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IMPLEMENTATION OF SIMPLE INHALATION STEAM THERAPY IN CHILDREN WITH UPPER RESPIRATORY TRACT INFECTION

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ABSTRACTS

The number of children suffering from Acute Respiratory Tract Infections (ISPA) is 59,417, and its prevalence is 40-80 times higher in developing countries compared to developed countries. The community service aims to implement simple inhalation techniques for children with ISPA and observe the nursing care response through a case study. The results show a positive response to airway cleanliness. The effectiveness of clearing the child's airway is indicated by a reduction in secretions and ronchi results in the lungs. Steam therapy with eucalyptus oil has a mucolytic effect (thinning mucus) and bronchodilating effect (relieving breathing).

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1. INTRODUCTION

There are numerous health issues or disorders that can arise within families, encompassing all systems, including respiratory system disorders. Acute Respiratory Tract Infections (ISPA) are among the leading causes of death in children in developing countries. ISPA refers to upper or lower respiratory tract infections that are usually contagious, leading to a spectrum of illnesses ranging from asymptomatic or mild infections to severe and fatal diseases, depending on environmental and host factors. ISPA is often defined as an acute respiratory tract illness caused by infectious agents transmitted from human to human. Symptoms typically manifest rapidly, within a few hours to several days, including fever, cough, sore throat, runny nose, shortness of breath, wheezing, or difficulty breathing (Masriadi, 2017).

According to the World Health Organization (WHO) in 2016, the number of ISPA cases was 59,417 in children, estimating it to be 40-80 times higher in developing countries than in developed ones. WHO states that tobacco kills over 5 million people per year and is projected to kill 10 million by 2020, with 70% of victims from developing countries (Safarina, 2015). Acute Respiratory Tract Infections (ISPA) remain a major health problem as the leading cause of death and morbidity worldwide, particularly affecting infants and children in Indonesia. The incidence of ISPA in toddlers and children in Indonesia remains high (Safarina, 2015). According to the Ministry of Health in 2017, ISPA cases reached 28%, with 533,187 cases.

ISPA is an acute respiratory disease with various symptoms caused by multifactorial factors affecting the upper and lower respiratory organs, with a focus on the lungs due to the high mortality rate of pneumonia (Dr. Widoyono, 2011, p. 204). The prevalence period of ISPA is calculated within the last month. The five provinces with the highest ISPA rates are East Nusa Tenggara (41.7%), Papua (31.1%), Aceh (30.0%), West Nusa Tenggara (28.3%), and East Java (28.3%). According to Riskesdas 2007, East Nusa Tenggara was also the highest province with ISPA. The prevalence period of ISPA in Indonesia according to Riskesdas 2013 (25.0%) is not significantly different from 2007 (25.5%). The highest prevalence of ISPA occurs in the age group of 1-4 years (25.8%). There is no significant difference between males and females. The percentage of finding and handling ISPA patients in toddlers in 2013 was 98.47% (Riskesdas, 2018).

Inhalation therapy involves administering medication directly into the respiratory tract through inhalation (Potter & Perry in Ni'mah, 2020). Simple inhalation means delivering medicine by inhaling it in the form of vapor into the respiratory tract using simple materials and methods, which can be done in a community setting. Steam Inhalation is inhaling warm vapor from boiling water (Akhavani, 2011). The evaporation uses hot water with a temperature of 42°C-44°C (Hendley in Ni'mah, 2020).

The steam from the hot water can be beneficial as therapy. Additionally, hot steam can help the body eliminate non-beneficial metabolic products, open pores, stimulate sweating, dilate blood vessels, and relax muscles (Soetrisno in Ni'mah, 2020). The therapeutic effects of steam, according to Crinion (in Ni'mah, 2020), include increasing oxygen consumption, increasing heart rate, and eliminating unnecessary body fluids, such as thinning mucus that obstructs the airways.

The research results differ from previous studies by Sutiyo (2017) on the implementation of inhalation therapy to reduce shortness of breath in children with bronchopneumonia in the Jasmine Room of RSUD dr. Soedirman Kebumen, stating that after applying inhalation therapy, there was a decrease in respiratory rate (RR) from 68 breaths per minute, absence of ronchi, and no retractions of the chest wall. In conclusion, the implementation of inhalation therapy is effective in reducing shortness of breath in children.

2. METHODS

Patient Information

The patient is a 2-year-old child who is currently experiencing a cough and cold. The mother mentioned that the child likes to play outside without wearing a mask. The fever phase has passed, and the body temperature is now 37.0°C. The child appears to have a productive cough, runny nose, no fever (anymore), and upon auscultation, there are ronchi (adventitious breath sounds) present.

Clinical Findings

An. M is the second child of Mr. S and Mrs. S, a two-year-old boy. An. M is close to both his father and mother, as well as his older sister, An. N, a six-year-old girl. An. M is described as a cheerful child. Mr. S and Mrs. S have a strong affection for both An. M and his sister. Mrs. S works as a teacher, similar to Mr. S, who is also a teacher. When Mr. S and Mrs.

S are at work, their two children are entrusted to relatives whose house is not far from their residence. Mr. S and Mrs. S patiently educate their children.

During the assessment, Mrs. S mentioned that An. M often plays outdoors with his sister without wearing a mask. An. M also tends to buy snacks indiscriminately with his sister without their parents' knowledge. Currently, An. M has been experiencing cough and cold symptoms for the past 2 days. Mrs. S stated that An. M had a fever but is now no longer feverish. Mrs. S has already given over-the-counter fever-reducing medicine to An. M.

Diagnostic Assessment

The nursing diagnosis for this client is ineffectiveness of airway clearance. Nursing care plan carried out by airway and breathing managements.

Therapeutic Intervention

By performing steam inhalation (nebulizer) using eucalyptus oil, inhaling the vapor with or without medication through the upper respiratory tract, this action is taken to facilitate easier breathing, liquefy secretions for easier removal, and keep the mucous membranes in the airways moist.

3. RESULTS AND DISCUSSION

After conducting an assessment and identifying the issue of ineffective airway clearance, the researcher took efforts to address the problem by teaching and demonstrating the steam therapy using eucalyptus oil. The first step involved preparing a basin, a towel, water, and the necessary heating tools. The second step was to pour hot water into the basin and mix it with approximately 5 drops of eucalyptus oil. The third step involved exposing An. M to the steam by bringing him close to the basin containing eucalyptus oil and warm water, all under the supervision of the parents, for approximately 10 minutes. Mrs. S performed this procedure twice a day, concurrently with bathing.

After three days of steam therapy management, An. M's airway condition improved. The ronchi sounds obtained through auscultation decreased, and the cough and cold symptoms reduced. An. M was able to expel phlegm with the assistance of his parents. An. M was also encouraged to blow balloons to facilitate his breathing. This is consistent with the research conducted by Ni'mah (2020), which stated that steam therapy with the addition of eucalyptus

oil is more effective in airway clearance for toddlers with Acute Respiratory Tract Infections (ISPA) than steam therapy alone at the Leyangan Community Health Center.

In the journal by Dewi (2020) titled "Effectiveness of Steam Therapy and Eucalyptus Oil on Airway Clearance in Toddlers Aged 3-5 Years with Acute Respiratory Tract Infections," nursing interventions involving steam inhalation and eucalyptus oil were effective in addressing airway clearance in children with ISPA. However, in Zaimy's (2020) journal titled "The Effect of Eucalyptus Oil (Eucalyptus) Inhalation Therapy on Breathing Patterns in Toddler Patients with ISPA in the Sungai Liuk Community Health Center Area in 2020," there was no significant effect observed from the administration of eucalyptus oil inhalation therapy on the breathing patterns of toddler patients with ISPA.

Eucalyptus oil is produced from the leaves of the Melaleuca leucadendra plant, with its primary content being eucalyptol (cineole). Research on the benefits of cineole explains that it provides mucolytic (thinning mucus), bronchodilating (relieving breathing), anti-inflammatory effects, and effectively reduces the average exacerbation of chronic obstructive pulmonary disease cases, as observed in patients with asthma and rhinosinusitis. Additionally, the use of eucalyptus for acute bronchitis therapy shows measurable improvements after four days of treatment. Nadjib, as mentioned in Ni'mah's study (2020), provides evidence that essential oil vapor from Eucalyptus globulus is effective as an antibacterial and is worth considering for use in treating or preventing respiratory infections in hospitals.

According to Dornish et al., as cited by Zulnely, Gusmailina, and Kusmiati in Ni'mah's study (2020), eucalyptus essential oil can be utilized as an herbal remedy, including reducing shortness of breath due to flu or asthma by applying it to the chest, treating sinusitis by inhaling warm steam with added eucalyptus oil drops, and relieving a congested nose by inhaling the aroma of eucalyptus oil.

Ni'mah's research (2020) on steam inhalation therapy with eucalyptus oil in toddlers with acute respiratory tract infections at the Leyangan Community Health Center showed no difference in airway clearance before and after steam inhalation therapy. However, there was a significant difference in airway clearance before and after steam inhalation therapy with eucalyptus oil. The addition of eucalyptus oil to steam therapy is more effective in airway clearance for toddlers with acute respiratory tract infections than steam therapy alone at the Leyangan Community Health Center.

Based on the above journals, An. M received steam therapy twice a day for three consecutive days using water and eucalyptus oil. The effectiveness of An. M's airway clearance was indicated by a reduction in secretions and ronchi results in the lungs. This aligns with the research conducted by Irianto as mentioned in Ni'mah's study (2020) on steam inhalation therapy with eucalyptus oil for airway clearance in children with ISPA at the South Bambu City Health Center, aiming to identify the influence of steam inhalation therapy with eucalyptus oil on airway clearance. The results showed a significant difference in airway clearance before and after steam inhalation therapy with eucalyptus oil, leading to the conclusion that this intervention significantly affects airway clearance in ISPA patients, resulting in significant airway clearance after steam inhalation therapy with eucalyptus oil.

4. CONCLUSION

Based on the implemented intervention, which is steam therapy with eucalyptus oil, there has been a significant change in providing mucolytic effects (thinning mucus) and bronchodilating effects (relieving breathing) for An. M in Mr. S's family in Pekayon, Tangerang Regency. The criteria for the outcome include normal respiratory frequency of 24-40 breaths per minute, regular depth and rhythm, vesicular breath sounds, and behavioral changes that enhance health, progressing from limited knowledge (score 2) to extensive knowledge (score 4).

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