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Well-Being of Infants Through Touch: The Effects of Massage on Sleep Quality and Weight Gain in the First 0-12 Months

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Abstract

The initial stage of an infant's life, from 0 to 12 months, is a critical period in their development. Growth optimization during this period depends on nutrition, emotional support, and early stimulation. Particularly, an infant's sleep quality is a key adaptive mechanism that influences their growth and well-being. This study aims to understand the impact of infant massage on the sleep quality of infants aged 0-12 months and to evaluate the influence of infant massage on weight gain in this age group. Therefore, this study conducts a systematic review of the impact of infant massage on infants aged 0-12 months, using the PubMed and Google Scholar databases from 2018 to 2023. Of 855 articles, 29 met the inclusion criteria according to PRISMA guidelines. The results show that regular infant massage, ideally 3-4 times a week for 15-30 minutes, significantly improves sleep quality and weight gain in infants aged 0-12 months. The effectiveness of infant massage is influenced by various factors such as environmental conditions, daily nutrition, massage routines, daily activities of the baby, and health conditions. This study implies that infant massage can be an important and effective intervention to support healthy infant growth and development, particularly in improving sleep quality and weight gain in infants aged 0-12 months, thereby encouraging the incorporation of infant massage as an integral part of daily baby care.

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Introduction

Critical physical and psychological development occurs in the early stages of a baby's life, from 0 to 12 months. Parents need to comprehensively monitor the baby's growth, including weight, height, sensory and motor development, and ensure adequate sleep (Ministry of Health, Republic of Indonesia, 2023). The fulfillment of three main needs, nutrition (nurturing), emotional care (*asih*), and early stimulation (*asah*), significantly influences the optimal growth of the baby during this period (Retno et al., 2023). Sleep is the primary adaptive mechanism for babies, where hormone production triples during sleep compared to when awake, emphasizing the importance of good quality sleep, including uninterrupted nighttime sleep and waking up refreshed (Wardani et al., 2023).

As the baby grows older, the need for sleep decreases; babies aged 3-6 months sleep about 13-15 hours a day, and this pattern becomes more adult-like at six months, stabilizing around 13.5 hours per day by 9-12 months (Dewi et al., 2020). However, sleep disturbances often occur and can significantly impact the baby's physical growth and psychological well-being. Signs of sleep disturbances include sleeping less than 9 hours per night, frequent waking, staying awake for long periods after waking, and being easily irritable (Karim et al., 2021). Despite its high prevalence, parental awareness of these sleep disturbances remains low.

According to the CDC, the prevalence of short sleep duration among children aged 4-12 months varies by state in the United States, ranging from 25.2% in Minnesota to 52.5% in Mississippi in 2018-2019 (CDC, 2019).

Besides sleep, maintaining an appropriate weight is also a critical issue in a baby's development. WHO data in 2017 indicated that malnutrition in Southeast Asia was 26.9%, with Indonesia facing various nutritional problems among infants aged 0-23 months (Kementrian Kesehatan RI, 2017). Malnutrition not only threatens short-term health but can also impact babies' cognitive and physical development in the long term. Therefore, parents must provide adequate and balanced nutrition to support their baby's growth. Stimulation activities such as baby massage also benefit by improving sleep quality and supporting healthy weight gain (Reuter et al., 2020).

Baby massage, a practice that has existed for centuries in many cultures, is based on the fundamental principle that gentle touch can enhance health and well-being. Baby massage can improve respiratory function, blood circulation, and digestion and alleviate colic or gas pain (Behdad & Dabaghian, 2020). Techniques such as effleurage (gentle stroking) and petrissage (kneading) have been shown to enhance the physical and emotional health of babies (Fadlalmola et al., 2023; Utli & Yağmur, 2022). Additionally, baby massage is a way to express affection and strengthen the bond between parent and baby (Anjani et al., 2018; Inawati & Sitiyaroh, 2022).

Previous relevant studies have explored the effects of baby massage on weight gain and sleep quality. For instance, Lestari et al. (2021) focused on weight gain in infants aged 1-6 months with a history of low birth weight (LBW), and Sulfiанти et al. (2023) discussed the impact of baby massage on sleep quality in infants aged 1-3 months. Furthermore, Hartati et al. (2020) investigated the effects of baby massage on weight gain in infants at a health center in 2019. While these studies share similarities with the current research focusing on the effects of baby massage, there is a gap in the existing literature. Few studies have integrated both aspects into a comprehensive investigation. This study examines explicitly two main aspects: sleep quality and weight gain in infants aged 0-12 months. Previous studies tend to focus on one aspect, such as weight gain in infants with a history of LBW or the impact of massage on sleep quality in infants aged 1-3 months.

The novelty of this study lies in its comprehensive approach to infant well-being through touch, exploring sleep quality and weight gain simultaneously. Although baby massage has been proven to improve weight gain or sleep quality, this study combines these two variables, offering a more holistic insight into the impact of touch on infant well-being in two important aspects. This provides a solid basis for integrating baby massage into maternal and child health programs. The objectives of this study are (1) to understand the impact of baby massage on the sleep quality of infants aged 0-12 months and (2) to evaluate the effects of baby massage on weight gain in this age group.

By exploring both critical aspects of infant development simultaneously, this study significantly contributes to understanding and practicing infant well-being. Through this comprehensive approach, the study fills a gap in the previous literature, which generally focused on one aspect only. By presenting both aspects, this study offers new insights into the integrated benefits of baby massage, supporting the application of baby massage practices in maternal and child health programs, which can improve sleep quality and optimal infant development.

Methods

2.1. Methods & Materials

This study aims to (1) understand the impact of infant massage on the sleep quality of infants aged 0-12 months and (2) evaluate the effect of infant massage on weight gain in infants within this age group. Therefore, this research focuses on infant massage's influence on sleep quality and weight gain, specifically within the 0-12-month age range. The data collection method uses the Population, Intervention, Comparison, and Outcome (PICO) framework (Simangunsong,

2022). In this process, Publish or Perish version 8 is used to gather journals from databases such as PubMed, Google Scholar, Sinta, and Scimago. The keywords used are: "infant massage", "sleep quality", and "infant weight gain". The desired results will be filtered using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method, as shown in Figure 1, following the predetermined inclusion criteria. The data obtained will then be managed using the reference management application Mendeley.

The application of the PICO method in analyzing articles is determined through the formulation of research questions obtained through the PICO framework. Special attention is given to Population (P), which includes defining the research problem and identifying the subjects to be studied. Next, the research questions are directed by focusing on the research subjects (Intervention (I)), followed by comparison (Comparison (C)), and resulting in the presentation of learning outcomes (Outcome (O)).

Table 1 . Article Deletion through PICO

PICO	Inclusion	Exclusion
Population	Infants aged 0-12 months	Toddler age above 12 months
Intervention	Effects of baby massage	Not discussing baby massage
Comparison	No comparison group	No comparison group
Outcome	a. Articles covering the evaluation of infant sleep quality b. Articles covering the evaluation of infant weight gain	a. Articles not discussing infant sleep quality b. Articles not discussing weight gain

Below are the research questions, data collection, and quality assessment of this study:

2.2. Research Questions

- What is the impact of infant massage on the sleep quality of infants aged 0-12 months? (Q1).
- What is the effect of infant massage on the weight gain of infants in the age group of 0-12 months? (Q2).

2.3. Data Collection

Based on this research, various articles are available. Therefore, the researchers limited the included articles based on the following methodological criteria: (1) At least 50% of the articles should use field research methods, (2) At least 50% of the used articles should include empirical data, (3) Only articles published between 2018-2023 will be included, (4) Articles must be relevant to the research objectives and include the keywords (infant massage, sleep quality, weight).

2.4. Data Evaluation

At this stage, the data will be evaluated based on a series of developed questions, and then scored according to each question, as follows:

- Was the article published in the period 2018-2023? (Q1)
- Does the article mention the terms "infant massage," "sleep quality," or "weight"? (Q2)
- Does the article explain the research purpose regarding the impact of infant massage on sleep quality and weight gain, specifically in the age range of 0-12 months? (Q3)
- Does the article discuss the impact of infant massage on sleep quality in infants aged 0-12 months? (Q4)
- Does the article refer to relevant theories or concepts related to infant massage? (Q5)
- Does the article provide recommendations or solutions for improving sleep quality or weight through infant massage? (Q6)

Then, scores will be given based on the following criteria: Yes, if the journal article aligns with the research question. No, if the journal article does not align with the research question.

2.5. Inclusion and Exclusion Criteria

In the process of assessing articles, specific inclusion and exclusion criteria are observed to ensure the relevance and quality of the sources used. The inclusion criteria encompass articles that examine a population of infants aged 0-12 months, focusing on the quality of infant sleep,

the effects of infant massage, and infant weight gain. Considered articles must employ field research methods with at least 50% of the articles containing empirical data. Furthermore, only articles published between 2018 and 2023 are included, and they must be relevant to the research objectives and include appropriate keywords such as infant massage, sleep quality, and weight gain.

Conversely, the exclusion criteria cover articles that involve populations outside the age range of 0-12 months, as well as articles that do not address the effects of infant massage, the quality of infant sleep, or infant weight gain. Articles published outside the period from 2018 to 2023 are excluded, along with academic papers like theses and dissertations that do not meet the inclusion criteria. By applying these criteria, it is expected to obtain relevant and high-quality articles to support the research objectives.

Results of Selection from Inclusion and Exclusion and Quality Assessment Based on the criteria set in the research method, a total of 855 articles met these categories after eliminating 825 articles that did not meet the inclusion criteria. Academic papers such as theses, dissertations, and articles outside the range of 2018-2023 were also excluded. As a result, 30 articles can be further detailed in the discussion, by guidelines from the research statement. The stages of the SLR research adopting PRISMA can be explained as follows:

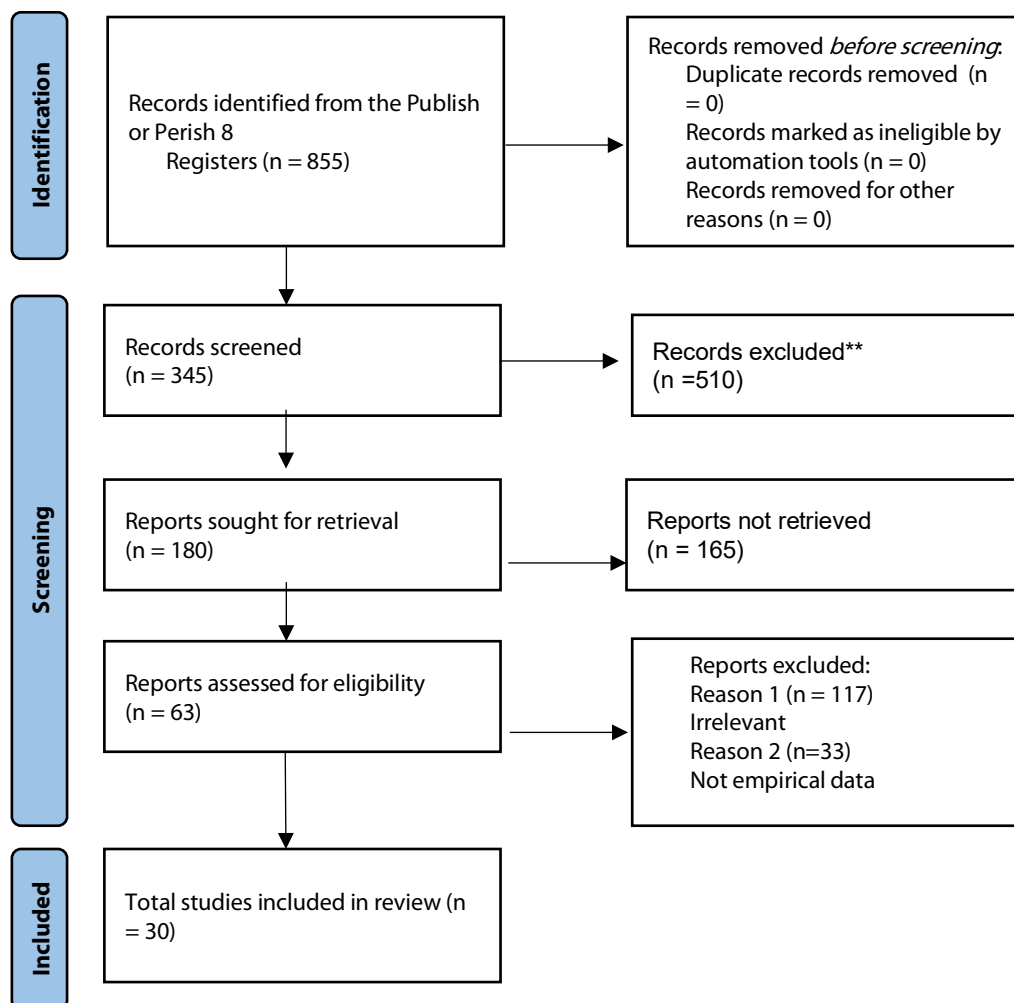


Figure 1. Search Algorithm (Harie et al., 2023)

Result

Based on the search results and data collection, 30 journals align with the reviewed topic. Following the search and data collection, the researcher successfully identified several journals relevant to the reviewed topic, as follows:

Table 2. Represents the outcome of a literature review that analyzed 30 related pieces of literature.

Source	Article type	Sample	Variable	Outcomes	Conclusion
(Mindell et al., 2018)	Research articles	Mothers of babies aged 3-18 months. <i>n</i> =123	- <i>Baby massage</i> - <i>Bedtime routine</i> - <i>Sleep</i>	Frequency : 5 times/week Duration : - Intervals : 3 weeks Before : - Sleep < 9 hours - Woke up < 3 times After : - Sleep > 9 hours - Woke up < 3 times <i>p</i> -value : 0.000<0.05	There is an influence of <i>baby massage</i> on the sleep quality of babies aged 3-18 months
(Krisnanto and Natalia, 2019)	Original article	Babies aged 3-12 months	- <i>Baby massage</i> - <i>Baby weight</i>	Frequency : 2 times/week Duration : 15 minutes Intervals : 4 weeks Before : 7029 grams After : 8023 grams <i>p</i> -value : 0.01<0.05	There is an effect of <i>baby massage</i> on the weight gain of babies aged 3-12 months
(Chau, 2019)	Original article	Parents of babies aged 0-6 months. <i>n</i> = 101	- <i>Baby massage</i> - Sleep Quality - Newborn baby	Frequency : 4 times/week Duration : 45 minutes Intervals : 1 week Before : - After : Good (60%) <i>p</i> -value : 0.001<0.05	There is an effect of <i>babu massage</i> on improving the sleep quality of babies aged 0-6 months
(Álvarez et al., 2019)	Research articles	Premature birth (birth weight 1,250-2,249 grams) <i>n</i> = 54	- <i>Baby massage</i> - Anthropometrics - Premature baby	Frequency : 1 time/week Duration : 15 minutes Intervals : - Before : 1.1483-2.280 grams After : 2,379-3,240 grams <i>p</i> -value : 0.001<0.05	There is an effect of <i>baby massage</i> on increasing the weight of babies with a history of premature birth
(Marni, 2019)	Original article	Babies aged 2-12 months. <i>n</i> =30	- Baby massage - Weight gain	Frequency : - Duration : - Intervals : 4 weeks Before : 6,728 grams After : 7,065 grams <i>p</i> -value : 0.000<0.05	There is an effect of <i>baby massage</i> on the weight gain of babies aged 2-12 months

(Utami et al., 2019)	<i>Original article</i>	Babies aged 3-5 months. <i>n</i> =30	- Baby massage - Sleep pattern	Frequency : Every day Duration : - Intervals : 4 weeks Before : 11.5 hours After : 13.33 hours <i>p-value</i> : 0.000<0.05	There is an influence of <i>baby massage</i> on the sleep patterns of babies aged 3-5 months
(Niasty Lasmy Zaen & Ria Arianti, 2019)	<i>Research articles</i>	Babies aged 3-6 months. <i>n</i> =20	- Baby massage - Sleep Quality	Frequency : 3-4 times Duration : - Intervals : 4 weeks Before : Less than 5 babies (50%), enough 5 babies (50%) After : Good 6 babies (60%) <i>p-value</i> : 0.000<0.05	There is an influence of <i>baby massage</i> on the sleep quality of babies aged 3-6 months
(Ifalahma & Rahma, 2019)	<i>Research articles</i>	Babies aged 3-6 months. <i>n</i> =30	- <i>Baby Massage</i> - <i>Sleep Quality</i>	Frequency : 3-6 times Duration : 15-30 minutes Intervals : 1 week Before : 13 hours After : 14-15 hours <i>P Value</i> : 0.005<0.05	There is an influence of <i>baby massage</i> on the quality of baby's sleep
(Harahap, 2019)	<i>Research articles</i>	babies aged 0-6 months. <i>n</i> =20	- Baby massage - Long Sleep	Frequency : 2 times Duration : 30 minutes Intervals : 4 weeks Before : 11.73 hours After : 14.35 hours <i>p-value</i> : 0.01<0.05	There is an effect of <i>baby massage</i> on the weight gain of babies aged 0-6 months
(Kurniasari et al., 2020)	<i>Original article</i>	Babies aged 3-6 months. <i>n</i> =32	- Baby massage - Long Sleep	Frequency : 2 times/week Duration : 30 minutes Intervals : 4 weeks Before : 11.73 hours/day After : 14.35 hours/day <i>P-value</i> : 0.000 < 0.05	There is an effect of <i>baby massage</i> on increasing the length of sleep for babies aged 3-6 months
(Dewi et al., 2020)	<i>Original article</i>	Babies aged 6-12 months. <i>n</i> =30	- Baby massage - Sleep Quality	Frequency : - Duration : - Intervals : - Before : - - Less than 15 babies (50%) - C quite 12 babies (40%) - Good 3 babies (10%) After : Good 30 babies (100%)	There is an influence of <i>baby massage</i> on the sleep quality of babies aged 6-12 months

(Paryono & Kurniarum, 2020)	<i>Original article</i>	Babies aged 3-9 months. <i>n=57</i>	<ul style="list-style-type: none"> - Baby massage - Growth and development - Sleep 	<i>P-value</i> : 0.000 < α (0.05)	There is an influence of maternal <i>baby massage</i> on the weight gain of babies aged 3-9 months
				Frequency : 1 time/week	
				Duration : -	
				Intervals : 4 weeks	
				Before : 6625 grams	
After : 7602 grams					
				<i>P-value</i> : 0.001 < 0.05	
(Nudesti & Setiyowati, 2020)	<i>Original article</i>	Babies aged 1-6 months <i>n=35</i>	<ul style="list-style-type: none"> - Baby massage - Weight 	Frequency : Routine and non-routine	There is an effect of <i>baby massage</i> on weight gain in babies aged 1-6 months
				Duration : -	
				Intervals : -	
				Not a routine : Normal 4 babies (11.4%) Less 5 (14.3%).	
				Routine : More than 4 babies (11.4%) Normal 19 babies (54.3%) Less 8 babies (8.6%)	
				<i>P-value</i> : 0.019 < 0.05	
(Cahyani & Prastuti, 2020)	<i>Original article</i>	Babies aged 3-6 months. <i>n= 34</i>	<ul style="list-style-type: none"> - Baby massage - Sleep Quality 	Frequency : -	There is an effect of <i>baby massage</i> on sleep quality in babies aged 3-6 months.
				Duration : -	
				Intervals : -	
				Before : - Problem 20 babies No problem 14 babies	
				After : - Problematic 9 babies No problem 25 babies	
				<i>P-value</i> : 0.003 < 0.05	
(Anggrain & Sari, 2020)	<i>Original article</i>	Babies aged 0-6 months. <i>n=30</i>	<ul style="list-style-type: none"> - Baby massage - Sleep Quality 	Frequency : 3 times	There is an influence of <i>baby massage</i> on the sleep quality of babies aged 0-6 months.
				Duration : -	
				Intervals : 2 weeks	
				Before : Poor 20 babies (67%) Enough 6 babies (20%) Good 4 babies (13%)	
				After : Bad 3 babies (10%) Enough 9 babies (30%) Good 18 babies (16%)	
				<i>P-value</i> : (0.002) < ($\alpha = 0.05$)	
(Sukmawati & Imanah, 2020)	<i>Original article</i>	Babies aged 3-6 months. <i>n=30</i>	<ul style="list-style-type: none"> - Baby massage - Sleep Quality 	Frequency : -	There is an effect of giving <i>baby massage</i> to improve the sleep quality of babies aged 3-6 months
				Duration : -	
				Intervals : -	
				Before : Poor (60%)	

				Good (40%)	
				After : Poor (26.67%)	
				Good (73.33%)	
				<i>p-value</i> : 0.01<0.05	
(Saddiyah Rangkuti, 2021)	<i>Original article</i>	babies aged 0-6 months <i>n= 20</i>	- Health Education - Baby massage - Sleep Quality	Frequency : - Duration : - Intervals : - Before : not enough 10 babies (50%) good 10 babies (50%) After : good 11 babies (55%), less 9 babies (45%) <i>P Value</i> : 0.000 (p<0.05)	There is an influence of Health Education regarding <i>baby massage</i> on sleep quality in babies aged 0-6 months.
(Dinengsih & Yustiana, 2021)	<i>Original article</i>	Babies aged 2-6 months <i>n=24</i>	- Baby massage - Weight - Sleep Pattern	Frequency : 2 times Duration : 15 minutes Intervals : 2 weeks Before : 6729.2 grams; 12.5 hours After : 6912.5 grams; 14.6 hours <i>P Value</i> : 0.000 <0.05	There is an effect of <i>baby massage</i> on increasing the baby's weight and sleep quality.
(Pratiwi, 2021)	<i>Original article</i>	Babies aged 1-6 months <i>n=35</i>	- <i>Baby massage</i> - Sleep Quality	Frequency : - Duration : - Intervals : - Before : Less 11 babies (31.4%) Enough 21 babies (60%), Good 3 babies (8.6%) After : Less 2 babies (5.7%) Enough 13 babies (37.1%) Good 20 babies (57.1%) <i>P Value</i> : (0.000) < 0.05	There is an effect of massage on the sleep quality of babies aged 1-6 months
(Irianti & Karlinah, 2021)	<i>Original article</i>	Babies aged 1-12 months <i>n=30</i>	- Baby massage - Sleep Quality	Frequency : 3-4 times Duration : 15 minutes Intervals : 6 weeks Before : 24 babies (80%) didn't sleep well and 6 babies (20%) slept soundly After : 8 babies (17%) didn't sleep well and 22 babies slept soundly (73%) <i>P Value</i> : 0.000 < 0.05	There is the effect of <i>baby massage</i> on the sleep quality of babies aged 0-12 months

(Lestari et al., 2021)	<i>Original article</i>	Babies aged 1-6 months <i>n=16</i>	<ul style="list-style-type: none"> - <i>Baby massage</i> - <i>Body Weight</i> 	Frequency : 2 times Duration : 10-15 minutes Intervals : 4 weeks Before : 2975 grams After : 3175 grams <i>P-value</i> : 0.001<0.05	There is an effect of <i>baby massage</i> on weight gain in babies aged 1-6 months.
(Handajani et al., 2022)	<i>Research articles</i>	Babies aged 1-12 months <i>n=30</i>	<ul style="list-style-type: none"> - <i>Baby massage</i> - Frequency of breastfeeding - Duration of breastfeeding - Sleep Quality 	Frequency : - Duration : - Intervals : - Before : Sleep duration > 12 hours, 9 babies Sleep duration < 12 hours, 21 babies After : Sleep duration > 12 hours, 19 babies Sleep duration < 12 hours, 11 babies <i>P-value</i> : 0.001<0.05	There is an effect of <i>baby massage</i> on improving the sleep quality of babies aged 1-12 months
(Nurseha & Lintang, 2022)	<i>Original article</i>	Babies aged 3-6 months <i>n=25</i>	<ul style="list-style-type: none"> - Baby massage - Weight - Sleep Quality 	Frequency : 3 times Duration : 15 minutes Intervals : 4 weeks Before : Body weight 5973 grams Sleep time 65.9 minutes After : Body weight 6875 grams Sleep duration 73.3 minutes <i>P-value</i> : 0.000 < 0.05	There is an effect of <i>baby massage</i> on increasing the average baby's weight and the average baby's sleep time
(Aryani et al., 2022)	<i>Original article</i>	Baby	<ul style="list-style-type: none"> - Baby massage - Sleep Quality 	Frequency : 3 times/week Duration : 15 minutes Intervals : 3 weeks Before : Good 5 babies (31.2%) Bad 11 babies (68.8%) After : Good 14 babies (87.5%) Bad 2 babies (12.5%) <i>P-value</i> : 0.0002 < 0.05	There is an effect of <i>baby massage</i> using VCO on the sleep quality of babies aged 3-10 months
(Suryanis et al., 2022)	<i>Original article</i>	Babies aged 6-12 months <i>n=40</i>	<ul style="list-style-type: none"> - Baby massage - <i>Cananga odorata</i> - Sleep Quality 	Frequency : - Duration : - Intervals : - Before : -	There was a change in sleep quality in babies who were massaged using <i>Cananga odorata</i> essential oil aromatherapy in children aged 6 – 12 months

				After	: Cananga - Good 35 babies (87.5) Stay the same 5 babies (12.5)	
					VCO - Good 7 babies (17.5%) Stay the same 33 babies (82.5)	
(Fauzia et al., 2022)	<i>Meta-analysis Original article</i>	Babies aged 0-3 years <i>n=1418</i> (708 intervention, 710 control) Babies aged 3-6 months <i>n=20</i>	- <i>Baby massage</i> - <i>Sleep Quality</i> - <i>Weight gain</i>	<i>Forest Plot</i>	: Sleep Quality: <i>Forest Plot</i> 6 articles found that baby massage can improve the quality of a baby's sleep by 0.70 times. Body Weight: <i>Forest Plot</i> 10 articles found that baby massage can increase a baby's weight by 0.52 times	<i>Baby Massage</i> affects improving the quality of sleep and baby's weight
				<i>p-value</i>	: Sleep quality $I_2=94\%$; $p=0.001<0.05$ Body Weight $I_2=90\%$; $p=0.001<0.05$	
(Safitri et al., 2023)	<i>Original article</i>	Babies aged 3-6 months <i>n=20</i>	- Baby massage - Sleep Quality	Frequency	: 3 times/week	There is an effect of <i>baby massage</i> on increasing the baby's weight and sleep quality.
				Duration	: 20 minutes	
				Intervals	: 2 weeks	
				Before	: - Less than 15 babies (75%) - Enough 5 babies (25%) Good 0 (0%)	
				After	: - Less 0 babies (0%) - Enough 4 babies (20%) Good 16 (89%)	
				<i>P-value</i>	- 0.000 < 0.05	
(Erlina et al., 2023)	<i>Original article</i>	Babies aged 1-12 months <i>n=5</i>	- Baby massage - Sleep Quality	Frequency	: -	There is an effect of massage on the sleep quality of babies aged 1-12 months
				Duration	: 15 minutes	
				Intervals	: -	
				Before	: Good 0% Enough 8 babies (32%) Less 17 babies (68%)	

				After : Good 25 babies (100%)	
				<i>P-value</i> : (0.000) < 0.05	
(Wardani et al., 2023)	<i>Original article</i>	Babies aged 3-12 months <i>n=30</i>	- Baby massage - Sleep Quality	Frequency : 2 times/week Duration : 15-30 minutes Intervals : 2 weeks	There is an influence of <i>baby massage</i> on the sleep quality of babies aged 3-12 months
				Before : Good 2 babies (13.3%) Bad 13 babies (86.7%)	
				After : Good 15 babies (100%)	
				<i>P-value</i> : 0.001 < 0.05	
(Fauziah et al., 2018)	<i>Original article</i> <i>Original article</i>	Babies aged 3-12 months <i>n=33</i> Babies aged 3-12 months <i>n=33</i>	- Baby massage - Weight - Sleep Quality	Frequency : - Duration : Regular and irregular Intervals : - Irregular : Weight - Didn't ride 6 babies - Up 16 babies Sleep Quality - Not good 3 babies - Fine 19 babies	There was no effect of baby massage on changes in baby's weight and sleep quality at the Jetis Health Center, Yogyakarta
				Regular : Weight - Not riding 2 babies - Up 9 babies Sleep Quality ¹ Not Good 1 baby Fine 10 babies	
				<i>P-value</i> : 0.687 > 0.05	

3.1. The Influence of Baby Massage on Baby Sleep Quality

Baby massage has been proven to have a significant positive influence on the quality of a baby's sleep. Research by Mindell et al., (2018) revealed that sleep and rest are crucial for a baby's growth and development, with growth hormones being produced more during sleep. Good sleep quality for babies, according to Handajani et al., (2022), is characterized by more than 12 hours of sleep each day. Sukmawati and Imanah, (2020) added that factors such as nutrition, environment, physical activity, and health conditions affect a baby's sleep quality. Erlina showed that babies with poor sleep quality are at risk of immune and endocrine system disorders. Meanwhile, Aryani et al., (2022) found that babies who received massages for 5 days experienced a 40% increase in immune strength. Baby massage, as studied by Álvarez et al., (2019), stimulates the production of endorphin hormones and increases serotonin, which plays a vital role in a baby's growth and development. Aryani et al., (2022)'s research also showed the effectiveness of baby massage in improving sleep quality, depending on various factors such as the baby's health and massage frequency. Baby massage, which according to Paryono and Kurniarum, (2020) improves sleep quality in babies aged 3-9 months, also has a positive impact on a baby's weight. Massage techniques enhance vagus nerve activity and trigger serotonin release, affecting sleep regulation Ifalahma and Rahma, (2019). Handajani et al., (2022) emphasized the importance of stimulating the production of endorphins and enkephalins to create a sense of relaxation and calmness, which eases a baby's sleep. Anggrain and Sari's study (2020) illustrates how baby massage improves sleep quality from poor to good. Finally, Wardani et al., (2023) found that regular baby massage improves sleep quality in all babies involved in their study. The use of oils like Virgin Coconut Oil (VCO) during massage, as suggested by Aryani et al., (2022), can help maintain baby skin moisture and improve sleep quality.

3.2. The Influence of Baby Massage on Baby Weight Gain

Various studies have revealed the benefits of baby massage, especially in the context of baby weight gain. Lestari's research (2021) found that regular massages on babies, particularly on the abdominal area, significantly contribute to weight gain through physical stimulation that enhances the digestive process. This is reinforced by the study of Nudesti and Setiyowati (2020), which recorded weight gain in 26 out of 35 babies who regularly received massages. Baby massage plays a role in stimulating the vagus nerve, triggering the production of digestive hormones like insulin and gastrin, which are important for metabolism and nutrient absorption, as explained by Nurseha and Lintang, (2022).

An analysis of 29 literature studies, including research by Marni, (2019) and Harahap, (2019), concluded that baby massage has a significant and positive impact on baby weight gain. Additionally, baby massage contributes to the bonding between mother and baby and supports baby development, as found in Lestari's research (2021). Krisnanto and Natalia (2019) suggested the right duration and frequency of massage to maximize benefits, namely 15-30 minutes, 3-4 times a week. Baby massage not only increases weight but also reduces stress and improves sleep duration, as shown by Nurseha and Lintang, (2022). However, Nurmalasari's research (2017) noted that not all babies experience weight gain, indicating the need for proper massage techniques and other supporting factors like adequate nutrition intake.

3.3. The Effect of Baby Massage on Sleep Quality and Weight Gain in The First 0-12 Months

The importance of baby care, especially in aspects of sleep quality and weight gain, is a primary focus in the context of the effects of baby massage on the 0-12-month age group. Baby massage, as a therapy involving gentle stimulation of muscles and skin, has shown significant positive impacts in numerous studies. In terms of baby sleep quality, research by Mindell et al., (2018) and Handajani et al., (2022) highlighted the importance of adequate sleep for a baby's growth

and development. Baby massage, through the stimulation of endorphin and serotonin hormones, has been proven to improve sleep quality, with research by Aryani et al., (2022) even noting an increase in immune strength by up to 40% in babies who regularly receive massages. There is a strong correlation between sleep quality and baby weight gain. Baby massage, besides stimulating the digestive system and nutrient absorption (Lestari et al., 2021), also plays a role in improving blood circulation and stimulating the lymphatic system, which indirectly supports weight gain. Relaxation and comfort-related hormones, like oxytocin, produced during massage, have a role in regulating appetite and metabolism, becoming an important factor in healthy weight gain (Krisnanto and Natalia, 2019). In a deeper understanding, studies indicate that baby massage, when applied regularly with the right duration and frequency, can have a substantial impact. In one intervention, baby massage can increase average sleep by 1-2 hours and add about 200 grams to a baby's weight. Further interventions over 4 weeks can even increase sleep duration by up to 3-4 hours and weight gain by up to 800 grams. These results reflect the significant contribution of baby massage to a baby's well-being, both in terms of sleep and growth. However, several factors can affect the effectiveness of baby massage, such as unsupportive environmental conditions, daily nutrition, massage routines, daily activities of the baby, and certain health factors. Therefore, optimal baby massage care requires a holistic approach, considering all aspects affecting a baby's well-being. In this context, a deeper understanding of individual baby needs and environmental factors can provide a more comprehensive view regarding the impact of baby massage on sleep quality and weight gain in the 0-12 month age group.

Discussion

This study's findings reinforce and corroborate 29 literature studies on the positive effects of infant massage on sleep quality and weight gain in infants aged 0-12 months. According to literature reviews conducted by Mindell et al. (2018) and Handajani et al. (2022), infant massage plays a significant role in improving infants' sleep quality by stimulating the production of endorphins and serotonin, both contributing to increased comfort and relaxation in infants. These findings align with Aryani et al. (2022), which show that infant massage boosts the immune system and positively affects the duration and quality of infants' sleep. In the context of weight gain, Lestari et al. (2021) and Nurseha & Lintang, (2022) state that infant massage contributes to weight gain through stimulation of the vagus nerve, which in turn triggers the production of essential digestive hormones such as insulin and gastrin. This indicates that infant massage supports digestive function and nutrient absorption and promotes overall growth and development in infants.

Research by Krisnanto and Natalia, (2019) shows that infant massage significantly increases the weight of infants aged 3-12 months. Similarly, a study by Álvarez et al. (2019) indicates that infant massage positively affects weight gain in premature infants. Marni, (2019) also found similar results in infants aged 2-12 months. Research by Utami et al. (2019) supports these findings by showing that infant massage improves the sleep patterns of infants aged 3-5 months, while a study by Niasty & Ria, (2019) reveals that the sleep quality of infants aged 3-6 months significantly improved after routine massage.

Furthermore, Ifalahma & Rahma, (2019) and Harahap, (2019) found that infant massage improves sleep quality and weight gain in infants aged 3-6 months and 0-6 months. Research by Kurniasari et al. (2020) shows that infant massage significantly increases the sleep duration of infants aged 3-6 months. Dewi et al. (2020) and Paryono & Kurniarum, (2020) also found that infant massage positively affects sleep quality and weight gain in infants. Research by Nudesti & Setiyowati, (2020) and Cahyani & Prastuti, (2020) shows that routine infant massage increases the weight and sleep quality of infants aged 1-6 months and 3-6 months. A study by Anggrain & Sari, (2020) indicates a positive effect of infant massage on the sleep quality of infants aged 0-

6 months. Sukmawati & Imanah, (2020) also found an improvement in the sleep quality of infants aged 3-6 months after massage.

Saddiyah Rangkuti, (2021) and Dinengsih & Yustiana, (2021) show that health education about infant massage and the practice of infant massage positively affects sleep quality and weight gain in infants aged 0-6 months and 2-6 months. Research by Pratiwi, (2021) reveals a positive effect of infant massage on the sleep quality of infants aged 1-6 months. Irianti & Karlinah, (2021) found that infant massage improves the sleep quality of infants aged 1-12 months. Handajani et al. (2022) and Nurseha & Lintang, (2022) also show that infant massage improves infant sleep quality and weight gain. Research by Suryanis et al. (2022) shows that using ylang-ylang essential oil aromatherapy during infant massage enhances the sleep quality of infants aged 6-12 months. Fauzia et al. (2022) found that infant massage positively affects the sleep quality and weight gain of infants aged 0-3 years. Safitri et al. (2023) and Erlina et al. (2023) also show infant massage's positive effects on infants' sleep quality. This research provides empirical evidence supporting the theory that infant massage is crucial in improving infants' sleep quality and weight gain. These findings underline the importance of infant care involving gentle physical contact and consistent stimulation, showing that infant massage can be considered a non-invasive and effective intervention to support infants' growth and development. Additionally, this research highlights the need for a holistic approach to infant care, encompassing considerations of environmental, nutritional, and overall health factors.

Findings from previous research and this study indicate continuity in understanding the benefits of infant massage; however, this research offers a more comprehensive perspective. Previous studies, such as those by Lestari et al. (2021) and Hartati et al. (2020), specifically focused on weight gain in infants with a history of low birth weight and infants in health centers, as well as Sulfiandi et al. (2023), who focused on the impact of infant massage on the sleep quality of infants aged 1-3 months. Their narrow focus provided an in-depth understanding of the specific impact of infant massage on certain aspects of infants' well-being. Still, it did not comprehensively consider the combined effects of infant massage on sleep quality and weight gain simultaneously. In contrast, this research integrates both aspects into a comprehensive study, evaluating how infant massage simultaneously influences the sleep quality and weight gain of infants aged 0-12 months. Thus, these findings not only strengthen previous evidence regarding the individual benefits of infant massage but also expand knowledge by demonstrating how these two benefits interact and support each other in promoting overall infant growth and development.

The implications of this research suggest that infant massage is an essential and effective strategy for supporting healthy infant growth, particularly in improving sleep quality and weight gain in infants aged 0-12 months. These findings encourage the practice of infant massage as an integral part of daily infant care, emphasizing the need for parents and healthcare practitioners to obtain training or knowledge on proper and safe massage techniques. Moreover, these research results can serve as a basis for developing public health policies and educational programs aimed at increasing awareness of the benefits of infant massage, as well as integrating infant massage into broader infant care recommendations. This research also opens up opportunities for further studies exploring other aspects of infant massage, including its long-term effects on cognitive and emotional development in infants, as well as understanding more about the factors influencing the effectiveness of infant massage, thereby optimizing the benefits provided to infants and their families.

Conclusion

This study aims to understand the impact of infant massage on the sleep quality of infants aged 0-12 months and to evaluate the influence of infant massage on weight gain in this age group. Based on extensive research, baby massage has been proven crucial in improving sleep quality and weight gain in infants aged 0-12 months. Regular massage, ideally performed 3-4 times a week for 15-30 minutes, can enhance sleep quality by 1-2 hours per session and contribute to significant weight gain, approximately 200 grams per session. Over four weeks, these benefits become more apparent, with sleep duration increasing by 3-4 hours and weight gain reaching up to 800 grams. While the literature supports these findings, it is important to note that environmental conditions, daily nutrition, regularity of massage, daily activities, health conditions, and breastfeeding frequency and duration can influence the effectiveness of baby massage. However, there is a significant gap in the 30 reviewed studies: none mention the optimal time for performing baby massage. Future research should identify and test the optimal time to provide more concrete parental guidelines. Additionally, healthcare providers must offer education and demonstrations so parents can independently and regularly practice baby massage at home, strengthening the parent-child bond.

References

- Álvarez, M. J., Rodríguez-González, D., Rosón, M., Lapeña, S., Gómez-Salgado, J., & Fernández-García, D. (2019). Effects of Massage Therapy and Kinesitherapy to Develop Hospitalized Preterm Infant's Anthropometry: A Quasi-Experimental Study. *Journal of Pediatric Nursing*, *46*, e86–e91. <https://doi.org/10.1016/j.pedn.2019.03.015>
- Anggrain, R. D., & Sari, W. A. (2020). Pengaruh pijat bayi terhadap kualitas tidur bayi usia 3-6 bulan. *Jurnal Penelitian Kesehatan*, *3*(1), 25–32. <https://journal.stikvinc.ac.id/index.php/jpk/article/view/185/123>
- Anjani, A. D., Lestari, D., Aulia, N., & Wibisono, C. (2018). Review article: Information giving effect to knowledge mothers with babies of infant massage. *International Journal of Information Research and Reveiw*, *05*(2011), 5590–5596. <https://ijirr.com/sites/default/files/issues-pdf/2967.pdf>
- Aryani, A., Rositasari, S., & Suwarni, A. (2022). Peningkatan Kualitas Tidur Bayi Usia 3-10 Bulan dengan Pemberian Baby Massage Menggunakan Virgin Coconut Oil. *Jurnal Ilmu Keperawatan*, *5*(1), 49–58. <https://doi.org/10.32584/jika.v5i1.1284>
- Behdad, F., & Dabaghian, F. H. (2020). Applications of massage in children from the perspective of Persian medicine. *Traditional and Integrative Medicine*, *5*(4), 212–220. <https://doi.org/10.18502/tim.v5i4.5167>
- Cahyani, M., & Prastuti, B. (2020). Pengaruh Pijat Terhadap Kualitas Tidur Bayi Usia 3-6 Bulan Di Klinik Cahaya Bunda. *JOMIS (Journal of Midwifery Science)*, *4*(2), 39–45. <https://doi.org/10.36341/jomis.v4i2.1358>
- CDC. (2019). *Sleep and Sleep Disorders: Children*. Centers for Disease Control and Prevention. <https://www.cdc.gov/sleep/data-and-statistics/children.html#:~:text=in Mississippi in 2018–2019>
- Chau, T. (2019). Evaluating the effectiveness of a massage workshop on crying and infant sleep in a PMI center. *Journal de Pediatrie et de Puericulture*, *32*(4), 181–184. <https://doi.org/10.1016/j.jpp.2019.06.005>
- Dewi, Y. C., Nurman, M., & Dhilon, D. A. (2020). Pengaruh Pijat Bayi terhadap Kualitas Tidur Bayi Usia 6-12 Bulan di Roemah Mini Baby Kids & Mom Care Siak. *Jurnal Doppler*, *4*(2). <https://journal.universitaspahlawan.ac.id/index.php/doppler/article/view/1109>
- Dinengsih, S., & Yustiana, R. E. (2021). Pijat Bayi Mempengaruhi Berat Badan Bayi Dan Pola Tidur Bayi Usia 2-6 Bulan. *Jurnal Kebidanan Malahayati*, *7*(2), 332–339. <https://doi.org/10.33024/jkm.v7i2.3867>
- Erlina, Fatiyani, & Maayah, N. (2023). Pijat Bayi Terhadap Kualitas Tidur Pada Bayi Usia 1-12 Bulan. *Jurnal Keperawatan Silampari*, *6*(2), 1322–1329. <https://doi.org/10.31539/jks.v6i2.5469>

- Fadlalmola, H. A., Mohammed, A. A., Abdelwahed, H. H., Mohammed, A. A., Taha, A. A. E., Ali, R. A., Abdelrahman, A. M. M., Hazazi, Z. H., Mohamed, A. S., Fatahalrahman, M. H., Eltom, A. B., Banaga, A. E., Mohamed, S. A. M., Elshaikh, A. A., Ali, A. M., Elbashir, A. A., Basheer, R. A., Taha, W. H., Ebrahim, E. M., & Ebrahim, E. E. (2023). Efficacy of Massage on Pain Intensity in Post-Cesarean Women: a Systematic Review and Meta-Analysis. *International Journal of Therapeutic Massage and Bodywork: Research, Education, and Practice*, 16(3), 44–63. <https://doi.org/10.3822/ijtmb.v16i3.861>
- Fauzia, R. L., Budihastuti, U. R., & Adriani, R. B. (2022). Meta-Analysis the Effect of Baby Massage in Increasing Quality of Sleep and Infant Body Weight. *Journal of Maternal and Child Health*, 7(1), 64–74. <https://doi.org/10.26911/thejmch.2022.07.01.07>
- Fauziah, A., Wijayanti, H. N., Penelitian, M., & Populasi, Y. (2018). Effect Of Baby Massage To Increase Weight And Baby Sleep Quality At Jetis Public Health Center Yogyakarta. *Jurnal UNS*, 6(2), 14–19. <https://doi.org/10.13057/placentum.v>
- Handajani, D. O., Suprapti, Rokani, & Rohmawati, D. A. (2022). Loving Touch Baby Massage Terhadap Peningkatan Frekuensi Menyusui, Durasi Menyusui, Dan Kualitas Tidur Anak. *Jurnal Kesehatan Global*, 5(1), 1–5.
- Harahap, N. R. (2019). Pijat Bayi Meningkatkan Berat Badan Bayi Usia 0-6 Bulan. *Jurnal Kesehatan Prima*, 13(2), 99. <https://doi.org/10.32807/jkp.v13i2.226>
- Harie, Y., Gautam, B. P., & Wasaki, K. (2023). Computer Vision Techniques for Growth Prediction: A Prisma-Based Systematic Literature Review. *Applied Sciences (Switzerland)*, 13(9), 1–25. <https://doi.org/10.3390/app13095335>
- Hartati, S., Hidayah Akademi Kebidanan Sempena Negeri, N., Tim, S., Marpoyan Damai, K., & Pekanbaru, K. (2020). Science Midwifery Effects of Baby Massage on Weight Gain in Babies. *Science Midwifery*, 8(2), 48–51. www.midwifery.iocspublisher.org
- Ifalahma, D., & Rahma, L. (2019). Effect of Baby Massage on Baby's Sleep Quality (Based on Baby Massage Duration and Frequency). *International Conference of Health, Science & Technology (ICOHETECH) 2019*, 7(6), 1–25. <https://ojs.udb.ac.id/index.php/icohetech/article/view/752/690>
- Inawati, I., & Sitiyarah, N. (2022). The Effectiveness of Infant Massage to Increase in Baby Weight in Bpm Inawati. *Risenologi*, 7(1a), 84–88. <https://doi.org/10.47028/j.risenologi.2022.71a.337>
- Irianti, B., & Karlinah, N. (2021). Efektifitas Pijat Terhadap Kualitas Tidur Bayi (0 – 1 Tahun) Di Pmb Hasna Dewi Tahun 2020. *Ensiklopedia of Journal PERANCANGAN*, 3(2), 155–164.
- Karim, Y. A., Utomo, M. T., & Yuliati, I. (2021). Hubungan Pijat Bayi Terhadap Kenaikan Berat Badan Pada Bayi Berat Lahir Rendah (Bblr) : Systematic Review. *Medika Respati: Jurnal Ilmiah Kesehatan*, 16(4), 263–274. <http://medika.respati.ac.id/index.php/Medika/article/view/528>
- Kementrian Kesehatan RI. (2017). Buku Saku Pemantauan Gizi Tahun 2017. In *Buku saku pemantauan status gizi tahun 2017*. <https://sehatnegeriku.kemkes.go.id/wp-content/uploads/2018/01/Buku-Saku-Nasional-PSG-2017-Cetak-1.pdf>
- Krisnanto, P. D., & Natalia, L. (2019). the Effectiveness of Baby Swimming and Baby Massage in Improving Baby Weight. *Healthy and Active Ageing*, 1–4. <https://prosiding.respati.ac.id/index.php/PIC/article/view/61/56>
- Kurniasari, D. D., Istikhomah, H., & Siswiyanti. (2020). Pengaruh Pijat Bayi Terhadap Lama Tidur Bayi Usia 3-6 Bulan di Desa Jemawan Kecamatan Jatinom Kabupaten Klaten. *Jurnal Kebidanan Dan Kesehatan Tradisional*, 5(1), 14–22. <https://doi.org/10.37341/jkkt.v5i1.133>
- Lestari, K. P., Nurbadlina, F. R., Wagiyono, & Jauhar, M. (2021). The effectiveness of baby massage in increasing infant's body weight. *Journal of Public Health Research*, 10(s1), 1–5. <https://doi.org/10.4081/jphr.2021.2332>
- Marni, M. (2019). Pengaruh Pijat Bayi Terhadap Peningkatan Berat Badan Pada Bayi. *Jurnal Kebidanan Indonesia*, 10(1), 12. <https://doi.org/10.36419/jkebin.v10i1.240>
- Mindell, J. A., Lee, C. I., Leichman, E. S., & Rotella, K. N. (2018). Massage-based bedtime routine: impact on sleep and mood in infants and mothers. *Sleep Medicine*, 41, 51–57.

- <https://doi.org/10.1016/j.sleep.2017.09.010>
- Niasty Lasmy Zaen, & Ria Arianti. (2019). Pengaruh Pijat Bayi Terhadap Kualitas Tidur Bayi Usia 3-6 Bulan Di Bidan Praktek Mandiri Nurul Umaira Titi Papan Tahun 2019. *Jurnal Ilmiah Kebidanan Imelda*, 5(2), 87–94. <https://doi.org/10.52943/jikebi.v5i2.389>
- Nudesti, N. P., & Setiyowati, H. (2020). Hubungan Pijat Bayi Dengan Kenaikan Berat Badan Pada Bayi Usia 1 – 6 Bulan Di Riu Mom Kids and Baby Spa Di Sukoharjo Pati. *Jurnal Ilmu Kebidanan Dan Kesehatan (Journal of Midwifery Science and Health)*, 11(2), 40–46. <https://doi.org/10.52299/jks.v11i2.70>
- Nurmalasari, D. I., Agung, E. M., & Nahariani, P. (2017). Pengaruh Pijat Bayi Dengan Kualitas Tidur Bayi Usia 3-6 Bulan Di Desa Bandung Kecamatan Diwek Kabupaten Jombang. *Jurnal Ilmiah Kebidanan*, 3(1), 77–83. <https://jurnal.uns.ac.id/placentum/article/viewFile/22834/16948>
- Nurseha, N., & Lintang, S. S. (2022). Efektifitas Pijat Bayi Terhadap Kenaikan Berat Badan Dan Kualitas Tidur Bayi Di Puskesmas Kramatwatu. *Journal Of Midwifery*, 10(1), 29–34. <https://doi.org/10.37676/jm.v10i1.2314>
- Paryono, P., & Kurniarum, A. (2020). Pengaruh Pijat Bayi yang dilakukan oleh Ibu terhadap Tumbuh-Kembang dan Tidur Bayi di Kabupaten Klaten. *Interest: Jurnal Ilmu Kesehatan*, 9(1), 44–49. <https://doi.org/10.37341/interest.v9i1.155>
- Pratiwi, T. (2021). Pengaruh Pijat Bayi Terhadap Kualitas Tidur Pada Bayi Usia 1-6 Bulan. *J-KESMAS: Jurnal Kesehatan Masyarakat*, 7(1), 9. <https://doi.org/10.35329/jkesmas.v7i1.1921>
- Retno, D., Puspitosari, D. R., & -, M. K. (2023). Authoritative Parenting and the Development of Pre-School Age Children At Al-Amin Kindergarten, Mojoroto Kediri. *International Journal of Nursing and Midwifery Science (Ijnms)*, 7(2), 256–267. <https://doi.org/10.29082/ijnms/2023/vol7/iss2/513>
- Reuter, A., Silfverdal, S. A., Lindblom, K., & Hjern, A. (2020). A systematic review of prevention and treatment of infant behavioural sleep problems. *Acta Paediatrica, International Journal of Paediatrics*, 109(9), 1717–1732. <https://doi.org/10.1111/apa.15182>
- Saddiyah Rangkuti. (2021). Pengaruh Pendidikan Kesehatan Pijat Bayi terhadap Kualitas Tidur Bayi Usia 0-6 Bulan di BPM Dewi Suyanti Tahun 2020. *Jurnal Kesehatan Masyarakat (JURKESMAS)*, 1(1), 34–42. <https://doi.org/10.53842/jkm.v1i1.10>
- Safitri, F., Indrayani, T., & Widowati, R. (2023). Efektivitas Pijat Bayi Usia 6 – 12 Bulan Terhadap Peningkatan Kualitas Tidur. *Jurnal Penelitian Perawat Profesional*, 5(1), 389–398. <https://jurnal.globalhealthsciencegroup.com/index.php/JPPP/article/view/1442/1163>
- Simangunsong, B. Y. P. (2022). Peluang dan Tantangan Usaha Mikro Kecil dan Menengah (UMKM): Systematic Literature Review. *Jurnal Ekonomi Pembangunan*, 1(1), 25–39. <https://jureka.fekonubt.net/index.php/jureka/article/view/21>
- Sukmawati, E., & Imanah, N. D. N. (2020). Efektivitas Pijat Bayi Terhadap Peningkatan Kualitas Tidur Bayi. *Jurnal Kesehatan Al-Irsyad*, 13(1), 11–18. [https://ejurnal.stikesalirsyadclp.ac.id/index.php/jka/article/download/49/42/#:~:text=KESIMPULAN,Terdapat efektivitas pijat bayi terhadap peningkatan kualitas tidur bayi dibuktikan,sebagai salah satu cara efektif](https://ejurnal.stikesalirsyadclp.ac.id/index.php/jka/article/download/49/42/#:~:text=KESIMPULAN,Terdapat%20efektivitas%20pijat%20bayi%20terhadap%20peningkatan%20kualitas%20tidur%20bayi%20dibuktikan,sebagai%20salah%20satu%20cara%20efektif)
- Sulfianti, S., Amir, S., & Yakub, S. A. (2023). The Effect of Baby Massage on Sleep Quality of Baby Aged 1-3 Months. *Journal La Medihealthico*, 3(6), 541–548. <https://doi.org/10.37899/journallamedihealthico.v3i6.764>
- Suryanis, I., Susanti, M., & Triyana, R. (2022). Efektifitas Pijat Bayi Menggunakan Aromaterapi Mintak Esensial Canaga Odorata Terhadap Kualitas Tidur Bayi Usia 6-12 Bulan Berisiko Stunting. *Jurnal Doppler*, 6(2), 65–69. <https://journal.universitaspahlawan.ac.id/index.php/doppler/article/view/8091>
- Utami, S., Rusmi, K., & Gamayani, U. (2019). Perbedaan Pengaruh Pijat Dan Spa Bayi Terhadap Pola Tidur Dan Peningkatan Berat Badan Pada Bayi Usia 3-5 Bulan. *Jurnal Kebidanan Malahayati*, 5(4), 371–380. <https://doi.org/10.33024/jkm.v5i4.2050>
- Utlı, H., & Yağmur, Y. (2022). The effects of Reiki and back massage on women’s pain and vital signs post-abdominal hysterectomy: A randomized controlled trial: The Effects of Reiki and

Back Massage on Women's Pain and Vital Signs. *Explore*, 18(4), 467–474.
<https://doi.org/10.1016/j.explore.2021.07.004>

Wardani, J. V., Choirunissa, R., & Kundaryanti, R. (2023). Efektifitas Pijat Bayi Terhadap Kualitas Tidur Pada Bayi Usia 3-12 Bulan. *Menara Medika*, 5(2), 242–251.
<https://doi.org/10.31869/mm.v5i2.4168>