A Meta-Analysis of the Efficacy and Safety of Using Oil Massage to Promote Infant Growth

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Problem The synthesizing evidence on the effectiveness of using oil massage to promote the growth of infants is still lacking. This paper aims to determine whether oil massage can promote the physical and neurobehavioral growth of infants according to variables and to evaluate whether oil massage is safe for infant skin.

Eligibility Criteria: The randomized controlled trials, clinical controlled trials and quasi-experimentally designed trials published prior to or in 2014 were searched according to predetermined inclusion criteria and exclusion criteria in Medline, PubMed, Ovid, the Cochran Library, and Chinese databases, including the China National Knowledge Infrastructure, Wan Fang database and VIP journal integration platform. Besides, the grey lectures were searched as well through Open Grey, GrayLIT Network and Clinical Trials.gov.

Sample: Eight studies out of 625 retrieved articles were eligible for inclusion.

Results: Oil massage increased the infant weights, lengths and head circumferences. However, it did not promote a significant advantage in neurobehavioral scores or cause a significant risk of adverse skin reactions.

Implications: The core mechanisms and standard procedures of oil massage as well as the preferred oil type should be the focus of future nursing practice and research.

Conclusions: Oil massage may effectively improve the physical growth of infants, and it presents a limited risk of adverse skin reactions. However, the relationship between neurodevelopment and oil massage requires further study.

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OIL MASSAGE IS a traditional practice in many countries, especially on the African and Asian continents, Indian subcontinent and Mediterranean region, which have used oil massage as part of newborn care for hundreds of years. The practice of oil massage has also gained favor in the neonatal intensive care units of developed countries (Ahmed et al., 2007; Darmstadt & Saha, 2002).

In the western world, however, parents and nurses are only taught massage to promote the development of low-risk babies who do not have a low birth weight (Underdown, Barlow, Chung, & Stewart-Brown, 2006), which may be caused by a lack of exact information on the underlying mechanisms of an effective infant massage. In addition, there were no fixed guidelines describing the exact methodology of infant massage. The practice of infant massage varies across the world, and western cultures have adapted certain traditional practices from eastern cultures. For example, although the International Association of Infant Massage teaches the use of nurturing touch and respectful communication in its training, other methods of training may emphasize yoga-based movements and flexibility (Abdallah, Badr, & Hawwari, 2013).

Background

Over the past decade, a number of researchers have explored the effects of oil and massage on infant growth or

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development during postnatal period. Investigations into the effects of infant massage have mainly been conducted on preterm infants and have focused on the infants' physical growth and neurodevelopment, activity and motility levels, hospital stay length and sleep behavior, among other outcomes. Massage has been recommended as an intervention for promoting the growth and development of preterm and low birth weight infants in these studies (Abdallah et al., 2013; Diego, Field, & Hernandez-Reif, 2005; Ho, Lee, Chow, & Pang, 2010; Kelmanson & Adulas, 2006; Procianoy, Mendes, & Silveira, 2010; Vickers, Ohlsson, Lacy, & Horsley, 2004). Other investigations into the effects of oil massage have suggested that all types of oil act as a source of warmth and nutrition when applied to infant skin, and they have the potential to prevent infection and body temperature loss by improving the skin barrier function and reducing the incidence of late hypothermia. As a result, oil appears to offer a number of potential benefits for neonatal growth (Darmstadt et al., 2002; Darmstadt et al., 2004; Darmstadt et al., 2005; Lee, Gibson, & Simmer, 1993; Soriano, Martinez, & Jorge, 2000). In addition, an early survey suggested that massage could reduce infant hospital stays and hospital costs (Field, Hernandez-Reif, & Freedman, 2004).

However, a few studies have explored the effects of combining oil with massage for infants, and the attitude towards oil massage has not been consistent. There is still a paucity of integrated evidence on the efficacy and safety of oil massage for infants. Therefore, we performed a meta-analysis to assess the influence of oil massage on infant to provide integrated evidence for neonatal nursing.

The Review
Aims

To determine whether oil massage can promote the physical and neurobehavioral growth of infants according to variables such as weight, length, head circumference and neurobehavioral scores and to evaluate whether oil massage is safe for infant skin based on the incidence of adverse skin reactions.

Search Method

Relevant studies were identified by searching the following electronic databases for articles published up to December 2014, the last search was performed on 31 December 2014: Medline (1950–2014), Pubmed (1865–2014), Ovid (1993–2014), the Cochran Library (1990–2014) and Chinese common databases, including the China National Knowledge Infrastructure (CNKI) (1979–2014), WanFang database (1990–2014) and VIP journal integration platform (1989–2014). In addition, grey literatures were searched as far as possible through Open Grey, GrayLIT Network and Clinical Trials.gov. The search words contained the various combinations of MeSH (Medical Subject Headings) and free words as follows: 'infant' (MeSH), 'newborn,' 'neonate,' 'baby,' 'massage' (MeSH) and 'oils' (MeSH). The studies were not screened based on language. All of the citations were imported to the Note Express

management software (Beijing Aegean Technologies Co. Ltd. Beijing, China) to remove duplicates and screen the literature according to the title and abstract. We then accessed the full text of relevant studies to confirm the details. Two reviewers independently performed this process, and disagreements were resolved by consensus with a third reviewer.

The inclusion criteria were formulated according to the PICOS model: (a) participants: infants from birth to 23 months of age; (b) intervention: massage combined with all types of oils (with massage referring to the manual application of moderate stress on some part of the body with a regular technique that is different from general touching of babies); (c) control: blank or massage-only (massage without oil or massage with placebo); (d) outcomes: weight, body length, head circumference, neurobehavioral scale score or adverse skin reaction; (e) study type: randomized controlled trial (RCT), clinical controlled trial (CCT) or quasi-experimentally designed trial.

The exclusion criteria of article: (a) participants: adults or animals; (b) intervention: only included oil or massage or general touch rather than massage or there were comprehensive interventions that included oil massage; (c) study type: not RCT, CCT and quasi-experimentally designed trials; (d) other: duplicate publication, and full texts were not available through various methods.

Search Outcome

A total of 625 articles were retrieved, including 296 studies in English and 329 studies in Chinese. First, all of the retrieved articles were imported to the Note Express management software to identify and remove duplicates. Second, 550 references were screened to remove clearly inappropriate articles according to the title and abstract. Then, the full texts of 14 articles were accessed to acquire additional details. The reference lists of relevant studies were screened using the snowball method and the grey literature was also searched. However, available studies or data were not found. Ultimately, eight studies that were published in peer-reviewed journals met the inclusion criteria of this meta-analysis (Figure 1).

Quality Appraisal

Two authors independently performed a quality assessment, and disagreements were resolved through consultations with a third reviewer. Random sequence generation, allocation concealment, blinded participants and personnel, blinded outcome assessments, incomplete outcome data, selective reporting and other biases were used to appraise the original studies using the Cochrane collaboration tool for assessing the risk of bias.

Data Abstraction

For data extraction, two authors independently applied a checklist that was adapted from chapter 7.3 of the Cochrane