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EFFECT OF SIMPLE INHALATION THERAPY TO OPTIMIZE AIRWAYS IN CHILDREN WITH ISPA

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ABSTRACT
Respiratory infections are the most common acute diseases in children in various countries, especially in Indonesia. According to WHO (2018), estimates that the incidence of Acute Respiratory Infections (ARI) in developing countries with a mortality rate of toddlers above 40 per 1000 live births is 15-20% per year in the toddler age group. In 2018, the number of deaths in Indonesian toddlers was 151,000, of which 14% of these events were caused by pneumonia. Central Java Province in 2020 ARI reached 67% of risk factors including malnutrition, low excursive breast milk, indoor air pollution, density, low measles immunization coverage. This scientific work is to determine the application of simple inhalation therapy to optimize the airway in children with ARI in Karangdowo Village, Weleri District, Kendal Regency. Case studies using descriptive methods with a case approach in children experiencing ARI with ineffective airways. The sample of this case study was 4 respondents with an age of 3-5 years. Data collection of children with ARI problems using observation sheets and SOPs for simple inhalation therapy. A case study found that before the application of sedrhana inhalation therapy 4 airway respondents were not optimal after the application of simple inhalation therapy that respondents experienced an increase in the airway. After being given simple inhlation therapy, the results of the study showed that of the 4 respondents who were carried out therapy showed optimal airway.

Keywords: Airway; ARI; simple inhalation therapy

INTRODUCTION
Acute Respiratory Tract Infection (ARI) is a disease that often occurs in children, the disease affects one or more parts, from the airways begins the nasal samapai alveoli including its parts (sinuses, middle ear cavity and pleura). The pathophen that most often causes ARI is a viral or a combined viral-bacterial infection. The method of transmission through contact and infectious respiratory aerosols in close proximity can also occur for some pathogenic agents (A. Purnamasari et al., 2022) .

According to WHO (2018), estimates that the incidence of Acute Respiratory Infections (ARI) in developing countries with a mortality rate of toddlers above 40 per 1000 live births is 15-20% per year in the toddler age group. In 2018, the number of deaths in Indonesian toddlers was 151,000, of which 14% of these events were caused by pneumonia (Admin & Sherly Widianti, 2020)

The prevalence of ARI is calculated within the last 1 month. The five provinces with the highest ARI are East Nusa Tenggara (41.7), Papua (31.1%), North Sumatra (30.0%), West Nusa Tenggara (28.3%) and East Java (28.3%). In Riskesdas 2017, East Nusa Tenggara was also the highest province with ISPA. The prevalence of Indonesian ARI according to Riskesdas 2013, (25.0%) is not much different from 2017 (25.5%). The highest characteristics of the population with ARI occurred in the age group of 1-4 years (25.8%). According to gender, there is no difference between male and female anatar. This disease is more commonly experienced in

population groups with the lowest and lower middle ownership indexes (Riskesdas Kemenkes RI, 2018).

In 2020 the coverage of the discovery of CENTRAL JAVA ARI reached 67%. Risk factors that contribute to the incidence of ARI include malnutrition, low excursive breast milk, indoor air pollution, density, low measles immunization coverage and BBLR (Dinkes Jateng, 2020). The incidence of ARI in toddlers is the most common disease experienced by toddlers compared to other diseases such as diarrhea, worms, asthma and others (Novikasari et al., 2021). Clinical upper respiratory tract infections are often found as influenza. Upper respiratory tract infections have a tendency to extend to trachea and bronchi, this condition can be aggravated by pneumonia. Upper respiratory tract infections characteristically arise with nasal congestion or continued secretion from the nose, sore throat and discomfort when swallowing, sneezing and dry coughing are common symptoms (L. Purnamasari & Wulandari, 2015).

Secretory buildup is a result of the production of bronchi that come out along with coughing or throat clearance. The buildup of the secretion indicates the presence of foreign objects in the respiratory tract so that it can interfere with the exit and entry of air flow. Secretion or sputum is mucus produced due to the stimulation of the mucous membrane physically, chemically or due to infection. This causes the cleaning process not to run adequately so that the mucus is buried a lot (Hartono. R, 2012). Common symptoms are usually fever, shortness of breath, dry stones, headaches, drooling all over the body, fatigue and lethargy, and there are secretions. Problems that often arise in this ARI disease are ineffective breathing patterns, ineffective airway clearance, fear or anxiety, pain, activity intolerance, and a high risk of infection (Hartono, 2012).

Airway clearance inability is the inability to clear secretions or obstructions from the respiratory tract to maintain airway clearance. One of the efforts to overcome the ineffective napa s road clearance can be done by inhaling the drug. The drug can be inhaled to produce local or systemic effects through the respiratory tract by using vapors, nebulizers or spray aerosols such as nebululation and inhalation therapy (Yanisa, 2019).

Inhalation therapy is the administration of inhalation (inhalation) seara drugs into the respiration duct. The users of this therapy are very widespread in the field of respirology. The pharmacological principle of inhalation therapy that tetap for respiratory diseases is that the drug can reach the target organ by producing optimal aerosol particles to be deposited in the lungs, fast work receipts, small doses, minimal side effects because the concentration of the drug in the blood is small or low, easy to use and the therapeutic effect is immediately achieved aimed at the presence of clinical improvement. Inhalations can be differentiated into *Metered Dose Inhalation* (MDI) without spacers, *Dry Powder Inhalers* (DPI), Nebulizers (jets and ultrasonics), and simple / traditional inhalations (S. U. Dewi & Oktavia, 2021).

Simple inhalation is to give medicine by inhalation in the form of steam into the respiratory tract which is done in simple ingredients and ways and can be done in a family environment. This therapy is more effective than because the drug works faster and is direct and has no side effects on other parts of the body. The advantages of simple inhalation therapy include being easier to do and more affordable cost (Silvi Zaimy et al., 2020).

One of the simple methods of inhalation can be carried out using eucalyptus oil. Eucalyptus oil can be useful in relieving breathing problems. Inhalingeucalyptus oil can relieve respiratory

problems because eucalyptus oil vapors function as a decongestant which if inhaled can help reduce the life of congestion and symptoms of bronchitis (Agustina & Suharmiati, 2017).

According to Erniawati's research (2018), entitled The Effect of Steam Inhalation With Eucalyptus Oil Droplets on Secretarial Expenditure in Children Suffering from ARI at Puskesmas, it was stated that in Central Java the discovery and treatment of ARI sufferers in 2014 was 71,451 cases (26.11%) an increase compared to 2013 (25.85%). This figure is still very far from the minimum service standard (SPM) target in 2010 (100%). At the district/city level, there is one city that has the highest percentage of coverage, namely Pekalongan Regency (95.9%), while the district with the lowest percentage of coverage is Sragen Regency (0.2%) While in the regions, a total of 17,436 people suffer from acute respiratory infections and 3,793 occur in children aged 0-14 years.

According to Dewi's research (2020), entitled The Effectiveness of Water Vapor and Eucalyptus Oil Therapy on Airway Clearance of Children Aged 3-5 years in ARI Sufferers in Garegeh Bukittinggi Village in 2020 stated that ARI ranks second in the ten most diseases 4.5. In various regions, cases of ARI occur in many children due to various risk factors that can be triggers. Ispa control in Indonesia began in 1984 along with the start of ispa control at the global level by WHO. Currently, one of the ARI diseases that needs attention is also influenza disease because it can cause outbreaks in accordance with pemenkes 1501/Menkes/Per/X/2010 about certain types of infectious diseases that can cause outbreaks and overcoming efforts.

Based on the results of observations made in Karangdowo Village, Weleri District, Kendal Regency in June 2022, it was found that some children hadami ARI and their families complained of colds and nasal congestion. Based on the existing cases on this background, it is necessary to provide good and appropriate nursing care to patients who experience ARI, so the researcher took the title "Application of Inhalasi Simple Therapy to Optimize Airways in Children With ARI in Karangdowo Village, Weleri District, Kendal Regency".

METHOD

The design of this case study is based on EPB (*Evidence based practice)* to explore the problem of providing simple inhalation therapy to optimize the airway in children with ARI. The patient is observed for 3 days. The case study method used is a descriptive approach. The subjects to be used by the researchers were clients who experienced ARI problems as many as 4 children. The instrument in this case study uses an observation sheet, namely data collection by conducting observations directly to case study respondents to find changes in things that will become a scientific work, namely the observation sheets of children with ARI before and after the application of simple inhalationsand the Operational Procedure Unit (SOP) of simple inhalation therapy. Studi case was carried out in Karangdowo Village, Weleri District, Kendal Regency on June 19 – July 02, 2022. How to collect data was carried out with observation sheets to case study respondents who agreed to participate in research activities. The steps for data collection are: identifying respondents, explaining case study procedures, providing *Informed Consent*, conducting an assessment of children with ARI (Pre-test) before the application of simple inhalation therapy, applying simple inhalation therapy, conducting an assessment of children with ARI (Post test) after the application of simple inhalation therapy and analyze the results of the case study test. The analysis of this case study using descriptive analysis aims to determine the application of inhalation therapy to improve airway clearance in children with ARI in Karangdowo Village, Weleri District, Kendal Regency

RESULTS

Table 1.
Data Results Before and After the Application of Simple Inhalation Therapy (n=4)

No	Name	Pre-Test				Post-Test			
		Sputum Production	Breath Sound	Breath Frequency	Breath Patterns	Sputum Production	Breath Sound	Breath Frequency	Breath Patterns
1	An. L	Increase	Moderately Increased	Putrefy	Putrefy	Increase	Moderately Increased	Moderately Deteriorating	Quite Deteriorating
2	An. A	Increase	Increase	Putrefy	Putrefy	Increase	Increase	Moderately Deteriorating	Quite Deteriorating
3	An. K	Moderately Increased	Moderately Increased	Quite Deteriorating	Moderately Deteriorating	Moderately Increased	Moderately Increased	Keep	Keep
4	An. Z	Moderately Increased	Increase	Moderately Deteriorating	Moderately Deteriorating	Moderately Increased	Increase	Keep	Moderately Deteriorating

Based on table 1, data was obtained on the presence of some children experiencing a decrease in sputum production and breathing sounds. In these data, children also experienced an increase in breath frequency and breath patterns. After being given simple inhalation therapy for 3 days with a duration of 10-15 minutes, the four respondents were given. The table shows the differences before and after being given simple inhalation therapy to children with ARI in Karangdowo Village, Weleri District, Kendal Regency. The first respondent had a change in the frequency and pattern of breathing, which was quite deteriorating. Respondents both the frequency of breathing and the pattern of breathing have changed, which is quite worse. The third respondent breath frequency and breath pattern experienced moderate changes. The fourth respondent had a moderate change in breathing frequency.

Table 2.
Data Results Before and After the Application of Simple Inhalation Therapy (n=4)

No	Name	Pre-Test				Post-Test			
		Sputum Production	Breath Sound	Breath Frequency	Breath Patterns	Sputum Production	Breath Sound	Breath Frequency	Breath Patterns
1	An. L	Moderately Increased	Moderately Increased	Quite Deteriorating	Quite Deteriorating	Keep	Keep	Keep	Keep
2	An. A	Increase	Increase	Quite Deteriorating	Quite Deteriorating	Moderately Increased	Moderately Increased	Moderately Deteriorating	Quite Deteriorating
3	An. K	Moderately Increased	Moderately Increased	Keep	Keep	Keep	Keep	Pretty Much Improved	Pretty Much Improved
4	An. Z	Moderately Increased	Increase	Keep	Quite Deteriorating	Moderately Increased	Moderately Increased	Keep	Keep

Based on table 2, data was obtained on the presence of some children experiencing a decrease in sputum production and breathing sounds. In these data, children also experienced an increase in breath frequency and breath patterns. After being given simple inhalation therapy for 3 days with a duration of 10-15 minutes, the four respondents were given. The table shows the differences before and after being given simple inhalation therapy to children with ARI in Karangdowo Village, Weleri District, Kendal Regency. The first respondent produced sputum and the sound of breathing experienced changes, namely moderate, the frequency and pattern of breath changed, namely moderate. The second respondent had sputum production and breath sound changed considerably, namely quite increased, the frequency of breathing and breathing patterns changed, which was quite deteriorating. The third respondent had sputum production and breath sound changed, namely moderate, breathing frequency and breathing patterns, which changed significantly. The fourth respondent had a change in the breath sound, which was quite increased, the breath pattern changed, namely moderate.

Table 3.
Data Results Before and After the Application of Simple Inhalation Therapy in Children With ARI (n=4)

No	Name	Pre-Test				Post-Test			
		Sputum Production	Breath Sound	Breath Frequency	Breath Patterns	Sputum Production	Breath Sound	Breath Frequency	Breath Patterns
1	An. L	Keep	Keep	Pretty Much Improved	Pretty Much Improved	Moderately Declining	Moderately Declining	Improved	Improved
2	An. A	Moderately Increased	Moderately Increased	Keep	Keep	Keep	Keep	Pretty Much Improved	Pretty Much Improved
3	An. K	Keep	Keep	Pretty Much Improved	Pretty Much Improved	Moderately Declining	Keep	Improved	Improved
4	An. Z	Moderately Increased	Keep	Keep	Keep	Keep	Moderately Declining	Keep	Keep

Based on table 3, data was obtained on the presence of some children experiencing a decrease in sputum production and breathing sounds. In these data, children also experienced an increase in breath frequency and breath patterns. After being given simple inhalation therapy for 3 days with a duration of 10-15 minutes, the four respondents were given. The table shows the differences before and after being given simple inhalation therapy to children with ARI in Karangdowo Village, Weleri District, Kendal Regency. The first respondent had sputum production and breath sound changed considerably, namely quite decreased, the frequency and pattern of breathing changed, namely improved. The second respondent of sputum production and breath sound changed, namely moderate, breathing frequency and breath pattern changed, which was quite improved. The third respondent had sputum production changed considerably, namely moderately decreased, breathing frequency and breathing patterns experienced changes. The fourth respondent of sputum production has changed, namely while the sound of breathing has changed, which is quite decreasing.

DISCUSSION

Based on this study, researchers found 4 respondents with ARI problems in Karangdowo Village, Weleri District, Kendal Regency. The first respondents experienced an increase in sputum production, there was an additional breathing sound, breathing frequency and rapid breathing pattern, demaam 38.8 ^{0}C and coughing. The second respondent with increased sputum production, there was an additional breathing sound, breathing frequency and rapid breathing patterns and coughing. The second respondent with increased sputum production, there was an additional breathing sound, breathing frequency and rapid breathing pattern, cough, fever 37.6 ^{o}C and weakness. The second respondent experienced increased sputum production, there were additional breathing sounds, breathing frequency and rapid breathing patterns, coughing and dry throat.

On the case study of an an early day of An. L frequency and breath patterns undergo quite deteriorating changes. An. A frequency and pattern of breath undergoes quite worsening changes. An. K frequency and breath pattern undergo moderate changes. An. Z the frequency of breaths undergoes moderate changes. On the case study of an an early day of An. L sputum production, breath sounds, frequency and pattern of breath undergo moderate changes. . An. A production of sputum and the sound of breathing undergoes a fairly increased change.. An. K sputum production and breath sound undergo moderate changes, the frequency and pattern of breath undergoes changes quite improved. An. Z the sound of breathing has undergone a change of considerable increase, the breath pattern undergoes moderate changes.

On the case study of an an early day of An. L sputum production and breath sound have changed considerably, the frequency and pattern of breath have improved. . An. A production of sputum and breath sounds undergo moderate changes, the frequency and pattern of breath undergoes quite improved.. An. K sputum production has changed quite a decrease, the frequency and pattern of breath have changed. An. Z sputum production undergoes moderate changes and the sound of breathing undergoes quite a decrease.

In case studies showed that there was a decrease in respiratory frequency in respondents between before and after simple inhalation therapy with eucalyptus oil. Showed that it can optimize the airway before and after inhalation therapy with eucalyptus oil. Each respondent also showed that the decrease in the frequency of different breaths in each patient was due to differences in symptoms and how severe ARI was experienced by respondents, and also because of the difference in age each respondent would show different breath recurrence.

In the case studies that have been carried out, the results of factors that influence the occurrence of ARI are environmental factors , in both subjects there is exposure to cigarette smoke due to parents who smoke. In accordance with the results of the study which says exposure to cigarette smoke can increase the risk of being infected with ARI. Cigarette smoke from either parents or residents of one-stop houses can pollute the air, and if inhaled by a child, it can damagethe respiratory tract , so pathogens that cause ARI easily enter and infect children.

This research is in line with a study conducted by Yanisa (2019), entitled The Effect of Steam Inhalation With Eucalyptus Oil Droplets On Secretion Expenditure In Children Suffering From Ispa In Puskesmas obtained data from the study explaining that children who before being given steam inhalation with eucalyptus oil droplets can remove the secretion but experience difficulties when removing the secretion, sore throat, congested nose and experiencing respiratory tightness. Meanwhile, after being given steam inhalation with eucalyptus oil droplets, the child is easier to remove secretions, does not experience sore throat when coughing, the congested nose decreases, and the breath is more relieved.

This research is also in line with the research conducted by S Zaimy et al. (2020), entitled Effectiveness of Water Vapor And Eucalyptus Oil Therapy On Airway Clearance of Children Aged 3-5 Years in Patients with Acute Respiratory Tract Infections in Garegeh Bukittinggi Village In 2020 from the study, the results showed that there were differences in Airway Clearance before and after conducting hot steam inhalation therapy using eucalyptus oil, so that it can be concluded that the intervention in the form of hot steam inhalation therapy using eucalyptus oil affects the Airway Clearance in ARI patients, namely the occurrence of significant Airway Clearance after conducting hot steam inhalation therapy using eucalyptus oil.

CONCLUSION

Before being given simple inhalation therapy with eucalyptus oil, data was obtained that from 4 respondents said that sputum production increased, breathing sound increased from the results of the respiratory frequency examination, it was found that there was an increase in breath frequency in respondents. After being given simple inhlation therapy, the results of the study showed that of the 4 respondents who were carried out therapy showed optimal airway.

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