

EFFECTIVENESS OF BABY MASSAGE ON MOTOR DEVELOPMENT IN BABIES: LITERATURE REVIEW

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Abstract

Baby massage is a touch therapy that involves massaging the baby with the aim of helping speed up the baby's motor development process. This research aims to determine the effectiveness of baby massage on baby's motor development. A literature review was conducted using a PICO search in the Google Scholar database. The research results show that massage can be done on babies with a frequency of 1-2 times/day for 1 month and lasts 10 to 15 minutes, providing tactile stimulation before/after bathing with $p < 0.05$ gives good results. has an important influence on motor development, babies who receive massage and movement training have faster growth and development than babies who do not receive massage and movement training. Baby massage is one way of manual therapy that influences soft tissue to improve baby's health.

Keywords: Baby massage, Motor development, Babies

INTRODUCTION

Infancy is a period of very rapid growth and development, starting from birth to 1 year old. The age of child development is divided into two, namely infants from birth to 28 days and children from 29 days to 12 years, there are two are gross motor and fine motor. Gross motor skills include body movements using large muscles such as kicking, standing, sitting, running (Widodo and Herawati, 2008). Early childhood growth and development is divided into four stages, namely the age of 0 to 3 months, 4 to 6 months, 7 to 9 months, and 10 to 12 months. Children aged 4 to 6 months grow and develop the fastest in terms of mobility (Ministry of Health of the Republic of Indonesia, 2010).

Developmental impairment ranges from 12.8 to 16%, with up to 30 children experiencing mild delays in gross motor skills, such as the ability to rotate back and forth at age 3 or 4, later on.

There are several factors that can inhibit a baby's growth and development and prevent him from reaching his genetic potential. Therefore, baby massage is one of the alternative solutions to stimulate baby growth and development (Jayatmi & Fatimah, 2021).

Motor development is one of the parameters to determine the best stage of development. Baby massage is really important for baby's health. Therefore, the role of parents is really needed in massage to strengthen the affection of parents and children, and improve blood circulation and breathing.

Previous research has shown that infants who receive massage and movement training have faster growth and development than infants who do not receive massage and movement training (Syahputri & Parinduri, 2020). Babies need stimulation so that their growth and development are optimal, as well as causing a sense of comfort and confidence so that children are more responsive to the environment and develop better (Sutriyawan & Nadhira, 2020).

In general, developing baby gestures has great effectiveness on the baby's development (weight and body length). Baby massage can improve the baby's blood circulation, as a result it can help the body work to help the baby's growth, such as weight gain and height.

METHODS

This study used literature review. Literature review is a systematic way of summarizing and evaluating knowledge or practice on a particular subject (Knopf, 2006). The research questions followed the PICO format: (P=Population) infants with motor development, (I=Intervention) Infant massage, (C=Comparison) no comparison, (O=Outcome) infant massage can effectively improve motor development.

The research journal articles reviewed are limited by inclusion and exclusion criteria, with journal retrieval having a time span for the last 10 years, namely 2013-2023.

Articles will be reviewed if they meet the following inclusion criteria: (i) the subject of the study is the Effectiveness of Infant Massage on Motor Development in Infants.

(ii) Research articles will be rejected if they have exclusion criteria following research with literature review methods. The author gets information based on journal databases such as PubMed, Google Scholar, ScienceDirect.

Developmental Prescreening Questionnaire (KPSP):

to evaluate a child's development based on age or potential delays

Mann-Whitney Statistics test:

Nonparametric statistical test for two independent samples.

statistical test t-independent

comparison test

Denver Developmental Screening Test

Assessment tools are used to evaluate development in children

with paired T-test samples.

Test the difference of 2 samples of subjects from the same population.

RESULTS AND DISCUSSION

The five journals studied went through the stages of selection, feasibility, and inclusion. Baby massage is one method of alternative medicine during child growth, (Roesli, 2001) mentioned that baby massage has many benefits including calming the baby, increasing the efficiency of rest (sleep) babies or toddlers, increasing the child's concentration ability, enlarging breasts. milk. produced for mother and baby, helps reduce digestive discomfort as well as emotional stress, stimulates brain and nerve development, improves intestinal motility, stimulates vagus nerve activity, strengthens the immune system Therefore massage is very effective in increasing weight, child growth and development (Roesli, 2001).

Table 1. Comparison *Experimental Grup* and *Control Group*

| Reviewer | Participant | | Intervention | | Measurement | Results | Design Study |
|------------------------------|--------------------|-------------------|--|--|---|---------|--|
| | Intervention group | Control group | Experimental group | Control group | | | |
| (Simanihuruk, 2017) | n=30 6 Month | - | Baby Massage | - | Paired sampel t-test | P<0,05 | Quasi Experimental |
| (Rizki, 2017) | n=15 6-7 Month | n=15 6-7 Month | Baby Massage + the Developmental Care Intervention (DCI) | Baby Massage + the Developmental Care Intervention (DCI) | Kuesioner Pra Skrinning Perkembangan (KPSP) | p=0,025 | Quasi experimental |
| (Rokayah & Nurlatifah, 2018) | n=10 5-6 Month | n=10 5-6 Month | Baby Massage | Baby Massage | DDST (Denver Developmental Screening Test) | P=0,01 | Quasi experimental |
| (NURSEHA & SUBAGIYO, 2022) | n=20 8-28 day | n=20 8-28 day | Baby Massage | Baby Massage | Quota sampling | P<0,05 | Pre eksperimental designs |
| Noor Cholifah, et al (2023) | n=8 6-12 Month | n=8 6-12 Month | Baby Massage | Baby Massage | Kuesioner Pra Skrinning Perkembangan (KPSP) | P <0,05 | Non randomized pre and post test with control group design |

Based on a literature review study, the authors found that of the 83 sample results, the average sample was dominated by infants with 6 months of age. Of the many literature found, most literature uses Quasi Experimental research design and measurement paired sample t-test, KPSP, DDST, and Quota Sampling with $p < 0.05$. Experimental group and Control Group using baby massage intervention.

Table 2. Therapeutic Dosage *Intervensi Baby Massage*

| Reviewer | Type of Intervention | Type of Intervention | | | | Duration Therapy |
|------------------------------|---|----------------------|---|--------------|---------------|---------------------------------|
| | | F | I | T | T | |
| (Simanihuruk, 2017) | The effectiveness of baby massage on the development of baby's weight and body length | Once a day | - | Baby Massage | 10 minutes | For 1 month |
| (Rizki, 2017) | The Effectiveness of Baby Massage on Infant Motor Development | Once a day | - | Baby Massage | 10-15 minutes | Once after bathing, for 1 month |
| (Rokayah & Nurlatifah, 2018) | When stimulated by touch or massage, the baby will feel the tone of the vagus nerve (cerebral nerve number 10). Massage can stimulate increased levels of gastrin and insulin absorption as a | Once a day | - | Baby Massage | 10 minutes | Every day, for 1 month |

| | | | | | | |
|----------------------------|--|-----------------|----------------|--------------|------------|---|
| | result can increase body weight. | | | | | |
| (NURSEHA & SUBAGIYO, 2022) | By stimulating the skin with gentle touching/massage, a well-behaved child will stimulate the nerves of the brain that control motor activity to promote gross motor development. | 2 times a day | Stimulus touch | Baby Massage | 10 minutes | Morning and evening before bathing, for 3 weeks |
| (Cholifah et al., 2023) | By stimulating the skin with gentle touching/massage, a well-behaved child will stimulate the nerves of the brain that control motor activity to promote gross motor development. Natural touch given to babies with massage | 1-2 times a day | - | Baby Massage | 10 minutes | Mornings and evenings, for 30 days |

Based on research that has been done, researchers found that baby massage can be done on babies with growth delay with a frequency of 1-2 times a day, with the intensity of body stimulation, with a duration of 10 to 15 minutes for 1 month and done before or after bathing.

Table 3. Mean of Study Characteristics

| Reviewer | Measurement | Group experiment | | Control group | | Significant |
|------------------------------|--|------------------|-------------|---------------|---------------|-------------|
| | | Pre | Post | Pre | Post | |
| (Simanihuruk, 2017) | Paired sampel t-test | 5.2 ± 7.5 | 6.4 ± 8.7 | - | - | P<0,05 |
| (Rizki, 2017) | Pre-Screening Developmental Questionnaire (KPSP) | 53.3 ± 33.3 | 6.7 ± 93.3 | 33.3 ± 6.6 | 26.7 ± 66.7 | p=0,025 |
| (Rokayah & Nurlatifah, 2018) | DDST (Denver Developmental Screening Test) | 1.06 ± 1.67 | 0.56 ± 0.56 | 0.70 ± 1.50 | 0.40 ± 0.50 | P=0,01 |
| (NURSEHA & SUBAGIYO, 2022) | Quota sampling | - | - | - | - | P<0,05 |
| (Cholifah et al., 2023) | Pre-Screening Developmental Questionnaire (KPSP) | 43.75 ± 6.25 | 37.5 ± 12.5 | 25 ± 25 | 18.75 ± 31.25 | P<0,05 |

Based on the table above, when compared to the control group, the intervention group showed a good and significant improvement

Discussion

Baby massage is a manual therapy method that manually manipulates soft tissues to improve the baby's health. The benefits of baby massage according to (Maharani et al., 2019) are to encourage the development of muscle structure and flexibility, contributing to the

development of physical abilities, intelligence and psychomotor skills of infant movements. One of the other benefits of baby massage that is done regularly is that the baby's motor skills increase rapidly. Baby massage will accelerate motor development because baby massage is a touch therapy or stimulation that is useful in stimulating motor development.

Based on the review literature, the authors show that infant massage is effective for infant development mostly in infants aged six months. Giving baby massage for 1 month, 10-15 minutes, 1 to 2 times a day, before / after bathing.

Parental massage can stimulate connections between nerve cells in the baby's brain, which will be the foundation in thinking, feeling and learning. Baby massage can directly stimulate the growth and development of babies and young children. Because massage can guarantee constant physical contact to maintain a sense of security in infants and toddlers, and strengthen the bond of affection between parents and children (Winarsih et al., 2022)

Baby massage can improve blood circulation so that the supply of oxygen throughout the body is regular. Baby massage is one type of tactile stimulation. Tactile stimulation is the most important type of sensory stimulation for optimal child growth and development (Winarsih et al., 2022). Based on the results of the evaluation of infant massage conducted for 1 month in the intervention group, fine motor development increased, because the stimulation by touching the skin / gently rubbing the baby's skin, will stimulate the child's nerves. brain to control motor skills activity so as to improve motor development.

Babies who receive regular stimulation such as baby massage will develop faster than babies who receive little or no stimulation. The provision of stimuli also contributes to achieving the best growth in the fields of vision, hearing, language, social interaction, intelligence, control of gross and fine movements, balance, coordination, and the development of independent abilities.

A baby's motor development begins with premier or primitive reflexes that have been present since the newborn, called primary or primitive reflexes. Primary reflexes reflect the activity of the brainstem and basal ganglia. Some reflex groups are symmetrical and disappear around 4 to 6 months of age, suggesting normal maturation of inhibitory effects or decreased brain decline. Another supporting theory from (Priyanti & Setyowati, 2022) is that some of these reflexes disappear after a while, these reflexes are called primitive reflexes / suckling baby reflexes. Primitive reflexes are physiological/natural and automatically appear and disappear with age because they are temporary. These reflexes are also known collectively as transient reflexes.

Gentle massage of the baby's arms, legs, and body can help improve the baby's ability to crawl, stand, and walk. In addition to stimulating muscles, baby massage also helps develop fine motor skills such as the ability to reach and hold objects

The theory proposed by (Maharani et al., 2019) states that touch or massage in infants can meet their basic needs. According to this theory, babies have three main needs that must be met by parents, namely physical-biological needs for brain growth, sensory systems, and motor. In addition, they also have an emotional need to receive affection that is important for the development of their intelligence. Sensory stimulation during massage has been shown to stimulate growth and improve the baby's nerve development.

Factors that cause late growth and development at the age of 3 to 12 months can vary, can be several causes including genetic or chromosomal problems, health disorders or disorders,

malnutrition, lack of stimulation and interaction, and an environment that does not support baby growth and development (Artale et al., 2023)

CONCLUSION

Baby massage is a manual therapy method that manually manipulates soft tissues to improve the baby's health. According to the results of the study, it was found that doing massage on children can have a positive effect on their motor development with statistical significance $p < 0.05$. In addition, massage can also help children to feel calmer and make their sleep more efficient, improve their concentration ability and help overcome digestive disorders and emotional stress. There are also other benefits such as stimulating brain and nerve development, improving bowel muscle movements, stimulating vagus nerve activity and strengthening the immune system. Therefore, massage is very effective in increasing weight and encouraging children's growth and development.

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