

# Massage Therapy for Infants and Toddlers With Acute Respiratory Infections: A Literature Review

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## **Massage Therapy for Infants and Toddlers With Acute Respiratory Infections: A Literature Review**

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### **ABSTRACT**

Acute respiratory infection (ARI) is a health problem that causes morbidity and mortality in Indonesia. This infectious disease most often affects infants and toddlers ranging from the upper respiratory tract to lower respiratory tract infections. One therapy that can be done by parents is massage therapy that aims to relax and overcome various health problems in infants and toddlers. Massage therapy is the initial treatment of minor ailments such as coughs, colds, and lack of appetite. This literature review aims to analyze the benefits of massage therapy in ISPA infants. The research method used by the author is a literature review using a database through Pubmed, Science Direct, Ebsco, and Google Scholar from 2009 to 2019. This article discusses massage therapy in ARI infants with upper respiratory infections and lower respiratory tract infections. Literature search results show that massage therapy provides recovery benefits for ARI symptoms such as overcoming fever, overcoming sleep difficulties, improving the immune system, improving the work of the respiratory system, improving blood circulation, increasing concentration, increasing appetite, and others.

**Keywords :** Massage Therapy, Acute Respiratory Infections, Infants and Toddlers

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**BACKGROUND**

This infectious disease attacks all age groups but the most susceptible to infection with this disease are infants and toddlers (WHO, 2014). Data on ARI incidence in 2017 in Indonesia per 1000 children under five is 20.54% (Kemenkes, 2018). ARI can be caused by microorganisms such as bacteria, A virus, host immunity, and various factors that interact with each other like Aspiration (Widoyono, 2011). Symptoms caused by ARI such as cough and runny nose, sneezing, accompanied by fever and red throat (Irianto, 2015). Symptoms peak within 1 to 3 days and generally improve in the first week but if a cold cough for more than 14 days without treatment can develop into a lower respiratory tract infection resulting in pneumonia with symptoms of rapid breathing frequency, chest retraction to the risk of death of the child (Morris, 2009). Recovery of bodily functions due to ARI symptoms requires treatment such as analgesic and antipyretic symptomatic drugs (Soebdiyo, 2013).

Pharmacological therapy is not enough to be a mainstay to restore the condition of toddlers, usually children tend to be fussy and difficult to take drugs that can cause trauma. Then additional methods are needed to support the healing process of children with chest massage therapy (Sutarmi, 2018). Massage therapy is widely used in developing countries as an alternative in reducing respiratory disorders in children and improving lung function (Martina, 2015). There is a study that explains that massage done by parents to their children provides two aspects, namely psychology and overcoming physical problems. This paper was made with the aim of analyzing the benefits of massage therapy in infants and toddlers ISPA.

**OBJECTIVE**

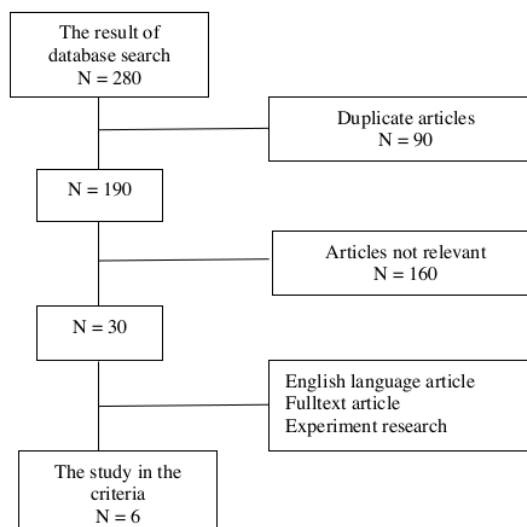
This study aimed to find out the effectiveness of massage therapy to prevent acute respiratory infections in infants and toddlers.

**METHODS****Search Method**

The research method used by the author is literature review. The author uses several databases such as Pubmed, Science Direct, Ebsco, and Google Scholar. Keywords used include Massage, Acute Respiratory Infection, Infants and Toddlers. The literature used is written in English and Indonesian, publication years from 2009-2019, Randomized Controlled Trial (RCT), studies that provide massage interventions, studies that report the incidence of ARI in infants and toddlers.

**RESULTS AND DISCUSSION**

The results from the research database are 280 articles. As many as 95 articles have in common or similarities with the title, 160 articles are not relevant. After using the inclusion and exclusion criteria, 6 articles were found that are suitable for this literature



**Figure 1. Flowchart of the exclusion process and final selection**

Source	Title	Table 1. Study Characteristics Respondents	Message Frequency	Message Duration	Results
Dwi Ernawati, 2014	Infant Massage Affects cortisol levels and the quantity of sleep in infants undergoing hospitalization using the comfort kolcaba theory approach	20 respondents aged 6 months-1 year	1 time a day for 4 days	10-20 minutes	The results of the study showed that salivary cortisol in the treatment group decreased $p = 0.01$ and improved sleep quality in the intervention group $p = 0.004$
Ummi Kalsum, 2017	Baby's weight gain through massage	30 respondents aged 0-6 months	2 times a day (morning and evening) for 3 weeks	10-20 minutes	The results of the study that there is the effect of massage on weight gain $p = 0.033$
Widyawati MN, Malikhah F, Suprihatin K, Sutarmi, 2019	Baby Massage With Common Cold Massage Oil on Temperature Change, Pulse Rate, Frequency of Breath, Sleep Quality and Number of Streptococcus Bacteria in Toddlers with Acute Respiratory	32 respondents aged 0-29 months	2 times a day (early evening) for 3 days	15 minutes	The results showed that in the intervention group temperature changes $p = 0.002$ , pulse frequency $p = 0.000$ , respiratory frequency $p = 0.006$ , improvement in sleep quality $p = 0.000$ and decrease in streptococcal bacteria $p = 0.004$

## Infection

Dewi U, Aminin F, Gunnara H. 2014	The Effects of Massage on the Quality of Sleeping in Babies 3-4 Months Old at Gelatik and Nuri IHCs of Tanjung Unggat Village of Tanjungpinang in 2014	17 respondents aged 3-4 months	Every day for 6 days	20 minutes	There is a difference between the frequency of getting up before and after a massage $p = 0.001$ , and there is a difference between the duration of getting up before and after a massage $p = 0.046$
Martina H, Beulah H, David A. 2015	Effectiveness of Massage Therapy on Children With Respiratory Illness	60 respondents aged 1-5 years	Every morning and afternoon for 3 days	10 minutes	Massage therapy can reduce lower respiratory tract infections and can improve lung function
Kusumastuti NA, Tamtomo D, Salimo H. 2016	Effect of massage on sleep quality and motor development in infant aged 3-6 months	60 respondents aged 3-6 months	Massage therapy 3 times a day for 10 days	20 minutes	Massage therapy improves sleep quality in the intervention group $p = 0.001$ , has gross motor development $p = 0.043$ , has fine motor development $p = 0.018$

## 1 Theoretical Concept

Acute Respiratory Infection is caused by air pollution which is transmitted through saliva and sneezing so that the breathing air that contains germs or microorganisms is inhaled by healthy people whose respiratory tracts infect and cause inflammation (Tanto, 2014). The case of ARI in 2014 ranged from 20-30% then increased significantly in 2015 amounted to 63.45%, and in 2016 increased by 65.27%. The mortality rate due to pneumonia in infants in 2014 was 0.08%, in 2015 it increased by 0.16%, the mortality rate due to pneumonia in infants in 2015 was 0.17%, in 2016 it decreased by 0.06%. Puskesmas conduct standardized examinations and management through the ISPA (P2) disease eradication program and the MTBS approach (integrated management of sick toddler). To reduce ARI, there are several effective interventions if carried out appropriately, including exclusive breastfeeding for 6 months to improve nutrition in infants and toddlers (not experiencing malnutrition), prevent through vaccination, clean and healthy living behavior (washing hands with soap). (Kemenkes, 2015)

Factors underlying ARI in children affected by the causative pathogen, environmental factors, and host factors include age, sex, age of toddler, nutritional status, immunization, low birth weight, breastfeeding, use of health facilities, social status economics, parental education, provision of vitamin A, knowledge, attitudes,

occupancy density and maternal behavior such as exposure to cigarette smoke to ARI (Nasution, 2009). Dengan berkurangnya kadar kortisol dapat meningkatkan sistem imun dan perasaan rileks

2 Massage therapy to increase production hormone and endurance

Massage therapy is stimulation to increase emotional bonds and interactions between mother and baby. By doing baby massage routinely, it can cause contact with mother and baby feelings such as closeness, affection, warmth, weight gain and care.(Gürol, 2012). Massage in 20 children undergoing hospitalization can increase the activity of the neurotransmitter serotonin which plays an important role in regulating anger, appetite and baby's body temperature. Massage can bind glucocorticoids so that it can reduce cortisol levels Lowering cortisol levels can increase the immune system and relax (Ernawati, 2014). Massage can stimulate the parasympathetic nervous system which is dominated by the brain nerve 10 (vagus nerve) which can increase intestinal peristalsis, increase levels of the enzyme absorption of gastrin, insulin and sphincter relaxation so that gastric emptying occurs quickly and increase appetite that is seen from an increase in baby's weight (Cahyono, 2009; Ummi, 2017). With an increased appetite, making the nutritional intake obtained is better for maintaining the immune system and ISPA is not easy enter the body (Maryunani, 2016).

Upper respiratory tract infections are usually accompanied by fever, this happens because of a bacterial infection reaction (Rini, 2013). Research conducted on 32 toddlers can stabilize body temperature, pulse frequency, respiratory frequency, and affect the number of bacteria (Widyawati, 2019). Massage can stimulate the sympathetic nervous system by stimulating sweat production where sweat production is stimulated by impulses in the hypothalamus which function as a regulator of body temperature if the body temperature increases evaporation occurs skin to reduce fever (Pratiwi, 2019). Massage stimulates the parasympathetic system so that it slows down the breathing rate and provides a relaxing effect and improves lung function (Shanmugam, 2017).

3 Massage therapy to improve sleep quality, growth and development

Acute respiratory tract infections can affect toddlers' sleep quality. The impact of sleep deprivation on toddlers can inhibit growth hormone and reduce endurance so that babies are more fussy and sensitive (Wong, 2011). To improve sleep quality in infants and toddlers, massage is done routinely, with massage can change brain waves by increasing beta waves and tetha so as to increase concentration and sleep babies more soundly (Dewi, 2014; Sutarmi, 2018). Baby massage can help facilitate sleep due to increased secretion of melatonin at night. Besides massage helps release endorphins and oxytocin to overcome discomfort. Melantonin as an antioxidant, boosts the immune system, increases muscle relaxation, and removes tension (Kusumastuti, 2016; Ernawati, 2014). When toddlers sleep the brain can produce about 75% of growth hormone wherein many growth hormones are produced in the pituitary gland. Growth hormones renew body cells such as brain nerve cells, blood cells, and skin cells. If the baby is often asleep according to his sleep needs, the cell renewal process will take place and the baby can maintain fitness the next day which makes the baby more concentrated so that it can help the psychological development



of emotions, intelligence and cognitive (Dewi, 2014; Pramaswari, 2017; Sutarni, 2018)

Toddler sleep needs every day around 12-14 hours. Toddlers who do massage regularly have a long sleep duration while sleeping. Infants aged 3-6 months who routinely do massages experience motor development compared to babies who are not massaged. Massage therapy can affect the production of the enzyme ornithin decarboxylase which influences cell and tissue growth (Kusumastuti, 2016).

#### 4 Improve lung function and vital capacity

Touch therapy affects the body temperature of premature babies. Increased body temperature of premature babies is stable because of the transfer of temperature from therapy to the baby and the thermoregulation improvement in the temperature setting in the baby's brain and touch therapy can accelerate blood circulation (Hikmah, 2011). Massage therapy is effective to reduce disorders of lower respiratory tract instability in ARI infants, improve pulmonary function, increase relaxation of respiratory muscles, and enhance the healing process and well-being toddler. Massage therapy can provide stimulation to the parasympathetic nerves located in cranial nerves 7 so that secretes fluid and loosens respiratory secretions (Martina, 2015; Cahyono, 2009)

### CONCLUSION

Massage can produce physiological changes related to organs, tissues, or cells. This can be measured by looking at cortisol levels, immunological reactions, and electroencephalogram examination (a picture of brain waves). The benefits of massage for ISPA infants include loosening respiratory secretions, increasing appetite, making sense of comfort, improving concentration, improving digestion, improving sleep disorders, reducing stress, increasing endurance, stimulating the nerves of the brain, and smooth blood circulation.

The role of parents is very important in handling infants and toddlers ISPA by using massage therapy can provide psychological effects and foster relationships of parental love for their children. Massage therapy does not pose a dangerous, safe and inexpensive risk. Health workers can organize seminars and baby massage training aimed at the general public. Family factors play an important role in managing ARI both by mothers and other family members. Families need to know and observe signs of early pneumonia complaints and immediately seek help in the health care system so that the disease does not become more severe

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