

Application of Aromatherapy Inhalation Therapy in Children with Ineffective Airway Clearance Due to Bronchopneumonia in Room Cendana 3, Kardinah Regional General Hospital, Tegal City

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Article Info

Keywords :

Bronchopneumonia, Ineffective Airway Clearance, Child, Inhalation, Aromatherapy.

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ABSTRACT

Background & Objective: Bronchopneumonia is one of the most common forms of lower respiratory tract infections in children and often causes ineffective airway clearance due to secretions buildup. This study aims to evaluate the effectiveness of nursing interventions using aromatherapy inhalation therapy in improving airway clearance in children with bronchopneumonia. **Method:** Descriptive, applying the results of previous case studies, using a pediatric nursing care approach and the innovative intervention of aromatherapy inhalation therapy. **Result:** Significant effectiveness was demonstrated, marked by a decrease in respiratory rate from 44 breaths per minute to 32 breaths per minute, more effective coughing, and reduced rales on lung auscultation. **Conclusion:** Aromatherapy inhalation therapy intervention was proven to help thin secretions and facilitate mucus clearance. Therefore, this intervention can be considered an alternative supportive measure in pediatric nursing care for children with bronchopneumonia experiencing airway clearance disorders.

DOI: doi.org/10.56359/igj.v4i2A.718



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Introduction

Bronchopneumonia is one of the most common lung infections in children. Bronchopneumonia in children generally occurs due to infection of the lower respiratory tract, namely the bronchioles and alveoli, caused by bacteria, viruses, or fungi. *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Staphylococcus aureus* are bacterial pathogens that may cause bronchopneumonia in children, while

viral causes include influenza virus, respiratory syncytial virus, and adenovirus (Titin, 2024).

Bronchopneumonia occurs as a result of upper respiratory tract infections, presenting with symptoms such as sudden fever reaching 39°C–40°C, often accompanied by seizures, nasal congestion, restlessness, and chest pain due to difficulty breathing. Other symptoms include dry or productive cough, shallow and rapid breathing with nasal flaring, adventitious breath sounds, vomiting, diarrhea, decreased appetite or breastfeeding, and accumulation of secretions leading to reduced ventilation. Inflammation in bronchopneumonia also increases secretion production, resulting in clinical manifestations such as ineffective airway clearance (Somantri & Iman, 2019).

The World Health Organization (WHO) reports that bronchopneumonia is the leading cause of death in children under five, surpassing measles, malaria, and AIDS. According to WHO (2022), in 2019 there were 740,180 deaths due to bronchopneumonia, accounting for 14% of all deaths among children under five. The prevalence of bronchopneumonia in developing countries is higher (82%) compared to developed countries (0.5%). UNICEF data in 2021 recorded 802,000 child deaths globally due to bronchopneumonia.

According to these data, bronchopneumonia remains the leading cause of childhood mortality compared to other diseases. The Indonesian Ministry of Health (2019) reported that bronchopneumonia accounted for 23% of cases, with a total of 499,259 reported cases. Results from RISKESDAS (Basic Health Research) showed an increase in the prevalence of bronchopneumonia in Indonesia from 1.6% in 2018 to 2.0% in 2019. The incidence in Central Java in 2021 reached 49.5% (Syahrin et al., 2024).

A study conducted by Somantri & Iman (2019) at RSUD Dr. Soeselo found that a pediatric patient (An. K) with bronchopneumonia presented with productive cough, runny nose, and fever persisting for one week prior to hospital admission. Objective findings included restlessness, nasal secretions, and auscultation revealed adventitious wet rhonchi. The identified nursing diagnoses were ineffective airway clearance, anxiety, and knowledge deficit. Interventions were carried out according to the Indonesian Nursing Intervention Standards.

Another study by Setiawati et al. (2024) on a pediatric patient at AN-NISA Hospital, Tangerang, reported ineffective airway clearance related to airway hypersecretion as the primary diagnosis. The researchers implemented chest physiotherapy to address the ineffective airway clearance. Evaluation results, based on the Indonesian Nursing Outcomes Standards, indicated that chest physiotherapy increased oxygen saturation in bronchopneumonia patients. The researchers also emphasized that chest physiotherapy is an independent nursing intervention that improves breathing patterns and recommended the semi-Fowler's position to enhance ventilation and tissue perfusion by utilizing gravity to aid lung expansion.

Furthermore, a study by Rosuliana et al. (2024) investigated the use of peppermint oil aromatherapy in children with bronchopneumonia. Results from a 5-

day intervention on two pediatric patients showed that peppermint oil was highly effective in reducing respiratory rate. Additionally, peppermint oil facilitated sputum expectoration. This was evidenced by the gradual reduction in respiratory rate before and after the administration of peppermint oil aromatherapy, although other factors such as oxygen therapy and nebulization may also have contributed to symptom relief.

Based on the described phenomena, previous research findings, and the nursing problems caused by bronchopneumonia—one of which is ineffective airway clearance—the author prepared a final nursing scientific paper entitled: “Nursing Care for An. M with Ineffective Airway Clearance Due to Bronchopneumonia in Cendana 3 Ward, RSD Kardinah, Tegal City.” The purpose of this work is to identify problems, signs, symptoms, and management strategies in children suffering from bronchopneumonia.

Objective

Applying Aromatherapy Therapy to An. M with Ineffective Airway Clearance Due to Bronchopneumonia in Cendana 3 Ward, RSD Kardinah, Tegal City.

Method

This final nursing scientific paper used a descriptive research design with the application of previous case study findings, employing a pediatric nursing care approach with an innovative intervention, namely music therapy. The instruments used included the pediatric nursing care format and the Standard Operating Procedure (SOP) for administering inhalation aromatherapy.

The subject of this final nursing scientific paper was an individual (one client) with ineffective airway clearance due to bronchopneumonia in Cendana 3 Ward, RSD Kardinah, Tegal City. The study was conducted over four days, from December 9, 2024, to December 12, 2024, with the administration of music therapy lasting 5–10 minutes. Data collection techniques included interviews, observations, and documentation. The data were obtained from the patient and the patient’s family (An. M) as primary data, as well as the patient’s medical records and information from nurses on duty in Cendana 3 Ward, RSD Kardinah, as supporting data.

The collected data were documented in the pediatric nursing assessment format. The author then conducted data analysis consisting of subjective and objective data, formulated nursing diagnoses for each individual case, developed nursing interventions based on the implementation strategy principles, carried out nursing implementation by applying inhalation aromatherapy, and finally performed nursing evaluations.

Results

The results of observation and interviews conducted on December 9, 2024, showed that the patient, a 15-month-old boy with the initials An. M, presented with the chief complaints reported by his mother, namely shortness of breath and fever.

Subjective data obtained from the interview with the patient's mother indicated that the child had experienced shortness of breath, productive cough, and fever for the past two weeks. The mother also reported that An. M had previously been hospitalized in one of the hospitals in Tegal City at the age of eight months with pneumonia. The child had received complete immunizations according to age.

Objective data obtained from observation revealed the following vital signs: body temperature 38.6°C, pulse 120 beats per minute, respiration 44 times per minute, oxygen saturation 100%, body weight 7.4 kg, and height 75 cm. Physical examination indicated that the patient was *compos mentis*, appeared pale, with warm extremities, anemic conjunctiva, anicteric sclera, rapid and shallow breathing, and additional rhonchi sounds. Supporting examinations included a chest X-ray and laboratory tests. The chest X-ray performed on December 9, 2024, revealed a clinical impression of bronchitis. Laboratory findings indicated abnormalities including low hemoglobin, low hematocrit, high Red Cell Distribution Width (RDW), low Mean Corpuscular Hemoglobin (MCH), low Mean Corpuscular Volume (MCV), and elevated Neutrophil-Lymphocyte Ratio (NLR).

Based on the data analysis, adjusted to major and minor criteria according to the Indonesian Nursing Diagnosis Standards (PPNI, 2019), the main nursing problem identified was ineffective airway clearance related to retained secretions as evidenced by ineffective coughing, altered respiratory rate and pattern, decreased respiration, and rhonchi sounds.

The planned nursing interventions were designed in accordance with the Indonesian Nursing Outcomes Standards (SLKI) and Indonesian Nursing Interventions Standards (SIKI) (PPNI, 2019), with the goal that after 4 × 24 hours of nursing care, airway clearance would improve, characterized by increased effectiveness of coughing, decreased sputum/secretions, improved respiratory rate, and improved breathing patterns. Planned interventions in this case study included airway management with therapeutic actions such as providing warm fluids, administering oxygen, and offering non-pharmacological therapy. The pharmacological therapy used in this study was inhalation aromatherapy.

Implementation

On the first day, interventions included monitoring breathing patterns, sputum or secretions, and additional breath sounds, recommending warm fluids, and providing non-pharmacological therapy, namely inhalation aromatherapy. On the second day, the interventions were repeated, with continued monitoring and inhalation aromatherapy. On the third day, the same interventions were maintained with the addition of health education about bronchopneumonia for the family. On the fourth and final day, the interventions focused on monitoring sputum production and breathing patterns, along with inhalation aromatherapy.

Evaluation

Nursing evaluations conducted over four days, from December 9 to December 12, 2024, for the diagnosis of ineffective airway clearance related to retained secretions,

were documented using the Subjective, Objective, Assessment, Planning (SOAP) approach. The patient's mother reported that the child was still coughing but with reduced phlegm. Objectively, respiratory rate decreased from 44 to 32 breaths per minute, breathing became more stable though still rapid and shallow, and rhonchi sounds diminished.

Discussion

The findings of this study revealed that subjective data consisted of parental complaints of shortness of breath with productive cough, while objective data showed increased respiratory rate (44 breaths per minute), shallow rapid breathing, and additional rhonchi sounds upon auscultation. These findings aligned with the definition of the nursing diagnosis "ineffective airway clearance" in the Indonesian Nursing Diagnosis Standards (SDKI), which include altered breathing patterns, additional breath sounds, and retained secretions (DPP PPNI, 2019).

Based on SDKI criteria, major indicators for this diagnosis include ineffective cough and altered breathing patterns, while minor indicators include rhonchi or other abnormal breath sounds and inability to adequately clear the airway. Therefore, the main nursing diagnosis identified was ineffective airway clearance related to retained secretions, characterized by ineffective cough, altered respiratory frequency and pattern, and rhonchi.

The nursing interventions focused on airway management. Non-pharmacological therapy included providing warm fluids to help thin secretions, oxygen therapy to improve oxygen saturation, and other therapeutic actions to enhance ventilation. An innovative approach applied in this study was inhalation aromatherapy, which proved effective in thinning secretions, improving cough effectiveness, and optimizing breathing patterns. This is consistent with studies by Azhari (2024) and Rosuliana & Hanidah (2024), which showed that peppermint inhalation reduces respiratory frequency and sputum production in pediatric patients with respiratory infections.

Implementation followed the Indonesian Nursing Interventions Standards (SIKI), tailored to the patient's condition and needs. Over the four days, interventions included monitoring respiratory patterns and sputum, administering inhalation aromatherapy, and providing health education to the family.

Conclusion

After four days of implementing inhalation aromatherapy, the SOAP-based nursing evaluation indicated significant improvement. The respiratory rate decreased to 32 breaths per minute, coughing became more effective, and rhonchi sounds diminished. These results demonstrate that the nursing interventions, particularly inhalation aromatherapy, were effective in improving airway clearance in pediatric patients with bronchopneumonia.

References

- Alfiah, N. (2021). *Faktor Risiko dan Faktor Protektif Bronkopneumonia dan Bronkitis Akut pada Pasien Bayi dan Anak Rawat Inap di RS PKU Muhammadiyah Gamping* (Skripsi, Universitas Muhammadiyah Yogyakarta). <https://etd.umy.ac.id/id/eprint/43297/>
- American Association of Critical-Care Nurses. (2020). *COVID-19 Pulmonary, ARDS, and Ventilator Education (Online Course)*. American Association of Critical-Care Nurses. <https://www.aacn.org/newsroom/2020-top-resources>
- Astuti, Y. D., Kartikasari, D., & Purwati, E. (2023). *Penerapan Terapi Inhalasi Sederhana dan Fisioterapi Dada untuk Menurunkan Frekuensi Napas pada Pasien dengan Bronkopneumonia*. RS Roemani Muhammadiyah Semarang.
- Azhari, A. N. (2024). *Implementasi Aromaterapi Peppermint Terhadap Peningkatan Bersihan Jalan Napas Pada Anak Balita dengan ISPA*. Jurnal Ilmiah Kesehatan Keris Husada, Jakarta.
- Dewi, R., & Yuliana, S. (2020). Pengaruh Aromaterapi Inhalasi Terhadap Gejala Sesak Nafas pada Lansia dengan Penyakit Paru. *Jurnal Keperawatan Respati Yogyakarta*, 7(2), 55–61.
- Hadyantari, S. A., & Hudiawati, D. (2024). *Efektivitas Pemberian Terapi Inhalasi pada Pasien dengan Bronkopneumonia untuk Mengatasi Ketidakefektifan Bersihan Jalan Napas*. Jurnal Kesehatan Tambusai, Surakarta.
- Latifah, H. N., Nurjanah, E., & Zakiudin, A. (2024). *Penerapan Asuhan Keperawatan pada An.K dengan Gangguan Sistem Pernafasan: Bronkopneumonia di RSUD Dr. Soeselo Kabupaten Tegal*. Jurnal Kesehatan Umum, Psikologi, Keperawatan dan Kebidanan. Brebes.
- Lesania, I., & Adinda. (2025). Pengaruh Inhalasi Uap Dengan Aromaterapi Eucalyptus Terhadap Frekuensi Nafas Pada Pasien Asma Bronkhial. *Jurnal Manajemen Informasi Kesehatan*, 10(1), 112–121. <https://ojs.stikessaptabakti.ac.id/jmis/article/view/58>
- Makdalena, M. O., Sari, W., Abdurrasyid, A., & Astutia, I. A. (2021). Analisis asuhan keperawatan pada anak dengan bronkopneumonia. *JCA of Health Science*, 1(2), 118–128. <https://jca.esaunggul.ac.id/index.php/jhea/article/view/139>
- Prastio, J., Imamah, I. N., & Yulianti, R. (2023). Penerapan Inhalasi Sederhana Dengan Aromaterapi Peppermint Terhadap Masalah Keperawatan Ketidakefektifan Bersihan Jalan Nafas Pada Anak Bronkopneumonia. *Jurnal Ilmiah Multidisiplin Keilmuan Mandira Cendikia*, 1(4), 19–26. <https://journal.mandiracendikia.com/index.php/mdi/article/view/674>
- Rosuliana, N. E., & Hanidah, H. (2024). *Penerapan Aromaterapi Peppermint Oil pada Balita Bronkopneumonia*. Jurnal Kesehatan Mahardika, Tasikmalaya.

- Sakila, E. P. H., & Amalia, D. (2023). Bronkopneumonia. *Jurnal Medika Nusantara*, 1(3), 134–145. <https://doi.org/10.59680/medika.v1i3.403>
- Sofwan. (2024). *Studi Kasus Penerapan Inhalasi Diffuser dengan Aromaterapi Peppermint dalam Peningkatan Bersihan Jalan Napas pada Anak dengan Bronkopneumonia di Paviliun Ade Irma Suryani Lantai II*. Journal of Educational Innovation and Public Health. Indonesia.
- Sudirman, A. A., Modjo, D., & Ibrahim, S. D. (2023). Analisis asuhan keperawatan bersihan jalan napas tidak efektif pada anak bronkopneumonia dengan tindakan kolaborasi pemberian nebulizer di ruang PICU RSUD Prof. Dr. H. Aloei Saboe. *Jurnal Rumpun Ilmu Kesehatan*, 3(2), 119–128. <https://doi.org/10.55606/jrik.v3i2.1846>
- Tim Pokja SDKI DPP PPNI. (2017). *Standar Diagnosis Keperawatan Indonesia: Definisi dan Indikator Diagnostik*. Jakarta: Dewan Pengurus Pusat Persatuan Perawat Nasional Indonesia.
- Tim Pokja SLKI DPP PPNI. (2019). *Standar Luaran Keperawatan Indonesia: Definisi dan Kriteria Hasil Keperawatan*. Jakarta: Dewan Pengurus Pusat Persatuan Perawat Nasional Indonesia.
- Tim Pokja SIKI DPP PPNI. (2018). *Standar Intervensi Keperawatan Indonesia: Definisi dan Tindakan Keperawatan*. Jakarta: Dewan Pengurus Pusat Persatuan Perawat Nasional Indonesia.
- Titin. (2024). Hubungan Status Gizi Dan Status Imunisasi Terhadap Kejadian Bronkopneumonia Pada Anak. *Indonesian Journal of Nursing and Health Sciences*, 5(1), 1–8. <http://jurnal.globalhealthsciencegroup.com/index.php/IJNHS>
- UNICEF, Save the Children, & Every Breath Counts. (2020). *Every child's right to survive: A 2020 agenda to end pneumonia deaths*. UNICEF. <https://www.unicef.org/reports/every-childs-right-survive-pneumonia-2020>
- Wati, N. S., Setyawati, R., & Suyanto. (2025). *Pengaruh Aromaterapi Peppermint dan Terapi Relaksasi Benson Terhadap Saturasi Oksigen Pasien Bronkopneumonia*. Jurnal Ilmu Kesehatan, Semarang.
- World Health Organization. (2020). *Levels and trends in child mortality: Report 2020*. United Nations Inter-agency Group for Child Mortality Estimation (UN IGME). <https://www.who.int/publications/i/item/9789240011286>
- World Health Organization. (2020). *Pneumonia*. <https://www.who.int/news-room/fact-sheets/detail/pneumonia>