



Baby Massage and Massage Oils: Are They Safe?

Bebek Masajı ve Kullanılan Masaj Yağları: Güvenli mi?

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ABSTRACT

Massage has been practiced in infant care for many years since it creates a good mother-infant bond, contributes to the prevention of morbidity, and provides better physical development. Baby oil massage has been shown to have several benefits in neonates. However, recent studies have reported that not all oils are appropriate for baby massage. This study was conducted to discuss the results of studies on the benefits of oil massage, which can affect skin properties and functions during the maturation process of the neonate whose skin has still not fully developed, and the possible effects of oils. In the study, it was also aimed to briefly review the safety of oils used in neonate skincare or massage, the importance of knowing the properties of herbal oils before choosing or using a particular one for a massage, and the role of professionals and parents. Moreover, up-to-date information on the use and effects of different herbal oils for massage of preterm and term babies was provided. Studies show that more research is needed to clearly answer which herbal oil is more effective and safer for infant massage.

Keywords: Massage, massage oils, safety, neonate massage

ÖZ

Masaj uygulaması iyi bir anne-bebek bağı oluřturması, morbiditeyi önlemeye katkısı ve bebeğın daha iyi gelişimini sağlaması nedeni ile bebek bakımında yıllardır kullanılmaktadır. Yenidoğanlarda bebek yağı ile yapılan masajının birden fazla faydası olduđu gösterilmiştir. Ancak son yapılan arařtırmalar, tüm yağların bebek masajı için her zaman uygun olmadıđından da söz etmektedir. Bu makale de amaç, hala cildi tam olarak gelişmemiş yenidoğanın cilt özelliklerini ve işlevlerini etkileyebilen, yağ masajının faydalarını, yağların olabilecek etkilerini tartışmaktır. Ancak yenidoğan cilt bakımında veya masajda doğal olarak kullanılan her şeyin çocukları için iyi veya güvenli olmadığını, masaj için belirli bir bitkisel yağ kullanılmadan önce bitkisel yağların özelliklerinin bilinmesinin önemini, profesyoneller ve ebeveynlerin rolünü kısaca gözden geçirilmiştir. Makale, farklı bitkisel yağların preterm ve term bebeklere masajda kullanımları, etkileri hakkında güncel bilgiler sunmaktadır. Yapılan çalışmalar, yenidoğanlarda masaj sırasında hangi bitkisel yağın daha etkin ve güvenli olduğunu açıklamak için daha fazla çalışmaya ihtiyaç olduğunu göstermektedir.

Anahtar kelimeler: Masaj, masaj yağları, güvenlik, yenidoğan masajı

INTRODUCTION

The sense of touch is one of the three senses that enables the child to perceive the environment and the outside world in the neonatal and infancy period and is a prominent sense compared to the senses of sight and hearing. During neonate and infancy period, the child perceives its environment with the help of this sense, establishes communication through it when it is picked up, caressed, and touched, and gets to know

its environment. Appropriate stimulation of the baby's senses by touching affects its psychosocial development positively (1). To stimulate the sense of touch, people use massage, which is a practice that is as old as human history, and it is one of the most effective methods. It has played an important role in maintaining health and treating diseases in different cultures for centuries (2–5).

The massage was first used as an intervention in China in 2760 BC. It was used in various cultures for both treating

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medical conditions and its beneficial effects on beauty. With the modernization of massage and techniques in the early 21st century, it began to gain popularity in North America. Massage for the term and premature babies have attracted the attention of many researchers and clinicians since the 1980s. Yet, research evidence on its benefits is limited (6).

The word massage is defined as the manipulation of body tissues to maintain health and reduce pain and stress. It includes many techniques, such as patting, kneading, and applying pressure to certain points. Infant massage, on the other hand, is defined as the application of “tactile stimulation by human hands” or “medium pressure to the whole body of the neonate”. In addition to these, some different interventions can usually be combined with baby massage. For example, kinesthetic stimuli such as a gentle touch on the baby’s body, opening and closing of arms and legs can be counted among them (3,7,8).

Massage is also used as an effective communication tool that strengthens the emotional bond between baby and mother and supports psychosocial development (9,10). When massage is applied regularly to babies, it strengthens the circulatory, digestive, and excretory systems, which do not develop adequately at birth, and contributes positively to the strengthening of muscle coordination and the physical and spiritual development of the baby (7,11–13).

While massage increases weight gain, accelerates growth, improves sleep quality, and reduces bilirubin that causes jaundice in term infants (14,15), in preterm infants, it provides benefits, such as better weight gain, less response to pain, and increased interaction with parents. Existing studies in the literature have not shown any adverse effects of massage (4,16–18). Some studies have shown that babies gain weight and even develop better interactions with their mothers, no matter who applies the massage (4,11,12), and that using oil in massage has some positive effects (18–20). However, research about infant massage and the oils used is limited (21–26), and more evidence-based, randomized studies are needed.

Today, some companies claim that the oils they produce are useful, without many studies and clinical data, while the studies that have been conducted so far have limited subjects and the study design or randomization of some of them seems inadequate. In addition, the oils used in many studies have not been specified whether they are processed or refined products. The aim of this review is to present the importance of using healthy and safe oils while neonates are being given a massage and supply research evidence from studies conducted in this field. Thus, it will be possible to increase the benefits of massage application, which we think is beneficial, and to protect babies from unwanted harm.

Can baby massage be applied safely?

Aromatherapeutic benefits can be achieved by combining manual massage techniques with the beneficial effects of essential and carrier oils (27). In addition to providing the desired aromatherapeutic effect in the massage, the safe application of the massage is one of the important application goals. The key element to ensure this safety is the selection of appropriate oil (28). The use of oils, such as sunflower oil, evening primrose oil, borage seed oil, linseed oil, and olive oil, is generally recommended for infants and children. Due to its high permeability, neonate skin has unique absorption properties against locally applied agents. Due to the incomplete development of the stratum corneum in the early neonatal period, the absorption of the applied drugs and the loss of water from the skin can be high, and it is quite sensitive (29,30). When all these conditions are considered, the good selection and safety of the oils used in baby massage gain importance in baby health.

During massaging, it is not only necessary to choose appropriate oil but also to take all safety precautions for the baby. For this reason, it is necessary to check whether there are signs of fever or illness before starting to give a massage to babies. If the baby has been vaccinated in the last 72 hours, it is not recommended massage the baby during this period to avoid disrupting the action of the vaccine. If there is any doubt about the baby’s health, it should be investigated, and the massage should not be applied without the approval of doctor. It is appropriate to perform body massage in a warm room, when the baby is calm, awake, and active, one to two hours after feeding and for a continuous period of fifteen to thirty minutes. Before starting the massage, parents or the people who will give the massage should always have clean hands and short nails and take off their jewelry. Oil massage should be avoided in summer if the baby has Miliaria rubra. Oil massage should be done before bathing in summer and after bathing in winter (31).

To prevent possible falls or accidents, babies should be massaged on the floor, especially when they grow up and can move more easily. Babies should not be left alone in high places.

For a parent/ practitioner to make the baby happy to have a massage, it is necessary to ask permission from the baby before starting the massage and to prepare and encourage the baby by talking and touching it.

What is the best option for baby massage oils?

There have been a lot of controversy and conflicting opinions on what is the safest oil for baby massage lately. It is observed in the media and literature that baby massage is practiced in many different cultures around the world and that oils used in the past have been traditionally preferred in most cases (29). Traditions can also play a role in determining the choice of oil used. In



India, mustard seed oil has been used largely for massage but has been subsequently shown to potentially harm the skin (29–31).

Recent research has shown that not all oils are suitable for baby massage. Before recommending or using a particular herbal oil for baby massage, the composition of herbal oils should be well known, professionals and parents should be warned that even if the oils are natural, they may not be good or safe for children (29–31).

There is little information on when to apply a massage in preterm babies. Moderate pressure applications are often used in preterm infants to avoid unnecessary and uncomfortable tactile stimuli. Some studies suggest the use of oil during massage to further increase the benefit of massage (7,31–33). There is even a suggestion that the use of the same type of oil constantly may be beneficial (34). In a study evaluating the effects of different oil types, “sesame, mustard, mineral, and vegetable oils” were used, and it was determined that “sesame oil” showed more significant changes. Mustard oil is not recommended, and it is evaluated that more studies on these oils are needed (33,35).

Although the effect of massage with or without using oil on the baby’s weight gain is not clear, recent studies have shown that massage with essential oils provides oil (lipid) absorption through the skin, and the weight gain in massage with oil (olive oil) is higher than that without oil (32,33,35). It is seen that massage contributes increasing blood circulation and oxygen transport, protection of the body against infections, and regulating body temperature (32).

Essential oils - Are they beneficial or harmful?

Essential oils are volatile substances that are usually colorless or light yellow, with an intense smell and oily consistency, soluble in oils, alcohol, ether, or chloroform (36). The use of essential oils on neonate skin should be avoided during the massage as they are very strong. Only an aromatherapist with specific knowledge in the field can use essential oils on the skin of babies and children. This practice can usually be done when the baby is three months old. It is also very important for the practitioner to understand the differences between the skin of a full-term baby and the skin of a premature baby (37).

Compared to simple massage, oil massage provides a decrease in motor activity, a decrease in stress behaviors, an increase in vagal activity, and an increase in salivary cortisol levels (7,31). In the early attachment process in the mother-infant relationship, the baby needs to smell its mother. Heavy-smelling oil can prevent the baby from smelling its parents and can be harmful to the early attachment process. The use of any heavily scented oil is therefore not recommended. An unscented product should be used to avoid confusion in the baby.

In addition, although the use of sage oil (apple oil) is recommended for babies’ stomachache/gas pain (colic), it has been observed that negative respiratory system or central nervous system symptoms or intoxication may develop as a result of accidental oral intake of these products by children or their misuse (38–42).

Apart from the issues mentioned above, the production of oils to be used in massage and oil processing and refining methods is another important component of choosing oil for skincare. The cold pressing method has been the preferred extraction method as it uses no heat or chemicals, preserves beneficial lipids, and limits irritating by-products (33). Although the topical application of cold-pressed oils seems safe, side effects, such as burning on the skin, erythema, or allergic reaction can be seen in some cases. It has been reported that herbal oils support allergic contact dermatitis in some individuals, and essential oils have a higher incidence of creating these problems than cold-pressed fixed oils (32,33).

Many studies have examined the effects of natural oils in neonatal skincare applications to help maintain and improve the integrity of the immature skin barrier and have obtained valuable results. Delicately-selected natural, cold-pressed oils can be used in addition to or in place of other conventional moisturizers to provide subcutaneous hydration and improve skin barrier function. Generally, small doses of oil (2-4 mL per application) massage methods have been used two to four times a day for specific skin areas or whole-body for neonate skincare (32,33).

When using massage oils, the oil should be tested for sensitivity to avoid allergic reactions. A certain minimum amount of oil mixture should be applied to an area where possible reactions can be observed for 24-48 hours for high sensitivity. If redness, itching or swelling is observed after application, the tested oil/oils should not be used (43,44).

An oil that is considered to have ideal natural emollient properties should be anti-inflammatory, antimicrobial, barrier-repairing, low irritant, or non-allergic, readily available, and economical (33). Now, let’s examine the oils that can be beneficial in case of use and can be used without harm during a massage, and some oils that are thought to be harmful.

Mineral oils

Mineral oil is a petroleum-based product that is not absorbed by the skin and forms a barrier on the surface. Some studies show that it may provide some benefits, especially in maintaining hydration and reducing infection, but it does not allow the skin to “breathe” and is not nutritionally valuable to the skin as it does not contain vitamins (45). Besides, mineral oils can have a strong artificial odor that can mask the natural scent



of the mother/baby. Although there are some studies on mineral oils, they do not recommend using mineral oil for baby massage. In a comparative study, coconut oil massage resulted in a significantly greater rate of weight gain and increase in height than mineral oil and placebo in the preterm infant group. There was no neuro-behavioral differences between the groups in term babies (46).

Olive oil

Olive oil has been used for care purposes since ancient times as its external application affects skin elasticity and protects against UV rays. In ancient Greece, massage with olive oil was used as an analgesic for therapeutic purposes and to prevent sports injuries.

Olive oil is shown as the best choice, especially for baby skin. Considering the positive effect of olive oil massage on weight gain in premature babies, it is recommended that nurses should use oil in infant massage in neonatal units (24,44). However, recent studies have shown that oleic acid in olive oil delays the healing of the skin's protective layer (skin barrier) in damaged skin (37), and there is limited evidence for the use of olive oil (47). On the other hand, oils with higher oleic acid content, such as olive oil, are now widely avoided for use in neonates, as they can be irritating and damaging to the integrity of the skin barrier when used as a moisturizer. More studies are needed on this topic (33).

In a randomized massage study with olive oil, sunflower oil, and no-oil groups, both oil groups were found to significantly exhibit improved skin hydration compared to the no-oil group, but the study was not found to be of clinical importance, and it was stated that more evidence was needed to recommend this type of massage. It was shown that regular external application of olive oil significantly improved the stratum corneum (48).

Sunflower oil

Organic sunflower oil has been the choice of baby massage instructors and many studies for the last 5-8 years as it has many features that make it ideal. It has almost no odor, is full of vitamins, is easily absorbed through the skin, and has no harmful effects if swallowed by the baby. Sunflower oil is rich in linoleic acid content (about 60,9%) and acts as an aromatherapy tool during the massage, nourishes the skin, is an oil with healing, moisturizing, antibacterial, regenerating, and restructuring properties, and strengthens the stratum corneum (37,44).

Fallah et al. (2013) concluded that sunflower oil massage could be used as an effective and safe intervention for weight gain in preterm newborns with very low birth weight. Some studies even suggest that sunflower seed oil is very important for preterm infant health and improves skin barrier function. Both oils should be used with more caution in preterm babies. In another study,

it was determined that even a short body massage with sunflower oil increased the weight gain of preterm infants and significantly reduced the length of stay in the Neonatal Intensive Care Unit (NICU) (25). Aziznejadroshan et al. (2020) concluded in a comparative study that coconut oil and sunflower oil massage improved weight gain in premature babies. Another study showed that therapeutic massage with sunflower oil would give better results than coconut oil (26).

Coconut oil

Coconut oil is a good choice instead of sunflower oil. It contains oleic acid, which is the same fatty acid found in olive oil, which means it can make the skin more permeable, but in a relatively low level. However, no comprehensive studies of the use of coconut oil on baby skin have been conducted, so it is difficult to strongly recommend it without a complete trial. What is clear, however, is that it is safer to use an organic, natural-based product on baby skin rather than a highly perfumed or processed product.

The findings of the study by Evangelin Sally (2017) revealed that there was a significant weight gain in low-birth-weight neonates who received a coconut oil massage. A systematic review found that topical application of coconut oil to the skin was beneficial in preterm infants, but the quality of evidence was low to moderate. There is need for randomized controlled studies with enough power, especially in very preterm and extremely preterm babies.

In a study evaluating the effectiveness of coconut oil versus olive oil massage on certain physical and physiological parameters in neonates, it was revealed that both coconut oil and olive oil massage were significantly effective in increasing weight gain, improving sleep patterns, and reducing crying in low-birth-weight (LBA) neonates compared to a control group. It is said that oil massage is safe and beneficial for very low birth weight neonates, and a significant difference in weight gain was found compared to the olive oil and the control group (50). Coconut oil massage caused weight gain in low birth weight neonates (51), as well as an increase in both weight and height compared to mineral oil and placebo (46).

Grapeseed Oil

Nayak et al. (2011) showed that grapeseed oil accelerated the wound healing process, which is related to the antibacterial, anti-inflammatory and antioxidant activity of biologically active compounds in the seed, including fatty acids and polyphenols. This oil can be used in the treatment of psoriasis, decubitus and skin itching (44,52,53).

Grapeseed oil is absolutely safe for the skin of neonates, and it can also be used for diaper dermatitis (44,52).



It does not irritate the baby if it gets into the eyes or mouth. It is easily digestible. When grapeseed oil is applied, it leaves a shiny film-like appearance on the skin. According to many experts, this special oil also contains linoleic oil and oleic oil, which are essential oils and contain some resveratrol. Grapeseed oil does not leave any residue on the skin of the baby. Therefore, the baby does not feel restless after the massage. This special oil can also be used on a baby's scalp. No allergies or side effects originating from the use of grapeseed oil have been reported. It also reduces the redness that occurs due to the constant use of diapers. Grapeseed oil and coconut oil should never be mixed for massage.

Safflower Seed Oil

Safflower seed oil is colorless, tasteless, and rich in linoleic acid. It has previously been important to see that the topical application of oils for neonatal massage affects blood lipid levels and can penetrate the skin. Although its high linoleic acid content supports the idea that its use on the skin will be beneficial for the skin barrier, there is limited clinical research into using safflower seed oil (33).

Sesame oil

It has been shown that massages containing sesame oil may have beneficial effects on neonate health, improved sleep patterns, and growth (27). It has been reported that massage with sesame oil increases sleep after massage and contributes to development (21). There is limited research into the use of this oil, thus more research evidence is needed.

CONCLUSION

It is best to avoid using any oil on the skin until the baby is at least one month old. According to our current recommendations, olive oil and sunflower oil should be avoided on the skin of a neonate. Coconut oil appears to be suitable for massage depending on its chemical structure but within the guidelines outlined above. Essential oils should be avoided for massaging infants younger than three months of age. These oils can only be used under the supervision of an aromatherapist. When applying oils for the first time, they should always be tested on the skin of the baby. Traditionally, natural plant-based oils have been used for infant massage for hundreds of years. However, more research is needed to determine when and which oil is suitable for a baby's skin, and more evidence is needed on this issue.

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