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Original Research/Systematic Review

Nursing Care for N with Bronchopneumonia in RSPPN Inpatient Room: A Case Study Report

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ABSTRACT

Background: *Bronchopneumonia is an infection of the lower respiratory tract caused by bacteria, viruses, or fungi. Children are more susceptible to Bronchopneumonia because their immune systems are weak. Bronchopneumonia can cause complications such as emphysema, acute otitis media, atelectasis, emphysema, and meningitis if not treated immediately. This study aims to implement Nursing Care for patient An. N with bronchopneumonia in the Inpatient Room of RSPPN Panglima Besar Soedirman. Research*

Methods: *This study aimed to evaluate the effectiveness of This study is a case study of pediatric nursing focusing on one case of Bronchopneumonia, which includes assessment, diagnosis, intervention, implementation, and evaluation.*

Results: *The study showed nursing diagnoses including ineffective airway clearance related to airway hypersecretion, hyperthermia related to the disease process, risk of falling related to having fallen, and knowledge deficit related to lack of exposure to information. Nursing implementation was carried out according to problem priorities for 3x24 hours. Implementation of independent nursing care for ineffective airway clearance problems, patients underwent chest physiotherapy and positioning, there was improvement although complaints still existed, so the problem was partially resolved. The diagnosis of hyperthermia, risk of falling, and knowledge deficit were successfully resolved.*

Conclusion: *Nursing care effectively improves bronchopneumonia patients' condition through chest physiotherapy, positioning, and targeted family education.*

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INTRODUCTION

Bronchopneumonia is a common respiratory tract infection in children and can lead to serious lung function impairment if not treated properly. This condition is frequently found in developing countries, with a high mortality rate among children under five years old. Local data also indicate a relatively high incidence, such as in DKI Jakarta, which reported a 53% incidence rate among toddlers (Banten Provincial Health Office, 2024).

Globally, approximately 802,000 children die from bronchopneumonia, equating to about 49 child deaths every second—a figure higher than mortality rates from other diseases such as diarrhea (Yuniar & Kustriyanti, 2023). At RSPPN Panglima Besar Soedirman, the prevalence of bronchopneumonia between December 2024 and February 2025 reached 40%. Symptoms of bronchopneumonia include high fever, shortness of breath, cough, and excessive sputum production, which can obstruct the airway. Ineffective airway clearance is one of the main nursing problems that must be addressed immediately to prevent further complications such as respiratory failure. One intervention proven effective in supporting airway hygiene is chest physiotherapy. Studies have shown that this intervention can enhance secretion removal and improve lung ventilation.

Bronchopneumonia is a lung infection that causes inflammation of the alveoli and bronchi, leading to exudate accumulation and reduced oxygen levels in the lungs (Baeti & Mardhiyah, 2023). This condition is also referred to as inflammation of the lung parenchyma, which can spread through the respiratory tract or hematopoietic cells to the bronchi (Modjo et al., 2023). In some cases, the infection can result in the formation of plaques in the lung lobes (Nurhayati & Khotimah, 2023). In pediatrics, bronchopneumonia is one of the most common respiratory diseases, caused by viruses, bacteria, *Mycoplasma pneumoniae*, or other pathogenic microorganisms that invade the respiratory tract (Duan et al., 2020). It frequently affects infants and young children, particularly due to *Mycoplasma pneumoniae*, bacteria, and viruses (Liu et al., 2020).

The causes of bronchopneumonia vary and include the following: Bacteria: *Streptococcus pneumoniae* is the most common bacterium causing bronchopneumonia in children. Other bacterial causes include *Haemophilus influenzae*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, and *Escherichia coli*. Viruses: Respiratory Syncytial Virus (RSV), Adenovirus, Influenza, and Parainfluenza are some of the viruses that can trigger bronchopneumonia. Fungi: Less commonly, fungi such as *Pneumocystis jirovecii* can cause bronchopneumonia, especially in immunocompromised patients. Aspiration: The entry of foreign objects or fluids into the respiratory tract can also be a causative factor.

The symptoms of bronchopneumonia in children include high fever, cough, shortness of breath, and rapid breathing accompanied by cyanosis (Amalia, 2023). According to the WHO classification, bronchopneumonia can be categorized as mild, severe, or very severe, depending on the respiratory symptoms, the child's ability to drink, and the presence of cyanosis (Vinet & Zhedanov, 2023).The pathophysiology of bronchopneumonia begins when pathogenic microorganisms are inhaled or enter the respiratory tract. These microorganisms then reach the alveoli and bronchioles, triggering an inflammatory response. This inflammation increases capillary permeability, allowing fluid and inflammatory cells (exudate) to enter the alveoli. The accumulation of exudate obstructs gas exchange, leading to ineffective airway clearance and decreased oxygen saturation (Modjo et al., 2023). The infection progresses through several stages: congestion, red hepatization, gray hepatization, and finally resolution (Makdalena et al., 2021).

The management of bronchopneumonia aims to eliminate the infection, relieve symptoms, and prevent complications. The therapeutic approaches include antimicrobial therapy, which involves the administration of antibiotics, antivirals, or antifungals based on the underlying etiology. Oxygen therapy is provided to address hypoxemia. Chest physiotherapy, including techniques such as clapping and postural drainage, helps clear sputum from the airways (Salmawati & Nursasmita, 2023). Bronchodilators are administered to widen the airways in cases of bronchospasm. Nebulizer therapy serves as an inhalation treatment that can reduce sputum production and improve breathing patterns (Silviani & Wirakhmi, 2023). Additionally, adequate fluid and nutritional intake is essential to maintain proper hydration and support the recovery process.

Based on literature review, the main nursing problems in pediatric patients with bronchopneumonia include ineffective airway clearance, characterized by ineffective coughing,

inability to expel secretions, adventitious breath sounds (ronchi), and altered breathing patterns. Ineffective breathing pattern is marked by symptoms such as dyspnea, tachypnea, and the use of accessory respiratory muscles. Impaired gas exchange is identified by hypoxemia, cyanosis, and abnormal blood gas levels. Early stages of child development significantly influence later developmental progress. A child's motor development—both fine and gross—encompasses various physical activities such as sitting, crawling, standing, and walking, as well as interaction with and response to instructions (Wijayanti & Rahmawati, 2019).

Psychological effects of hospitalization in children include depression, stress, anxiety, and fear. Hospitalization can also impact a child's development and interfere with the treatment process (Pitun & Budiyati, 2020). Therefore, understanding the psychological and developmental impacts of hospitalization is crucial. The application of the atraumatic care concept can help prevent psychological problems in children, such as fear, and support their optimal development. In addition, implementing family-centered care can reduce psychological issues in children, such as anxiety, fear, and the lack of parental affection (Manulu, 2023).

MATERIALS AND METHOD

This study employed a case study design aimed at describing in detail the nursing care management for a pediatric patient diagnosed with bronchopneumonia. The case study approach was chosen to explore specific clinical phenomena in a real-life, contextual setting within a defined time and location. The participant in this study was an infant and their family, with a confirmed diagnosis of bronchopneumonia, hospitalized in the inpatient ward of RSPPN Panglima Besar Soedirman, South Jakarta.

The data collection was conducted from February 24 to March 1, 2025. Data were obtained through direct observation, interviews with the patient's mother, physical examination (inspection, palpation, percussion, and auscultation), and documentation review, including medical records and nursing notes. The data were further supported by relevant literature from nursing books and journals. Throughout the case study, the researcher adhered to ethical principles in nursing, including justice—ensuring appropriate therapy based on legal and professional standards—as well as confidentiality and respect for the client's autonomy.

RESULTS

Nursing assessment was conducted on February 24, 2025, for An. N, a 9-month-old male infant who was admitted to the inpatient ward of RSPPN Panglima Besar Soedirman. The patient presented with flu and cough that had persisted for three days, accompanied by groaning sounds during breathing and a fever of 38.4°C. At the time of examination, the patient exhibited productive cough, shortness of breath, and audible rhonchi. The mother reported that the patient had previously been positioned on his side in the emergency room.

Based on the nursing assessment, four nursing diagnoses were established: ineffective airway clearance related to airway secretions; hyperthermia related to the disease process; risk of falls related to a history of falling; and knowledge deficit related to limited exposure to health information. Nursing interventions were implemented over a period of 3 × 24 hours in accordance with the identified priorities.

For the ineffective airway clearance problem, independent nursing actions such as chest physiotherapy, positioning, and nebulization were performed. These interventions resulted in partial improvement. The patient experienced reduced shortness of breath and coughing, with oxygen saturation (SpO_2) at 98% and a respiratory rate of 32 breaths per minute. However, rhonchi were still present, indicating that the problem was only partially resolved. The hyperthermia issue was successfully managed. The patient's body temperature returned to normal (36.8°C) following the administration of D5 ¼ NS intravenous fluids. The risk of falls was mitigated by installing bed handrails and providing education to the patient's mother on how to ensure the child's safety. No

further fall incidents were reported. Additionally, the knowledge deficit was addressed through structured health education. The patient's mother demonstrated improved awareness of the child's condition and showed active engagement by asking relevant questions, although the issue was considered only partially resolved.

DISCUSSION

An. N, a 9-month-old infant diagnosed with bronchopneumonia, presented with primary complaints of a 38.4°C fever, flu, productive cough accompanied by groaning breath sounds, and shortness of breath. Physical examination confirmed chest wall retraction, positive rhonchi, and an increased respiratory rate of 32 breaths per minute. The nursing assessment in this case focused primarily on respiratory problems and hyperthermia. In addition, a secondary infection—commonly caused by viruses affecting the respiratory tract—was suspected to contribute to inflammation of the bronchi and alveoli.

Chest physiotherapy was found to be effective in helping the patient reduce signs and symptoms of ineffective airway clearance, which were indicated by the presence of thickened or excessive secretions in the respiratory tract and a noticeable difference in breathing patterns before and after therapy. After the intervention, the patient no longer exhibited signs of labored breathing (Syafiati & Nurhayati, 2021). During mild infection stages, secretions tend to accumulate during sleep and are expelled upon waking. Chest physiotherapy is a technique used to clear the lungs, consisting of chest percussion, postural drainage, tapping, and vibration, performed up to 2–3 times per day for 20–30 minutes. The techniques used in pediatric patients are similar to those applied to adults, including postural drainage, tapping, vibration, percussion, deep breathing, and effective coughing, aimed at expelling sputum or mucus (Fidayana et al., 2023).

In general, chest physiotherapy is performed by physical or respiratory therapists and works by indirectly clearing airway secretions to improve breathing. This therapy consists of clapping, postural drainage, and vibration (Hanafi & Arniyanti, 2020). It can also evacuate inflammatory exudates and tracheobronchial secretions, eliminate airway obstructions, lower airway resistance, enhance gas exchange, and reduce respiratory effort (GSS et al., 2019).

The intervention for hyperthermia involved the administration of D5 ¼ NS intravenous fluids, which successfully reduced the patient's body temperature to 36.8°C. Fever management can involve pharmacological measures, non-pharmacological methods, or a combination of both. Pharmacological treatment includes antipyretic medication, while non-pharmacological interventions may involve increased fluid intake, placing the child in a normally ventilated room, dressing them in light clothing, and applying warm compresses (Dhewa & Haryani, 2024).

Meanwhile, other nursing problems observed in the patient included risk of falls, which was resolved by installing bed handrails, and knowledge deficit, which was partially addressed through health education regarding the child's condition and hygiene practices. Overall, the comprehensive nursing care provided in this case demonstrated effectiveness in addressing the patient's primary health problems.

CONCLUSION

Nursing care for pediatric patients with bronchopneumonia highlights the importance of a comprehensive approach to address the primary issue of ineffective airway clearance. During the inpatient care period at RSPPN Panglima Besar Soedirman, interventions such as chest physiotherapy, oxygen administration, and close monitoring of vital signs proved effective in improving the patient's respiratory condition. Evaluation indicated significant clinical improvements, including reduced shortness of breath, decreased fever, and improved breath sounds.Nursing care effectively improves bronchopneumonia patients' condition through chest physiotherapy, positioning, and targeted family education.

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