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The effectiveness of baby massage in increasing baby weight

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ABSTRACT

Babies born with low birth weight (LBW) are more vulnerable to health issues and are a leading cause of neonatal death. Globally, cases of low birth weight in the world reach 15.5%, with 90% of them occurring in developing countries. The aim of the review was to identify evidence regarding the effectiveness of baby massage in increasing baby weight. This Scoping Review was referring to the steps taken by Arksey and O'maley, the articles included published from 2018 to 2023, in English and Indonesian and focus on baby weight gain, in the The data source from journals were accessed via the Pubmed, Wiley, and Google Scholar databases. 103 journals were filtered, 96 journals were excluded, 7 articles were taken based on title and abstract, 7 journals were assessed for eligibility, 2 were excluded because they did not meet the inclusion and exclusion criteria, the journal was included in the review 5 who meet the requirements. This research carried out Critical Appraisal according to the design in the research journal, namely Critichal Appraisal Randomized Control Trial and Critichal Appraisal Quasi Experiment. A scoping review of 5 journals regarding the effectiveness of baby massage in increasing baby weight identified the main research theme, namely giving massage to babies, factors that influence baby massage and obstacles to carrying out baby massage. Based on the results of the four journals it can be concluded that baby massage is effective. in baby weight gain.

1. Introduction

According to the World Health Organization, babies who have just been born and weigh less than 2,500 grams are known as Low Birth Weight or low birth weight. In 2018, the prevalence of low birth weight cases in the world reached 15.5%, with 90%of them occurring in other countries. developing countries, including Indonesia (Khan et al., 2022). The short-term impacts of low birth weight are thermoregulatory system disorders, immune disorders, respiratory disorders, cardiovascular disorders and digestive disorders (Peters et al., 2017) the long-term impacts of low birth weight are psychological disorders, physical disorders, and even death (Govoni et al., 2019).

The level of public knowledge regarding low birth weight (LBW) varies depending on several aspects such as level of education, access to health information and community culture, ow knowledge tends to have bad habits or lifestyle such as eating non-nutritious food which results in low birth weight (LBW). (Seyed Karimi et al., 2021) People who have good knowledge so that mothers are not at risk of giving birth to Low Birth Weight (LBW) (Janni et al., 2002).

Community-level interventions also play a crucial role in addressing LBW. Promoting public awareness campaigns about maternal and child health can empower families to adopt healthier practices. For example, encouraging routine antenatal check-ups, emphasizing the importance of a nutritious diet, and discouraging harmful habits like smoking or excessive caffeine consumption are key strategies to mitigate LBW risks (Vrkatić et al., 2022). Addressing cultural misconceptions and providing education tailored to specific community needs can further enhance efforts to combat LBW.

The level of public knowledge about LBW varies depending on several factors, such as education level, access to health information, and cultural practices. Limited knowledge is often associated with poor lifestyle habits, such as consuming non-nutritious food, which can increase the risk of LBW (Goudet et al., 2019; Suranny & Maharani, 2021). Conversely, communities with adequate knowledge are better equipped to adopt healthy practices, reducing the risk of mothers giving birth to LBW infants (Lestari et al., 2021a; Ratna Ningsih, 2019).

This Scoping Review aimed to map the evidence regarding the effectiveness of Baby Massage in increasing baby weight.

2. Method

2.1. Identifying Research Questions or Identifying Focus Review Using the PICO Framework

Identification of Review Focus using the PICO Framework (Population, Intervention, Comparison and Outcomes) is used in this scoping review to search journals, determine inclusion and exclusion criteria, and identify appropriate articles. The review question in this scoping review is "What is the Scientific Evidence for Midwifery About Effectiveness of Baby Massage in Gaining Baby's Weight?

Table 1. PICO Framework

Framework	Keyword
Population	Babies aged 1 to 6 months with low birth weight
Intervention	Baby Massage
Comparison	Comparison Average baby weight in the intervention group and controlgroup
Outcome	The effectiveness of Baby Massage in increasing baby weight

2.2. Identification of Relevant articles

Researchers identified inclusion criteria and the inclusion criteria in selecting journals were journals published from 2018 to 2023, English and Indonesian journals, related journals, and articles focused on the effectiveness of Baby Massage in increasing baby weight. and exclusion criteria, namely the article is not full text, and the article does not have results on baby weight gain.

Article search using Boolean keywords: (Baby Massage) and (Increase Low Birth Weight) This scoping review uses four database sources, namely Pubmed, Wiley and Google Scholer

Table 2. Article Search Keywords

Population	Intervention	Comparison	Outcome
-	(Baby Massage) AND	-	(Increase Low Birth Weight)

2.3. Selection of Articles or Identifying Literature Using PRISMA Flow Chart

Articles were selected through elimination of duplicate articles, filtering based on title and abstract, as well as thorough reading of articles with the aim of suitability of research articles in conducting a Scoping Review.

The Prisma Flow Chart Checklist is needed to provide an overview of the process of searching for scientific articles, compiling review reports, and presenting information related to research procedures that have been carried out (Munn et al., 2018).

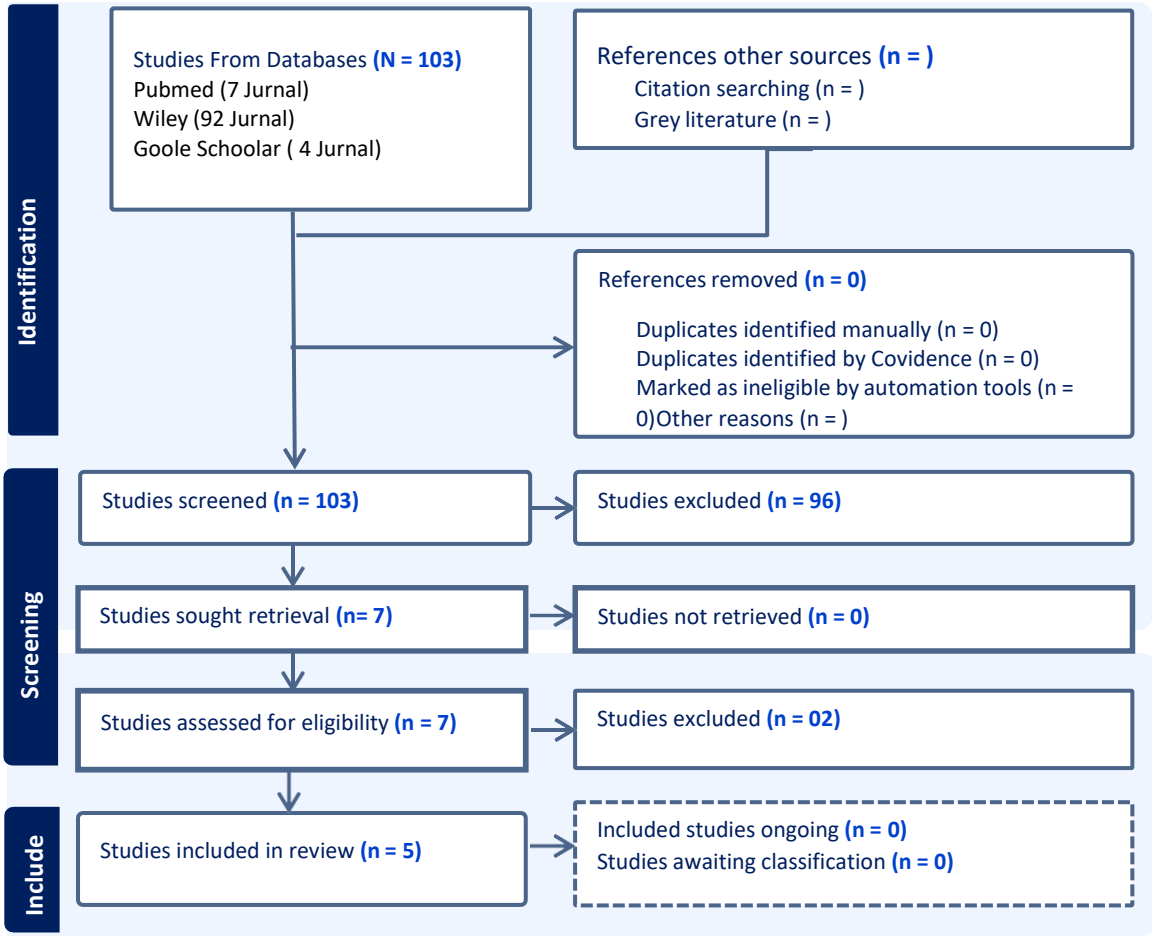

Fig. 1. Prism Flow Chart

Based on search results using keywords in the database, there are 103 journals. All articles were entered into Mendeley, in Export to Covidence there were no duplicate journals, 103 journals were filtered, 96 journals were excluded, 7 articles were taken based on title and abstract, 7 journals were assessed for eligibility, 2 were excluded because they did not meet the inclusion and exclusion criteria, the journal was included in the review 5 who meet the requirements. Synthesis of article data using Charting Data, namely Author, Year, Country, Title, Research Design, Data Collection Methods and Instruments, Sampling Techniques and Number of Respondents, Data Analysis Methods, and Data Mapping Results

2.4. Data Charting

Five articles that had been assessed critically as a whole were then extracted to include the main article Criteria include author, year, country, research title, objectives, research design, data collection methods and instruments, sampling techniques and number of respondents, data analysis methods, and results. Mapping data is created through discussions with parties The second author adopted the modified joanna briggs institute (jbi). Theauthor recorded and compared the extracted data, which can be seen in the following table:

Table 3. Data Charting

No	Writer/ Year/ Country	Title	Researchdesign	Data Collection Methods and Instrument	Sampling Techniquesand Number of Respondents	Data analysis method	Results
A1	Zhang Dkk/ 2018/China (Zhang, 2018)	Massage Intervention by Mothers for Preterm Infants	Randomized Controlled Trial	30 And 70 Minute Semi-Structured Interviews And Observations	Random Sampling 112 Premature Babies	Analysis with Anova	Giving baby massage for 15 minutes twice a day for 2 weeks. The comparison of the baby's weight in the intervention group was higher than the control group after massage. The 1 week intervention group averaged 1750.5 g and the 2 week average 2150.6 g and the 1 week control group averaged 1606.4 g and2 weeks: average 1747.8. The results of the study showed a significant increase in body weight with a p-value of 0.001
A2	Hetal Shah Dkk/ 2019/ India (Hetal Shah, 2019)	Effect Of Tactile, Kinesthetic Stimulation and Kangaroo Mother Care on Low Birth Weight in Preterm Infants Of Tactile, Kinesthetic Stimulation And Kangaroo Mother Care On Low Birth Weight In Preterm Infants Of Tactile, Kinesthetic Stimulation And Kangaroo Of Tactile, Kinesthetic Stimulation And Kangaroo Mother Care On Low Birth Weight In Preterm Infants Care On Low Birth Weight In Preterm Infants Care On Low Birth Weight In Preterm Infants	Quasi Experiment	Interviews with Questionnaires and Observations	Purposive Sampling 20 Babies	Dependent and Independent T Test	Giving baby massage for 10 minutes for 5 days, compared to the average baby's weight after the intervention, the intervention group was 44.54 g and the control group was 37.5 grams. The P-value is 0.7250, meaning there is no significant difference in weight. And the standard deviation of the average weight of the intervention group was 36.90 g and the control group was 18.48 g. T-value 0.3595 means there is no significant comparison between two groups. The results showed an increase in weight in babies, although it was not significant (p-value 0.18)
A3	Linda Melia Dkk/ 2020/ Indonesia (Linda Melia, 2020)	Effect The Mothers Individual Stimulation on The Growth and Development Of Infants With Low Birth Weight History	Quasi Experimental	Interview with Observation Questionnaire with Observation Sheet	Purposive Sampling 30 Babies	Wilcoxon test	Providing baby massage twice a day (morning and evening), in sessions of 15 to 20 minutes, for 30 days, Comparison of the baby's weight before the intervention, the baby's weight ranged between 2280 to 8400 grams, after the intervention the baby's weight increased with a value range between 2800 to 8000 grams, the results of the study showed that therewas an effect of baby massage on increasing the baby's weight (p= 0.0001)

A4	Franciane R/ 2021/ Brazil (Franciane R, 2021)	Effects Of Hydrotherapy And Tactile-Kinesthetic Stimulation On Weight Gain Of Preterm Infants Admitted In The Neonatal Intensive Care Unit	Randomized Controlled Tria	Observation	Random Sampling 44 Babies	T Test and Anova Analysis	Giving Baby Massage for 15 minutes within 5 days, comparison of baby weight found in the massage group there was an increase in weight although not significant (0.43) while in the hydrotherapy group there was a significant increase (p 0.001), the results showed an increase in weight although not significant (p = 0.43)
A5	Puji Lestari Dkk/ 2021/Indonesia (Lestari et al., 2021a)	The Effectiveness Of Baby Massage In Increasing Infant's Body Weight	Quasi Experiment	Observation with Observation Sheet	Purposive Sampling 32 BBLR	T Test and Regression Analysis	Giving Baby Massage twice a week for four weeks, 10 to 15 minutes, comparison of baby weight in the intervention group before the intervention averaged 5356.25 g and after the intervention 5856.25 g, the average difference before and after the intervention: 500g, Baby weight in the control group before the intervention averaged 5287.50 g and after the intervention: 5556.25 grams, the average difference before and after the intervention: 268.75 grams, the average difference in weight before and after the intervention was greater in the intervention group (500 grams)

3. Results

3.1. Characteristics of Articles by Country

The research articles used in this Scoping Review come from several countries, such as China, India, Brazil and Indonesia. Characteristics of articles by country can be seen in Figure 2

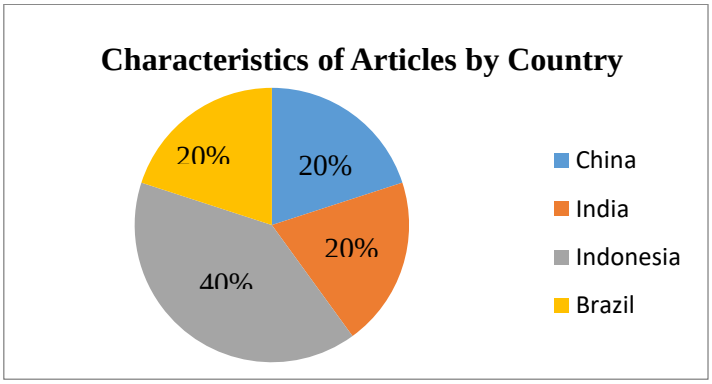

Fig. 2. Characteristics of Articles by Country

3.2. Characteristics Based on Research Design

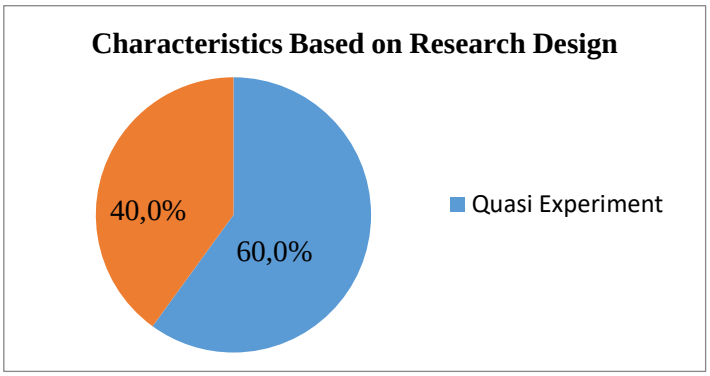

Fig. 3. Article Characteristics Based on Research Design

Characteristics of articles based on research design for Quasi Experiment (3 Articles), Randomized Control Trial (2 Articles)

3.3 Characteristics of Articles Based on Data Collection

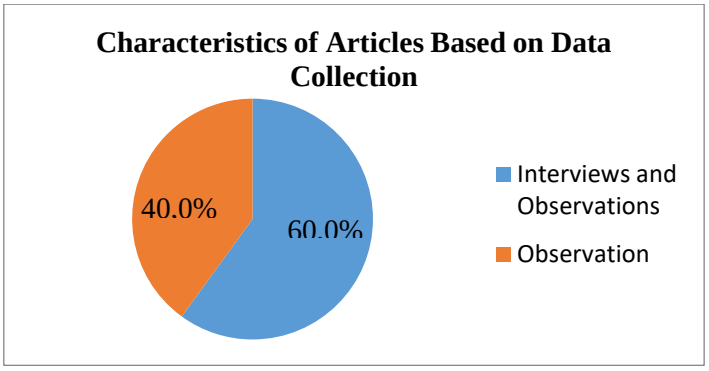

Fig. 4. Article Characteristics Based on Data Collection

Characteristics of articles based on data collection methods through interviews and observations (3 articles), observation (2 articles)

3.4 Characteristics Based on Quality

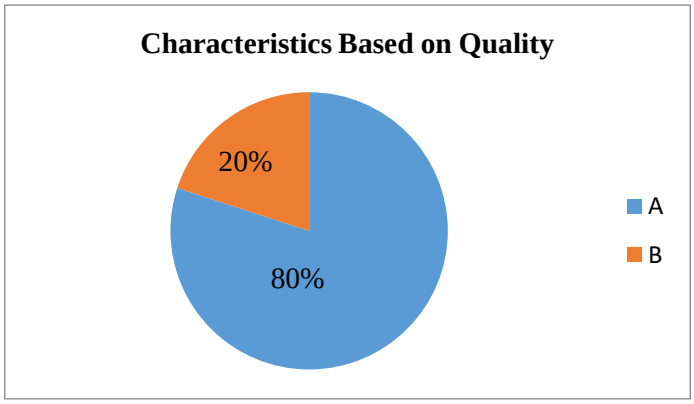

Fig. 5. Article Characteristics Based On Article Quality

Based on the results of the quality assessment of the 5 articles, there are 4 quality A articles meaning the article is good and explained in detail and there is 1 quality B article because it does not explain the follow-up to the research.

3.5 Theme Analysis

After analyzing the themes and evaluating the quality of the journals through data extraction, the main themes of the selected journals were as follows:

Table 4. Analysis and Mapping of Research Article Themes

No	Tema	Sub Tema	Artikel Penelitian
1	Giving baby massage	Baby massage techniques	A1,A2,A4
		Digestive system stimulation	A1,A2
2	Factors that affect baby massage	Massage frequency	A1,A2,A3,A4,A5
		Massage duration	A1,A2,A3,A4,A5
		Parents' role	A1,A2,A3
3	Barriers to baby massage	Lack of knowledge	A1
		Time constraints	A1

4. Discussion

Based on the results of a literature search, 3 themes were obtained as follows:

1) Giving Massage To Babies

Giving massage to babies is a form of touch therapy which functions as an important treatment technique in increasing body weight (Álvarez-González et al., 2021; Rasumawati et al., 2022). With various techniques including touching, stroking (effleurage), stretching, kneading, vibrating, friction, percussion, compression, and active or passive flexion and extension movements within the normal physiological range of motion (Lestari et al., 2021b, 2021a).

Then with a massage technique of 10 strokes starting from the scalp, on the forehead from the middle to the sides, on the upper limbs then flexion/extending the range of motion in the shoulder and elbow joints, stomach and lower limbs, then giving a simultaneous range of motion in the hip joint. Massage is given from proximal to distal direction and performed 10 repetitions for range of motion. The baby is then turned to the prone position and moderate pressure is applied with the finger from proximal to distal (Hetal Shah, 2019).

After that, with the first phase technique, position yourself on your stomach, and massage with moderate pressure in the sequence from crown to neck to crown, from neck to shoulder to neck, from neck to sacral area to neck, from thigh to foot to thigh, from shoulder to hand to a total of fiveminutes. The second phase is in the supine position, flexion/extension of the arms for six repetitions for 1

minute, then flexion/extension of the legs for six repetitions for 1 minute and flexion/extension of both legs together for six repetitions for 1 minute. In the third phase, the first sequence is repeated for 8 minutes (Franciane R, 2021).

Massage also improves nutritional absorption in babies by stimulating digestive activity, stimulating peristaltic movements and intestinal activity. Massage can help babies digest and absorb nutrients more effectively. Physical touch and light movements on the baby's body stimulate the mechanoreceptors and baroreceptors in the skin of the digestive tract which are supplied by efferent vagal fibers.

2) Factors That Influence Massage On Babies

a) Massage frequency

Infant massage was performed at various frequencies, starting with massage once every five days. This massage frequency was then increased to twice a day for two weeks(Zhang, 2018). Furthermore, infant massage was performed daily for 30 consecutive days (Linda Melia, 2020). Finally, infant massage intervention was given twice a week for four weeks to produce significant weight gain (Lestari et al., 2021a).

b) Massage duration

The duration of infant massage also varies, including the duration of infant massage given is around 10 minutes per session. Then the duration of the massage is slightly longer, which is around 15 minutes per session. After that, massage intervention with the same duration, which is 15 minutes Furthermore (Zhang & Yongwen, 2018). Next, baby massage with a duration of between 15 and 20 minutes per session. This approach shows variation in longer massage duration to support baby growth and development Finally, with the duration of each session ranging from 10 to 15 minutes**.**

c) Parents' role

Baby massage is very important for baby's health. Especially if done by the parents themselves. So the role of parents is needed in giving massage to babies . (Adams et al., 2015; Rasumawati et al., 2022) Parents, especially mothers, are directly involved in giving baby massage to babies. They are given training to carry out massage interventions for two weeks on their own babies. Mothers play a role in providing direct stimulation to babies through massage. This massage aims to stimulate the baby's digestive system, including the stomach and other digestive organs.

3) Barriers to Carrying out Baby Massage

In general, many mothers are still afraid to do baby massage because they lack sufficient knowledge about baby massage.

Mothers expressed difficulty in controlling the strength of touch when giving baby massage to their babies. Some of them may not have enough knowledge or may find it difficult to adapt the strength of their touch to the needs of premature babies who require gentle and careful touch. Time constraints also create challenges in timing massage before feeding and at least four hours after the previous session. This reflects practical obstacles that may influence the overall implementation of massage interventions.

Limitation of the Study

This research has limitations, namely that data collection was not carried out directly because this research is an analysis of previous research articles.

5. Conclusion

Based on 103 journals that were screened, only 5 articles were reviewed based on inclusion criteria, massage for babies is a form of touch therapy that has benefits in increasing body weight, stimulating digestive activity, and helping effective absorption of nutrients. There are a variety of massage techniques that can be used, such as stroking, moderate pressure, flexion, and other movements. The duration and frequency of massage can vary, and involves parents, especially mothers, who are directly involved in giving massage to babies.

However, there are several obstacles in carrying out massage on babies, including difficulty in controlling the strength of touch, limited knowledge, and time constraints. However, with training and parental awareness, infant massage can be an effective method in improving infant health and growth.

It is hoped that this scoping review will include more searches of accessible databases to support this

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