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Mother's Ability to Massage her Baby with Technical Guidance from Medical Personnel: A Systematic Review

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Abstract

BACKGROUND: Baby spa is useful for baby's growth and development. The previous research has shown that when the baby is massaged by the mother, a bond is formed between the mother and the baby compared to other people who do the massage. However, in its implementation, baby spas are often carried out by health workers.

AIM: The purpose of this research is to determine the mother's ability to do baby massage with the guidance of medical personnel.

METHODS: This method of writing systematic reviews refers to the Preferred Reporting Items for Systematic Reviews guidelines. Articles were searched in several databases ; ScienceDirect, EBSCO, PubMed, Scinapse, Google Scholar from 2011-2021. The search strategy uses the keywords Infant OR Infant Preterm OR Very Low Birth Weight infants AND Massage OR Oil Massage AND Attachment AND Growth.

RESULTS: The results show the chances of success of mothers doing baby massage with the help of medical personnel, the baby massage learning media used were baby phantoms, brochures, pamphlets, and baby massage videos, and the frequency of massage for 10–15 min each time the massage. The results obtained after the mother did the baby massage were the increase in body weight, body length, arm circumference of the baby, better bonding between mother and baby, improvement in mother's mood, and increase in mother's positive attitude in caring for the baby.

CONCLUSION: This study proves that the role of medical personnel in training baby massage to mothers is proven to be effective in increasing the ability of mothers to do baby massage.

Introduction

Babies are children with an age range of 0–12 months [1]. At this time, there is a rapid growth so that it is a good opportunity for parents to strive for optimal baby growth [2]. The first 1000 days of life – the time span roughly between conception and a person's second birthday – are a unique period of opportunity when the foundations for optimal health, growth, and neurodevelopment across the entire life span are laid [3]. Millions of children fail to fulfill their developmental potential and suffer mental health problems globally. Evidence is mixed as to whether growth after the first 1000 days of life affects intellectual function and mental health in school-age children [4].

Developmental delays are common in childhood, occurring in 10–15% of preschool children. Global developmental delays are less common, occurring in 1–3% of preschool children. Developmental delays are identified during routine check-ups by primary care physicians or when parents or preschoolers raise concerns [5]. The first 5 years of a child's life is a golden period of their development, contributing to their future learning skills and social and emotional abilities due to rapid progress in physical and development [6]. Infant sleep has dynamic trajectory, developmental changes that occur during this period, and interactions with other developmental domains [7]. Adequate sleep quantity and good sleep quality are associated with positive characteristics of children, which further underline their importance in promoting well-being in children [7]. To support growth, baby massage is carried out. Massage is effective manner to improve sleep quality, gross and fine motor development, in infants aged 3–6 months [9].

Baby massage has many benefits for baby's growth such as increasing baby's weight, body

length, arm circumference, baby's sleep quality, decreasing bilirubin levels, reducing mother's stress level in caring for babies, and forging bonds between parents and babies [10], [11], [12], [13], [14], [15], [16], [17], [18], [19]. It is hoped that baby massage can be one of the routine care interventions that can be carried out by mothers [20], [21]. Massage that is done regularly on babies is used to massage the legs, abdomen, chest, hands, back, and stretching movements can increase baby's weight. Massage triggers a nerve action potential that stimulates the vagus nerve [22].

Some research on infant massage is currently still dominated by medical personnel such as midwives, nurses, and therapists [23], [24], [25]. The role of health workers is to provide education and practice baby massage for mothers to stimulate the growth and development of infants. This intervention can be integrated with maternal and child health programs in primary health-care facilities [26]. The low knowledge of mothers about the benefits of baby massage is one of the things that make a mother unable to do baby massage [20]. Research has shown that when the baby is massaged by the mother, a bond is formed between the mother and the baby compared to other people who do the massage [11], [14], [16]. Baby massage is very appropriate to be one form of pattern of care for babies that can be done by parents [20].

Mothers were instructed in breastfeeding by nurses or midwives but sometimes they did not receive infant massage education at the hospital where the study was conducted. Infant massage is a simple, inexpensive, and effective technique for supporting infant growth and development. It is accepted as a new practice which is gradually gaining popularity by being applied to babies and their mothers; it can be done independently. However, many mothers do not know that they can communicate with their babies by touch because they think that they can easily injure their babies. The mothers should be instructed to use various interactive methods such as touch, visual, and auditory contact. The nurse has a responsibility not only for the initiation of the mother's attachment to the infant but also for its maintenance. This is especially true for mothers who are very young and primiparous and who may need more support [14]. The use of baby spa requires coordination between the midwife and other health workers. Midwives must also provide health education about baby spa to stimulate baby's growth and development so that babies can grow optimally [27].

Based on this background, this study systematically reviews the mother's ability to perform infant massage with the guidance of medical personnel. This research is useful in supporting evidence of infant massage training by medical personnel if good results are obtained while maximizing the role of parents independently in managing and monitoring the health of their children.

Methods

Study design and search strategy

The writing of systematic reviews refers to the Preferred Reporting Items for Systematic Reviews guidelines. The search strategy for this systematic review is to identify articles that are relevant to the purpose of the study using five search databases. The five databases and keywords used, as shown in Table 1. These five databases are used as search engines to find articles that qualify for review. Some of the articles found from the database include ScienceDirect (28 articles), EBSCO (20 articles), PubMed (58 articles), Scinapse (38 articles), and Google Scholar (86 articles). Total number of articles is 230 articles.

Table 1: Search strategy and study selection criteria

Search strategy	
Database	Search strategy
ScienceDirect, EBSCO, PubMed, Scinapse, and Google Scholar	Infant OR Infant Preterm OR Very low birth weight infants AND Massage OR Oil Massage AND Attachment AND Growth
Study selection criteria	
Inclusion criteria	Exclusion criteria
English articles from 2011 to 2021 Baby massage is done by the mother with the guidance of medical personnel Massage is performed on normal, premature and low birth weight babies There is data to know the baby massage learning media used, the frequency of baby massage, and the output produced after parents do baby massage	Baby massage by medical personnel Articles that are not in English Incomplete manuscript regarding massage time and massage amount

Study selection, outcome measure, and data extraction

The article extracted was first selected with inclusion and exclusion criteria. Inclusion and exclusion criteria data are described in Table 1. Assessment of article quality is carried out through the Joanna Briggs Institute Critical Appraisal Checklist. All systematic reviews incorporate a process of critique or assessment of research evidence. The purpose of this assessment is to assess the methodological quality of a study and to determine the extent to which a study has addressed possible biases in its design, behavior, and analysis. All papers selected for inclusion in the systematic review (i.e. – those that met the inclusion criteria described in the protocol) required rigorous assessment by two critical raters [28]. In this research, quality of article rated by seven authors. Non-conformance of the results resolved by discussion and consensus.

Data abstraction and synthesis

Strategy search articles using the PICO method, P (Population) normal babies, premature babies, low birth weight babies (LBW). I (Intervention) baby massage, C (Comparison) skin-to-skin care, and O (Outcome) growth, bond between mother and baby. The data are then arranged in a table containing the author, year, sample, design, media, frequency, massage, and output/result.

The number of articles included in the review i manuscripts, namely: (1) Gürol and Polat (2012), (2) Fallah *et al.* (2013), (3) Kumar *et al.* (2013), (4) Vicente *et al.* (2017), (5) Zhang and Wang (2019), and (6) Lotfalipour *et al.* (2019).

Results

The results of the systematic review were obtained from the study identification of 230 articles from database searches ScienceDirect (n = 28), EBSCO (n = 20), PubMed (n = 58), Scinapse (n = 38), and Google Scholar (n = 86), issued as many as 83 of the same articles, screened articles after duplication of 147 articles, issued articles after reading the title and abstract as many as 76 articles, and then read the full text of 71 articles and chose six articles whose massage was carried out by mothers with the guidance of medical personnel.

Table 2 shows the result of critical appraisal. All research shows that it has good qualities to be included in a systematic review.

The PRISMA results in Figure 1 show that after 230 articles screened, only 6 articles can be included in the criteria and continue the review process.

Table 3 shows the output of mother's ability to massage her baby with technical guidance from medical personnel.

Table 2: JBI critical appraisal checklist

ria	1	2	3	4	5	6
Is it clea the study what is the "cause" and what is the "effect" (i.e., there is no confusion about which variable comes first)?	Y	Y	Y	Y	Y	Y
Were the participants included in any comparisons similar?	Y	Y	Y	Y	Y	Y
Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	Y	Y	Y	Y	Y	Y
Was there a control group?	Y	Y	Y	Y	Y	Y
Were there multiple measurements of the outcome both pre and post the intervention/exposure?	Y	Y	Y	Y	Y	Y
Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	Y	Y	Y	Y	Y	Y
Were the outcomes of participants included in any comparisons measured in the same way?	Y	Y	Y	Y	Y	Y
Were outcomes measured in a reliable way?	Y	Y	Y	Y	Y	Y
appropriate statistical analysis used?	Y	Y	Y	Y	Y	Y

JBI: Joanna Briggs Institute, description Y: Yes, N: No, U: Unclear, N: Not applicable.

Assistance of medical personnel such as midwives, nurses, or other medical personnel in helping mothers does baby massage based on the synthesized articles, namely, medical personnel conducting baby massage training to mothers. Baby, one of the methods used, is by way of demonstration. Medical personnel directly practice how to do baby massage using baby phantom media. In addition to baby phantom media, medical personnel also provide printed media such as brochures and pamphlets and baby massage videos [10], [14], [15], [16].

The duration and duration of the baby massage intervention that can be done by parents based on the six articles analyzed, the average frequency of massage performed by mothers on their babies is 10–15 min each time they do massage [10], [14], [15], [16], [29], [30] which can be done at least once a day [14] or a maximum of 4 times a day [30] depending on the condition of the baby (normal, premature, and LBW). The results obtained after the mother did baby massage with the guidance of medical personnel, namely, the occurrence of weight gain [10], [29], [30], baby's body length and arm circumference [10], the occurrence of a better bond between parents and babies, as well as an increase in the mood of mothers who have premature babies [14]. Where from six

Table 3: The output of mother's ability to massage her baby with technical guidance from medical personnel

Author (Year)	Sample	Design	Media	Massage frequency	Output/results
Gürol and Polat (2012) [14]	117 mothers who have normal babies Intervention 60 mothers, Control 57 mothers	Quasi experiment	Baby phantoms, baby massage videos, brochures	15 min daily for 38 Days	The bond between mother and baby in the intervention pre-test value 88.12 ± 15.19, post-test value 90.87 ± 10.76 with p = 0.01 control pre-test value 84.28 ± 17.60 and post-test value 85.10 ± 15.50 p = 0.36
Fallah *et al.* (2013) [29]	54 premature babies with LBW Intervention 27 babies, control 27 babies	Randomized controlled trials	No data available	10 min, 3 times a day, morning, afternoon and evening during 14 days	Weight gain measurement in the 1st month in the intervention group = 2334 ± 135 Control = 2201 ± 93, p = 0.04
Kumar *et al.* (2013) [30]	48 premature babies with LBW, 25 infant interventions, control 25 babies	Randomized controlled trials	No data available	10 min 4 times a day, for 28 days	Weight gain in the intervention group = 4761.7 ± 47.9 Control group = 334.9 ± 46.4, p = 0.05
Vicente *et al.* (2017) [15]	194 pairs of healthy mothers and babies, intervention 97 mothers and babies, controls 97 mothers and babies	Experiment	Baby phantom	10–15 min each massage session until baby is 12 months old	There was a better bon ween mother and baby and mothers had more positive attitudes than mothers in the control group
Zhang and Wang (2019) [10]	112 premature babies Intervention 52 mothers, Control group 26 mothers	Experiment	Baby spa video	15 min, 2 times a day for 2 weeks	Weight gain, length/height, arm circumference F = 41.151, 6.621, 24.158, respectively; p < 0.001)
Lotfalipour *et al.* (2019) [16]	52 mothers with premature babies Intervention 52 mothers, Control 26 mothers	Experiment	Baby phantoms, pamphlets, baby massage videos	15 min daily for 5 days	Maternal mood scores increased significantly in the intervention group (p < 0.001), the control group (p = 0.02)

LBW: Low birth weight.

articles, two articles assessing weight gain [29], [30], one article assessing baby's weight gain, length, and arm circumference [10], one article assessing the bond between mother and baby [14], one article assessing mood improvement in mothers of premature babies [16], and one article assessing that there is a better bond between mother and baby and mothers have a more positive attitude in caring for babies than mothers who do not do baby massage [15].

Discussion

The guidance of medical personnel in helping mothers to do baby massage has been proven to be effective in increasing the mother's ability to do baby massage. The benefits obtained are equally effective when compared to baby spa carried out by health-care personnel. In one study, infant massage appeared to be a viable option for teaching paternal parenting sensitivity. While reporting a brief intervention, the study showed that participating fathers were helped by increasing their feelings of competence, role acceptance, partner support, attachment, and health and by reducing feelings of isolation and depression. Baby massage classes seem to offer dads a positive experience to meet other dads and enjoy the opportunity to share their father's experiences [31]. Baby massage functions include strengthen and improve the interaction between children and adults so as to improve their health. This cost-saving technique can provide a simple but effective way to support early affective bonding; in this way, it can accompany the existing process and maintain the dyad during the expected developmental challenges, if necessary. Especially in complex intervals such as the postpartum period, this practice can be very important, as it can help couples deal with mutual adjustment needs, facilitating the process of regulation and establishment of the sleep-wake cycle. In addition, an emotionally intense "guided" approach to babies can reassure mothers, who often perceive newborns as fragile and afraid to touch them, making them more confident when holding their babies. From this perspective, infant massage is a valuable resource in terms of primary prevention, that is, in terms of interventions aimed at maintaining and enhancing existing resources in the family system, as it can be offered as enriching support also in the absence of adult psychopathology [32]. Parents all over the world have been massaging their babies for centuries. The popularity of baby massage in Western countries is a relatively recent phenomenon; the trend may have developed due to the perceived health benefits. In some Eastern cultures, the practice of baby massage is passed down from one generation to the next. In Western culture, new parents are more likely to attend a local baby massage class with an instructor. Whatever the form of exercise, it is important to know that there is no potential to harm the baby [33].

One of the learning strategies carried out by medical personnel is to use more than 1 learning media, several studies in the intervention combine one media with another [14], [16]. For example, giving baby massage training interventions with baby phantoms, baby massage videos, and brochures [14]. Giving media more than 1 goal is to make it easier for mothers to learn to do baby massage besides that every mother is different in understanding and liking a learning media, some are happy with reading, some are happy through hearing (audio), and some are happy with learning media only through videos. The ability to deliver messages for each media is different [34] so that medical personnel need to discuss with the mother before giving baby massage learning media. Women with a better level of empowerment will have a lower chance of experiencing infant mortality. Women's empowerment is associated with improved child nutrition, and both underpin the achievement of multiple sustainable development goals [35].

The ability of mothers to massage babies with the guidance of medical personnel has proven to be effective against weight gain in premature babies and LBW babies. Related to the baby's digestive function and hormones, such as gastrin and insulin [11],[25], [36], [37], baby massage can cause baby being hungry quickly and breastfeed more actively and more often. This will stimulate an increase in the secretion of the mother's prolactin and oxytocin hormones which will result in more milk being produced [20].

One of the benefits of baby massage that is done by the mother to her baby is the formation of a bond of affection between mother and baby. The gentle touch and loving gaze of a mother towards her child will be able to flow the strength of the inner bond between them [16]. This becomes the basis for children's growth and development in forming effective communication patterns. The formation of an effective communication pattern from an early age is a determinant in the formation of a child's character who is of good character and self-confidence. Baby massage that is done by the mother will further increase the bond that has been formed since the baby is still in the womb. Baby massage is an expression of love between mother and child through touching the skin which has a very extraordinary impact. Massaging the baby regularly is one way to build a bond with the baby which has an impact on the growth of a healthier baby and makes the mother feel happy and happy in taking care of the baby [15], [16], [38].

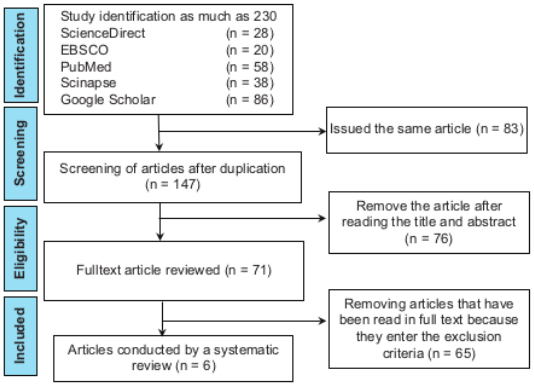

Figure 1: Preferred Reporting Items for Systematic Reviews flow diagram

These results indicate that the chances of mothers in giving massage to their babies. If the mother has health problems, this action has the opportunity to be carried out by the husband as a substitute [20], [39].

Conclusion

This study proves the role of medical personnel in teaching and training baby massage to mothers is proven to be effective in increasing the ability of mothers to massage babies using baby phantom media, videos, brochures, and pamphlets which have an impact on weight gain, bonding between mother and baby, mood enhancement mothers, as well as increasing the mother's positive attitude in caring for the baby.

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