changes in subsequent measurements could be used to describe changes in the infants' condition following infant massage therapy.

Changes in Colic Symptoms Following Infant Massage Therapy

Following infant massage therapy, the mean colic symptom score decreased from 7.94 to 1.31. The post-intervention scores also showed a lower range, from 0 to 5. The mean reduction of 6.63 points indicates a substantial descriptive change in colic symptom scores following the intervention.

Physiologically, this change may be understood in relation to infant massage as a form of tactile stimulation. Gentle massage applied to the infant's body, including the abdominal area, may provide physical stimulation that promotes relaxation and comfort. Abdominal massage may also support the movement of intestinal gas and gastrointestinal peristaltic activity (Dehghan et al., 2020; Küçükaydınoğlu & Turan, 2025). In addition to these mechanical effects, tactile

stimulation has been associated with increased parasympathetic activity through the vagus nerve, which contributes to the regulation of gastrointestinal function. The combined effects of relaxation and support for digestive function may help reduce discomfort, which may subsequently be reflected in decreased crying or fussiness. This proposed mechanism is consistent with the explanation provided.

The relaxation response may also help explain the changes observed after the intervention. Gentle and structured touch may reduce physical tension in infants and promote a calmer state. When infants become more relaxed, behavioral responses such as crying and fussiness may decrease. In the present study, this change was reflected in the lower colic symptom scores recorded after the therapy.

The findings are consistent with Akdogan & Yildiz, (2025), who examined I Love You (ILU) massage and, as reported in the thesis, found a significant change in the occurrence of colic symptoms with a p-value of 0.001. Al Qahtani & Ahmed, (2021) also reported a significant association between infant massage techniques and colic complaints, with a p-value of 0.013. In addition, Vaziri et al., (2018), who investigated a combination of infant massage and lavender aromatherapy, reported changes in colic symptom scores following the intervention.

The similarity between these findings and previous research suggests that tactile stimulation through infant massage may have potential as a non-pharmacological approach for reducing discomfort in infants experiencing colic symptoms. However, the present study differs from some previous interventions because it used infant massage without combining it with aromatherapy. Therefore, the observed changes in this study specifically reflect the difference between the pre-intervention and post-intervention conditions within the same group receiving infant massage therapy.

Effectiveness of Infant Massage Therapy for Colic Symptoms

The paired t-test produced a p-value of 0.000 ($p < 0.05$), indicating a statistically significant difference in colic symptom scores before and after infant massage therapy. The mean score decreased by 6.63 points, from 7.94 before the intervention to 1.31 after the intervention.

The main finding of this study is that infant massage therapy was followed by a statistically significant reduction in colic symptom scores among the infants assessed. Physiologically, this finding may be interpreted through two potentially complementary mechanisms. First, abdominal massage provides mechanical stimulation that may facilitate the movement of intestinal gas and gastrointestinal activity. Second, gentle touch may promote relaxation through stimulation of the parasympathetic nervous system, potentially helping infants become calmer. These responses may contribute to a reduction in observable manifestations of discomfort associated with colic.

This finding is consistent with Darmareja & Jansen, (2025), who reported a p-value of 0.001 following the use of ILU massage for abdominal colic in infants. (Akdogan & Yildiz, 2025) likewise found a statistically significant association between massage techniques and colic complaints, with a p-value of 0.013. The consistency in the direction of these findings suggests that massage-based interventions may have potential as a supportive approach for addressing discomfort associated with infant colic.

From a clinical practice perspective, infant massage is relatively simple and may be provided as a complementary approach when performed using appropriate techniques. In this study, the massage was administered by a certified professional in accordance with the established procedure. Therefore, the application of these findings in healthcare settings should consider the competence of the massage provider, the

infant's condition, and adherence to appropriate techniques and procedures.

The findings support the study hypothesis that colic symptoms differ before and after infant massage therapy. Thus, infant massage therapy may be considered a non-pharmacological approach to help reduce colic symptoms in infants. Nevertheless, the findings should be interpreted cautiously because the study used a one-group pretest–posttest design without a control group and involved only 16 participants. The observed reduction demonstrates a change following the intervention, but it cannot fully distinguish the effect of massage therapy from other factors, such as the natural course of colic symptoms or changes in infant care during the study period. Future studies should consider incorporating a control group, a larger sample size, and multiple research settings to provide stronger evidence regarding the effectiveness of infant massage therapy in reducing colic symptoms.

CONCLUSION

This study indicates that infant massage therapy was associated with a reduction in colic symptoms among infants aged 1–4 months who received the intervention at PMB Lia Nurmala, Jambi City. The changes observed following the therapy, together with the statistically significant findings, support the hypothesis that colic symptoms differed before and after infant massage therapy. These findings suggest that infant massage therapy has potential as a non-pharmacological approach to help alleviate discomfort associated with colic symptoms in infants. Its application should nevertheless involve gentle and appropriate techniques, follow established procedures, and take into account the individual condition of each infant.

RECOMMENDATIONS

In clinical practice, midwives and other healthcare professionals may provide parents with education about infant massage as a supportive measure to help alleviate discomfort associated with colic symptoms. The education should be accompanied by a demonstration of appropriate massage techniques and, where possible, supervision of their application to ensure that the massage is performed safely and in accordance with established procedures.

For future research, studies should consider larger sample sizes, the inclusion of a control group, and recruitment across multiple healthcare settings. These improvements would allow changes in colic symptoms following infant massage therapy to be evaluated using a more rigorous research design and would enhance the applicability of the findings to broader populations.

REFERENCES

- Al Qahtani, A. M., & Ahmed, H. M. (2021). The Effect of Educational Program for New Mothers about Infant Abdominal Massage and Foot Reflexology for Decreasing Colic at Najran City. *Comprehensive Child and Adolescent Nursing*, 44(1), 63–78. <https://doi.org/10.1080/24694193.2020.1740827>
- Akdogan, R., & Yildiz, S. (2025). The effect of SPA and massage applied on babies on colic symptoms: A randomized controlled trial. *Journal of Pediatric Nursing*, 82, e164–e174. <https://doi.org/10.1016/j.pedn.2025.04.008>
- Çetinkaya, B., & Başbakkal, Z. (2012). The effectiveness of aromatherapy massage using lavender oil as a treatment for infantile colic. *International Journal of Nursing Practice*, 18(2), 164–169. <https://doi.org/10.1111/j.1440-172X.2012.02015.x>
- Dehghan, M., Malakoutikhah, A., Ghaedi Heidari, F., & Zakeri, M. A. (2020). The Effect of Abdominal Massage on Gastrointestinal Functions: a Systematic Review. *Complementary Therapies in Medicine*, 54, 102553. <https://doi.org/10.1016/j.ctim.2020.102553>
- Darmareja, R., & Jansen, S. (2025). Abdominal Massage as Nursing Implementation of Feeding Intolerance of Preterm Infants in Neonatal Intensive Care Unit: A Systematic Review. *Care : Jurnal Ilmiah Ilmu Kesehatan*, 13(1), 54–65. <https://doi.org/10.33366/jc.v13i1.5213>
- Ertem, G. S., & Özyazıcıoğlu, N. (2025). Effects of colic massage and kangaroo care on infantile colic pain, crying and sleep duration: A randomized controlled trial. *Journal of Pediatric Nursing*, 84, 390–396. <https://doi.org/10.1016/j.pedn.2025.07.003>
- Hana Anisah Ritonga, & Sri Alem Br. Sembiring. (2023). Knowledge Construction on Traditional Massage Healer in Sipirok, Tapanuli Selatan District. *Indonesian Journal of Medical Anthropology*, 4(1), 9–18. <https://doi.org/10.32734/ijma.v4i1.10792>
- Halpern, R., & Coelho, R. (2016). Excessive crying in infants. *Jornal de Pediatria*, 92(3), S40–S45.

- <https://doi.org/10.1016/j.jpmed.2016.01.004>
- Kim, J. S. (2011). Excessive crying: behavioral and emotional regulation disorder in infancy. *Korean Journal of Pediatrics*, 54(6), 229. <https://doi.org/10.3345/kjp.2011.54.6.229>
- Küçükaydınoğlu, S., & Turan, N. (2025). The effect of abdominal massage applied after surgery on gastrointestinal symptoms and comfort level. *Perioperative Medicine*, 14(1), 84. <https://doi.org/10.1186/s13741-025-00560-6>
- Mansouri, S., Kazemi, I., Baghestani, A. R., Zayeri, F., Nahidi, F., & Gazerani, N. (2018). A placebo-controlled clinical trial to evaluate the effectiveness of massaging on infantile colic using a random-effects joint model. *Pediatric Health, Medicine and Therapeutics*, Volume 9, 157–163. <https://doi.org/10.2147/PHMT.S185214>
- Shamir, R. (2013). Infant Colic and Functional Gastrointestinal Disorders. *Journal of Pediatric Gastroenterology and Nutrition*, 57(S1). <https://doi.org/10.1097/01.mpg.0000441923.90436.c7>
- Vaziri, F., Sahebkharm, Z., Bahrami, R., Pourahmad, S., & Azima, S. (2018). Lavender Oil Aromatherapy on Infantile Colic and Maternal Mood: A Double Blind Randomized Clinical Trial. *Pharmaceutical Sciences*, 24(1), 38–43. <https://doi.org/10.15171/PS.2018.07>
- Yasiroh, U., Wardani, E. K., & Soekardjo, S. (2024). The Effect of Giving a Combination of Lavender Aromatherapy Oil and Oxytocin Massage on the Smooth Flow of Breast Milk in Breastfeeding Mothers. *Placentum: Jurnal Ilmiah Kesehatan Dan Aplikasinya*, 12(1), 15. <https://doi.org/10.20961/placentum.v12i1.84152>