

Vapor Inhalation Therapy (*Eucalyptus*) Introduction to The Event of ARI in Toddlers

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ABSTRACT

The incidence of ARI in the under-five age group is estimated at 0.29 cases per child/year in developing countries, 0.05 cases per child/year in developed countries. With an average experience of ARI with moderate signs and symptoms. At the Cikedal Public Health Center, the researchers obtained data on 175 patients with ARI. Namely 92 ARI in toddlers and 44 in children and 39 in adults. This study to determine the Effect of Eucalyptus (*Eucalyptus*) Oil Steam Inhalation Therapy on the Incidence of ARI in Toddlers at the Cikedal Public Health Center, Pandeglang Regency, Banten Province in 2021. The method in this research is Quasi-Experimental Design. The research design used was a two-group pre-post test and control design. The sample in the study was 30 respondents, consisting of 15 respondents from the experimental group and 15 respondents from the control group. Data were analyzed using Paired T-test and Independent T-test. The Results: the average score of incidence of ARI pretest in the experimental pretest group was 5.33 while the posttest was 2.87 and the average difference was 2.6, the average score for the incidence of ARI pretest in the control group was 5.40 while the post-test was 5.20 and the average difference of 0.2 Independent T-test results obtained p-value 0.000 the conclusions and suggestions, there was an effect of eucalyptus (*eucalyptus*) vapor inhalation therapy on the incidence of ARI among toddlers at the Cikedal Public Health Center, Pandeglang Regency, Banten Province. It is hoped that clinical nurse will implement the application of eucalyptus oil inhalation therapy to reduce ARI in toddlers.

Keywords: ARI (Upper respiratory tract infection); eucalyptus oil; toddlers

INTRODUCTION

Upper Respiratory Tract Infection (ARI) is a disease that often occurs in children. The incidence of ARI in the under-five age group is estimated at 0.29 cases per child/year in developing countries, 0.05 cases per child/year in developed countries. There are 156 million cases of ARI and most occur in India (43 million), China (21 million), and Pakistan (10 million) as well as Bangladesh, Indonesia, and Nigeria with 6 million cases each. Of all cases of ARI that occur in the community, 7-13% are severe cases and require hospitalization. (Agustina, 2016).

The causes of ARI consist of bacteria, viruses, fungi, and aspiration. Bacteria include *Diplococcus pneumonia*, *Pneumococcus*, *Streptococcus*, *Staphylococcus aureus*, *Hemophilus influenza*. Viruses: *Influenza*, *Adenovirus*, *Silomegavirus*. Fungi: *Aspergillus sp*, *Candida albicans*, *Histoplasma*. And aspirations: food, motor vehicle fumes (fuel oil), kerosene, amniotic fluid at birth, foreign objects, and grains (Irianto, 2014). General symptoms are usually fever, shortness of breath, dry stones, headache, aches all over the body, fatigue, lethargy, shortness of breath, severe cough producing a large amount of mucus, high fever (Misnadiarly, 2015).

If airway clearance is not maintained, the patient will experience airway obstruction resulting in ineffective airway clearance (Somantri, 2012). As a result of this accumulation of sputum, it will also cause the supply of oxygen to the body which will cause hypoxia and then develop rapidly into severe hypoxemia, decrease consciousness and lead to death (Djuantoro, 2014).

One effort to overcome nasal congestion can be done by administering inhaled drugs, drugs can be inhaled to produce local or systemic effects through the respiratory tract by inhaling using steam, nebulizer, or aerosol spray (Gabrielle, 2013). Steam inhalation therapy is an effective treatment for nasal congestion, a natural method that works well with steam and heat. (Ashley, 2013). Steam inhalation therapy is very helpful for removing blockages such as colds, bronchitis, pneumonia, and various other respiratory conditions, steam inhalation opens nasal congestion and parts of the lungs allowing to release of thin mucus, breathe easier and heal faster. To make steam, you can use only water or you can add herbal oils to enhance the effect of the treatment (Phylis, 2012).

Eucalyptus oil is produced from the leaves of the *Melaleuca leucadendra* with the largest content being eucalyptol (cineole). The results of research on the efficacy of cineole explain that cineole has a mucolytic effect (thinning phlegm), bronchodilating (relieving breathing), anti-inflammatory and reducing the rate of exacerbations of chronic obstructive pulmonary cases as well as in the case of patients with asthma and rhinosinusitis. In addition, the effect of using eucalyptus for the treatment of acute bronchitis was well measured after four days of therapy. (Nadjib et al, 2014).

Research conducted by Irianto (2014) on steam inhalation therapy with eucalyptus oil on airway clearance in children with ARI in the Puskesmas Kota Bambu Selatan area, showed that there were differences in airway clearance before and after hot steam inhalation therapy using eucalyptus oil. 5 drops are put into warm water that is already in the basin, inhaled for 5 minutes at a distance of 50 cm from the toddler for 7 days.

The results of a preliminary survey that the researchers conducted at the Cikeudal Public Health Center in 2021, based on data from April-July, the researchers obtained data on 175 patients with ARI. Namely 92 ARI in toddlers and 44 in children and 39 in adults. With an average experience of ARI with moderate signs and symptoms (Cikeudal Health Center, 2021). Based on previous research that eucalyptus oil inhalation therapy is effective in overcoming ARI in toddlers, therefore the researchers took a study entitled "Effect of Eucalyptus (*Eucalyptus*) in Toddlers".

METHOD

This study using a quasi-experimental with two groups pretest and posttest with control design. The population in this study were toddlers with ARI aged 3 - 5 years, with the research location at the Cikeudal Public Health Center, Pandeglang Regency, Banten Province in 2021. The population taken was 92 ARI in toddlers. The sampling method used the purposive sampling method with a total sample of 30 people who were divided into two, namely 15 people as the intervention group and 15 people as the control group. Eucalyptus oil vapor inhalation therapy in the intervention group was by giving warm water that had been included 5 drops of pure wood oil tea in a basin, for 15 minutes at a distance of 50 cm from toddlers for 7 consecutive days. The research instrument for the ARI category uses a questionnaire. The results of the normality test of the data from the Skewness are -1.639 and the results from the Kurtosis are -1.274, which means that the data is between the range -2 to +2, therefore the data is declared to be normally distributed, so the statistical test used is the paired sample T-test and Independent T-test test.

RESULT

Table 1. The Effect of Eucalyptus (*Eucalyptus*) Steam Inhalation Therapy on the Incidence of ARI in Toddlers (In Each Group)

Group	Pretest-Posttest		ARI Incidence	Difference	p
	Mean	Mean			
Intervention	2.467	2.005	0.462	0.000	
Control	2.00	1.10	0.9	0.000	

Based on paired sample t-test in the intervention group, the average pretest 2.467 while p score dropped to 2.005, with p-value of 0.000 which means that there is Differences in the effect of ARI on toddlers before and after eucalyptus oil vapor inhalation therapy in the work area of the Cikedal Public Health Center, Pandeglang Regency.

Table 2. *Eucalyptus* Steam Inhalation Therapy on the Incidence Between ARI Toddlers

ARI in Toddlers	Intervention		Control	Differences	p-value
	Mean	Mean			
Posttest	5,31	1,566	1,668	0,000	

Based on Table 2, the results of the calculation of the difference in the mean (average) value of the post test 1.668. The results of the Independent T-test showed a significance value of 0.000 <0.05, so it can be concluded that there is a difference in the effect of eucalyptus oil vapor inhalation therapy on ARI in children under five in the work area of the Cikedal Public Health Center, Pandeglang Regency.

DISCUSSION

Average ARI scores before and after eucalyptus oil vapor inhalation therapy in the intervention group

This indicates that eucalyptus oil vapor inhalation therapy is good for toddlers because it can reduce ARI problems. This is in accordance with Danusantoso, (2012). ARI (Upper Respiratory Tract Infection) is an infection of the upper respiratory tract and lower respiratory tract with acute conditions. Respiratory tract infections are caused by viruses, bacteria and fungi. This acute respiratory tract infection will usually attack the host, if the immunology (body resistance) decreases or is not good. This disease often occurs in children, especially in children under five years of age whose immune system is still susceptible to disease.

Currently, one of the ARI diseases that need attention is influenza because it can cause outbreaks in accordance with the Minister of Health Regulation No. 1501/Menkes/Per/X/2010 concerning Certain Types of Infectious Diseases that can Cause Outbreaks and Control Efforts. Distilling eucalyptus leaves (*Melaleuca leucadendra* Linn) is the general livelihood of the people on Buru Island. The results of the refining of eucalyptus oil as much as 215.5 tons in 2014 made Buru Island one of the main producers of eucalyptus oil in Indonesia. The essential oil of *Eucalyptus* sp. One effort to overcome nasal congestion can be done by administering the drug by inhalation, the drug can be inhaled to produce local or systemic effects through the respiratory tract by inhaling using steam, nebulizer, or aerosol spray.

The results of previous studies of eucalyptus oil have benefits and the main content of this plant has properties as a phlegm thinner, relieves respiratory tract, anti-inflammatory and cough suppressant. So the researchers conducted a study providing eucalyptus oil inhalation therapy to toddlers with ARI, by providing warm water and purih wood oil which was dropped into warm water as much as 5 drops for 15 minutes within 7 days in the experimental group and did not explain anything to the control group. The results of this study are in line with the research of Nadjib, et al (2014) in their research that there is evidence showing that essential oil vapor from *Eucalyptus globulus* given for 7 days as much as 5 drops of eucalyptus oil mixed with hot water is effective as an antibacterial and deserves consideration for its use in treatment or medicine. prevention of patients with respiratory tract infections in hospitals.

Based on the results of the research on the results of questionnaires on toddlers with ARI before being given eucalyptus oil inhalation therapy, it was found that toddlers had moderate and mild ARI which were characterized by symptoms of coughing, hoarseness, i.e. the child had a hoarse voice when talking or crying, runny nose (mucus from the nose), hot or cold. fever 370C to 390C and rapid breathing. After being seen from the results of observations through questionnaires on toddlers with ARI. After being given eucalyptus oil inhalation therapy, the respondents experienced significant changes, namely a reduction in symptoms in ARI after being given eucalyptus oil inhalation therapy.

The researcher assumes that giving eucalyptus oil vapor inhalation therapy can reduce the problem of ARI. This is because the largest eucalyptus oil content is eucalyptol (cineole). The results of research on the efficacy of cineole explain that cineole has a mucolytic effect (thinning phlegm) and bronchodilating (relieving breathing).

Average ARI score in the control group in the Cikedal Health Center area, Pandeglang Regency, Banten in 2021.

Based on the results of research on toddlers in the control group (not given eucalyptus oil vapor inhalation therapy) there was a change in the decrease in ARI problems. But the decrease was slightly different, in contrast to the decrease in ARI problems in the experimental group given oil vapor inhalation therapy. This is in line with Mubarak, et al (2015) that steam inhalation is the inhalation of vapors with or without drugs through the upper respiratory tract, in this case, an action to make breathing easier, secretions more watery and easy to expel, mucous membranes in the respiratory tract. stay moist.

According to Misnadiarly (2015), the common symptoms of ARI are usually fever, shortness of breath, dry stones, headache, aches all over the body, fatigue, lethargy, shortness of breath, severe cough producing a large amount of mucus, high fever. The use of eucalyptus oil aromatherapy also provides a sense of comfort and freshness so that it can become the center of attention where the brain in the pituitary gland will release endorphins or serotonin so that the body becomes relaxed, not anxious, and feels sleepy. A relaxed body condition can also affect hemodynamic changes where blood pressure and pulse will tend to decrease (Suryono et al., 2020).

Based on the results of the research from the results of questionnaires on toddlers with ARI in the control group (not given eucalyptus oil vapor inhalation therapy) it was found that toddlers had moderate and mild ARI which were characterized by symptoms of coughing, hoarseness, namely the child had a hoarse voice when talking or crying, runny nose (exhaling mucus from the nose) fever or fever 370C to 390C and rapid breathing.

The researcher assumed that after being seen from the results of observations through questionnaires on toddlers with ARI in the control group, there was a significant change, namely a decrease in symptoms in ARI, but eucalyptus oil vapor inhalation therapy had more effect on reducing ARI in toddlers.

***Eucalyptus* Steam Inhalation Therapy on the Incidence Between ARI Toddlers**

Intervention group (given *eucalyptus* oil vapor inhalation therapy) had a pretest and posttest difference of 8.34 and the difference between the pretest and posttest the control group was 5.61. The results of the measurements of the experimental group and the control group stated that after being given eucalyptus oil vapor inhalation therapy, the experimental group had more improvement than the control group who were not given eucalyptus oil vapor inhalation therapy.

Based on the results of the intervention group and the control group, a test for changes in ARI in children under five using the paired sample T-test a significance value of 0.000 (<0.005). These results mean that there is an effect of eucalyptus oil vapor inhalation therapy before and after being given eucalyptus oil vapor inhalation therapy for toddlers with ARI in the work area of the Cikedal Health Center, Pandeglang Regency.

Based on the results of the paired sample T-test, this is in line with the research of Nadjib, et al (2014) in their research that there is evidence showing that essential oil vapor from *Eucalyptus globulus* is effective as an antibacterial and deserves consideration for its use in the treatment or prevention of patients with respiratory tract infections in Indonesia. hospital. According to Ashley (2013), Steam inhalation therapy is an effective treatment for nasal congestion, a natural method that is good with steam and heat.

According to Dornish in Zulnely & Kusmiati (2015) mentions that eucalyptus essential oil can be used as herbal medicine, including to reduce shortness of breath due to flu or asthma by applying it to the chest, treating sinuses by inhaling steam from warm water that has been dripped with eucalyptus oil and soothing the nose. clogged by inhaling the aroma of eucalyptus. The use of essential oils, one of which eucalyptus by inhalation method was also carried out in a clinical trial using a randomized double-blind, placebo-controlled method of spray using five essential oils (*Eucalyptus citriodora*, *Eucalyptus globulus*, *Mentha piperita*, *Origanum syriacum*, and *Rosmarinus officinalis*) was performed on patients with upper respiratory tract infections in six clinics in Israel. Aromatic spray or placebo was used five times a day for three days with a dose of four sprays at a time directed at the back of the throat. Evaluation of symptoms showed that aromatic spray was more effective in reducing symptoms compared to placebo (Julia & Buckle, 2016).

According to Nadjib, (2014) the largest eucalyptol oil content is eucalyptol (cineole). The results of research on the efficacy of cineole explain that cineole has a (thinning phlegm), bronchodilating (relieving breathing), anti-inflammatory and lowers the rate of exacerbations of chronic obstructive pulmonary disease well as in the case of patients with asthma and rhinosinusitis. The essential oil vapor of *Eucalyptus globulus* is effective as an antibacterial and deserves consideration for its use in the treatment or prevention of patients with respiratory infections.

Based on the results of data processing and research results, the researchers assumed that eucalyptus oil vapor inhalation therapy had an effect on ARI in toddlers. Because eucalyptus oil contains cineol, melaleucin, an essential oil consisting of terpineol, cineol, and lignin. Where the cineol content has an effect on thinning phlegm. Then eucalyptus oil vapor inhalation therapy is an action to make breathing easier, secretions more watery and easy to remove, mucous membranes in the respiratory tract to remain moist. So that the problem of ARI in toddlers is easier to overcome.

CONCLUSION

Based on the results of research on the effect of eucalyptus (*Euvalyptus*) on toddlers with ARI in the work area of the Cikedal Public Health Center, Pandeglang Regency, it can be concluded that there is an effect of eucalyptus oil vapor inhalation therapy on ARI in toddlers with an average value of (mean) before administration of 5.33. It is hoped that clinical nurse can provide education to the community to be able to apply the provision of eucalyptus oil inhalation therapy in reducing ARI in toddlers.

REFERENCES

- Agustina, Z. A, and Suharmiati, S. (2017). Pemanfaatan Minyak Kayu Putih (*Melaleuca leucadendra* Linn) sebagai Alternatif Pencegahan ISPA. *Jurnal Kefarmasian Indonesia*, 120-126.
- Ashley K. Willington. (2013). *Natural Cure for Sinus without Drugs: Permanent Sinus Relief*. Lulu: Noah Publishing.
- Danusantoso, H. (2012). *Buku saku ilmu penyakit paru.Edisi 2*. Jakarta: EGC.
- Djuantoro, D. (2014). *Buku Ajar Ilustrasi Patofisiologi, Edisi ke-4*. Tangerang: Aksara
- Irianto, K. (2014). *Ilmu Kesehatan Anak*. Bandung: Alfabeta
- Julia B, Buckle J. (2016). *Respiratory care.Clinical aromatherapy (Third Edition)*. London: Churchill Livingstone; p. 353±72.
- Misnadiarly. (2015). *Penyakit Infeksi Saluran Napas Pneumonia Pada Anak Orang Dewasa, Usia Lanjut. Ed. 1*. Jakarta: Pustaka Obor Populer
- Mubarak, W. I., Indrawati, L., & Susanto, J. (2015). *Buku Ajar Ilmu Keperawatan Dasar: Buku 1*. Jakarta: Salemba Medika

- Nadjib, B. M., Amine, F. M., Abdelkrim, K., Fairouz, S., & Maamar, M. (2014). Liquid and vapour phase antibacterial activity of Eucalyptus globulus essential oil= susceptibility of selected respiratory tract pathogens. *American Journal of Infectious Diseases*, 10(3), 105.
- Somantri, I. (2012). *Asuhan Keperawatan pada klien dengan gangguan sistem pernapasan*. Jakarta: Salemba
- Suryono, A., Akbar, F., Nugraha, F. S., & Armiyati, Y. (2020). Combination of deep breathing relaxation and murottal reducing post chemotherapy nausea intensity in nasopharyngeal cancer (NPC) patients. *Media Keperawatan Indonesia*, 3(1), 24-31.
- Zulnely, G., & Kusmiati, E. (2015). Prospek Eucaliptus citriodora sebagai minyak atsiri potensial. *Pros Sem Nas Masy Biodiv Indon*, 1(1), 120-126.