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CARE FOR BRONCHOPNEUMONIA IN AN.RFM WITH CHEST PHYSIOTHERAPY IN THE GARDENIA ROOM OF MUHAMMAD SANI GENERAL HOSPITAL

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ABSTRACT

Bronchopneumonia is one of the lower respiratory tract infections that often affects children and can cause serious complications if not treated properly. The accumulation of secretions in the respiratory tract can cause ineffective airway clearance, shortness of breath, and decreased lung ventilation function. This case study aims to describe the nursing care provided to 7-year-old RFM with bronchopneumonia who underwent chest physiotherapy in the Gardenia Room at Muhammad Sani Regional General Hospital. The method used was a nursing process approach that included assessment, diagnosis, intervention, implementation, and evaluation of nursing care. Three main nursing diagnoses were identified: ineffective airway clearance, hyperthermia, and nutritional deficiency. Interventions included chest physiotherapy, oxygen therapy, antipyretic administration, temperature monitoring, and nutrition and feeding position education. The three-day evaluation showed clinical improvement, including decreased respiratory rate, reduced additional breath sounds, improved body temperature, and increased appetite. This study emphasizes the importance of the role of nurses in applying chest physiotherapy as an effective non-pharmacological intervention to improve airway clearance in children with bronchopneumonia.

Keywords: Bronchopneumonia, Chest Physiotherapy, Pediatric Nursing Care

INTRODUCTION

Bronchopneumonia is one of the most common respiratory diseases affecting children, especially toddlers, and is the leading cause of death in this age group (Purnamawati & Fajri, 2020). Bronchopneumonia is a form of pneumonia characterized by inflammation of the lung parenchyma, involving the bronchi or bronchioles, with a patchy distribution of infiltrates caused by bacteria, viruses, fungi, or foreign bodies (Raja et al., 2023).

Radiologically, bronchopneumonia shows widespread areas of consolidation around the bronchi, rather than a single lobar pattern. The WHO (2021) notes that throughout 2021, more than 800,000 toddlers died from bronchopneumonia worldwide, or the equivalent of 39 children dying every second. This figure is higher than deaths from diarrhea (437,000 children) and malaria (272,000 children). In Indonesia alone, bronchopneumonia accounts for 16% of under-five deaths, with 19,000 children dying from this disease. Riskesdas data shows that the prevalence of bronchopneumonia increased from 1.6% in 2013 to 2% in 2021 (RIKESDA, 2021).

Bronchopneumonia is also called lobular pneumonia, which causes clinical manifestations including fever above 38°C, shortness of breath, ineffective coughing, rales, additional breathing sounds, and chest pain (Azahra et al., 2022). Transmission occurs through droplets when the patient coughs or sneezes, which are then inhaled and trigger an inflammatory process in the lungs (Aryani & Argarini, 2023a).

Bronchopneumonia can cause physical effects such as hypoxia due to impaired gas exchange, which, if left untreated, can lead to loss of consciousness, seizures, permanent brain damage, and even death (Sukma et al., 2020).

In addition to physical effects, bronchopneumonia also has psychological and social impacts on the family. Children often become restless, weak, and have difficulty eating, while families experience emotional distress, disruption of activities, and economic burdens due to the cost of care and the need to accompany the child intensively (Safitri, 2022). Therefore, the role of nurses is crucial in providing comprehensive nursing care, from assessment, establishing nursing diagnoses, to implementing interventions, both pharmacological and non-pharmacological.

Nurses play an important role as implementers, planners, and educators in bronchopneumonia nursing care, especially in dealing with ineffective airway clearance. Ineffective airway clearance is defined as the inability of an individual to clear secretions or obstructions from the airways to maintain a patent airway (SDKI DPP PPNI Working Group, 2017). Parameters of successful airway clearance include the ability to cough effectively, no sputum accumulation, and normal breathing patterns (SLKI DPP PPNI Working Group, 2019).

Nurses play a role in identifying major and minor signs and symptoms of ineffective airway clearance, such as ineffective coughing, excessive sputum, wheezing, rales, dyspnea, changes in breathing patterns, and cyanosis (Sukma et al., 2020). Bronchopneumonia is treated through pharmacological and non-pharmacological approaches. Pharmacologically, symptomatic therapy such as antipyretics, antibiotics, mucolytics, and bronchodilators is administered to reduce symptoms (Sukma et al., 2020).

Non-pharmacologically, one intervention that has been proven effective is chest physiotherapy. Chest physiotherapy includes percussion (clapping), vibration, squeezing, postural drainage, and effective coughing exercises, with the goal of helping to release secretions attached to the bronchial walls, improve respiratory muscle function, improve ventilation, and prevent complications of hypoxia (Moy et al., 2024).

Several studies support the effectiveness of chest physiotherapy in children with bronchopneumonia. For example, a study by Azahra et al. (2022) at Arjawinangun Regional General Hospital found that chest physiotherapy administered to children aged 8 months and 21 months successfully improved temperature, pulse, respiratory rate, oxygen saturation, and reduced symptoms of rales, secretions, and coughing within 6–7 days, although there were differences in the speed of improvement between individuals. Research by Azmy et al. (2022) also showed similar results, where chest physiotherapy conducted for three days was able to normalize pulse rate, respiration, and oxygen saturation in children with bronchopneumonia. These findings further reinforce that chest physiotherapy is effective in overcoming the problem of ineffective airway clearance. In addition, Nurhayati et al. (2022) in their study at RSI Banjarnegara emphasized that the application of chest physiotherapy integrated with the nursing care process successfully increased the effectiveness of coughing, reduced sputum production, and resolved abnormal breathing sounds such as grok-grok after three days of treatment. Cases of bronchopneumonia are quite common in pediatric wards, including at Muhammad Sani Tanjung Balai Karimun Regional General Hospital, which is the main referral hospital in the Karimun Regency, Riau Islands. Based on internal data from the Gardenia ward in June 2025, there were 20 cases of bronchopneumonia. This condition shows that the need for effective, standardized, and well-documented nursing care is

crucial in improving pediatric nursing care.

The researcher was interested in conducting this case study because bronchopneumonia is a complex clinical case that is often encountered in pediatric nursing practice. The case study was conducted on patient An.RFM with a diagnosis of bronchopneumonia who was treated in the Gardenia ward of Muhammad Sani Regional General Hospital. Muhammad Sani Regional General Hospital was chosen as the research location due to its high number of bronchopneumonia cases and the availability of facilities and health personnel that enable comprehensive nursing care.

In addition to ineffective airway clearance, which needs to be treated optimally, children with bronchopneumonia also often face various other interrelated nursing problems, such as hyperthermia and nutritional deficiencies. Therefore, the researchers were interested in raising this case study with the title "Bronchopneumonia Nursing Care in An.RFM with Chest Physiotherapy in the Gardenia Room of Muhammad Sani Regional General Hospital".

RESEARCH METHOD

This research was conducted in July 2025 using a case study method. The subject of this study was An. RFM, a 7-year-old boy with a medical diagnosis of bronchopneumonia who was treated in the Gardenia Room of Muhammad Sani Regional General Hospital. Data collection was carried out through interviews, observations, documentation, and a combination of the three. The instruments used in this study were nursing care forms that included assessment sheets, nursing diagnoses, nursing interventions , nursing implementation, nursing evaluation, and supporting tools such as laboratory and radiology examination results.

RESEARCH RESULTS

Based on the assessment results of a child who was hospitalized with the main complaints of coughing up phlegm and shortness of breath, several data were found that supported the identification of nursing problems. The patient’s mother said that her child had a cough with phlegm that could not be effectively expelled and often experienced shortness of breath, especially when lying down. Objectively, data was obtained in the form of ineffective coughing, use of accessory breathing muscles, tachypnea (breathing rate of 28x/minute), additional breathing sounds in the form of rhonchi, and SpO_2 97% with a nasal cannula. Based on this data, the nursing diagnosis was ineffective airway clearance (SDKI D.0001) related to excess sputum and evidenced by ineffective coughing and the presence of additional breath sounds.

Nursing interventions for this problem are directed at improving airway clearance with SLKI “Airway Clearance” (L.01002). Intervention strategies according to SIKI (I.01011) include: observation of breathing patterns, additional breathing sounds, and sputum; therapeutic measures such as positioning the child in a semi-Fowler/Fowler position, giving warm drinks, chest physiotherapy, and administering oxygen if necessary; education on effective coughing techniques; and collaboration with the medical team in administering bronchodilators.

Other data showed that the child had a fever that did not subside despite being treated with compresses at home. The patient’s mother mentioned that the child’s body temperature remained high, appetite decreased, and the child appeared weak. Objectively, the body temperature was 38.8°C, pulse was 110x/minute, tachypnea, warm skin, and dry lip mucosa. This indicates a problem of Hyperthermia (SDKI D.0130) related to the disease process and evidenced by an above-normal body temperature.

Interventions included monitoring body temperature and vital signs (SIKI I.14578), increasing fluid and nutritional intake, and educating the family about warm compresses. The SLKI used was "Thermoregulation" (L.14134), with the target of improving body temperature. Collaboration was carried out for the administration of antipyretics according to medical indications.

Furthermore, the child also experienced a decrease in appetite during illness. The patient's mother mentioned that the child only ate small amounts and only consumed soft foods. Objectively, the child's weight was recorded at 20 kg, the oral mucosa was dry, and the child appeared weak. This data supports the diagnosis of nutritional deficiency (SDKI D.0019) related to psychological factors and evidenced by a decrease in appetite and weight.

The intervention plan was aimed at improving nutritional status (SLKI L.03030), including monitoring food intake and weight, providing high-calorie and high-protein foods, and educating the family about proper eating positions and diets. Collaborative intervention was carried out with a nutritionist to calculate daily calorie and nutrient requirements (SIKI I.03119).

From an educational perspective, it was found that parents did not understand their child's medical condition. The patient's mother said that they thought the symptoms of cough and fever were minor, so they had not taken their child to a health facility. The mother also appeared confused when given an explanation and repeatedly asked about bronchopneumonia. This indicates a knowledge deficit (SDKI D.0111) related to a lack of exposure to information.

The intervention focused on increasing the level of knowledge (SLKI L.12111) through an educational approach (SIKI I.12383), including identifying readiness to receive information, providing educational media, providing education on risk factors and danger signs, and strategies for preventing complications. It is hoped that behavior in accordance with recommendations will increase and misperceptions will decrease.

Finally, based on data showing high temperature, leukocytosis (21,920/mm^3), chest X-ray results showing pulmonary infiltrates, and family hand hygiene that was not always monitored, a diagnosis of Risk of infection (SDKI D.0142) was made, related to inadequate secondary body defenses.

The intervention plan focuses on infection prevention (SLKI L.14137) and is carried out through monitoring signs of infection, restricting visitors, practicing hand hygiene, skin care, and education about signs of infection and the importance of nutrition. Collaboration is carried out for immunization when necessary (SIKI I.14539).

DISCUSSION

The initial nursing assessment of An. RFM was conducted comprehensively through interviews, observation, and physical examination. The main complaints were coughing with phlegm, shortness of breath, and weakness. The child showed use of accessory breathing muscles, rapid breathing (tachypnea), and retraction of the lower chest wall during inspiration. The patient's mother also reported that the child had difficulty sleeping and often woke up due to shortness of breath. This data indicated a disorder in the respiratory system that could affect basic oxygenation needs.

The results of the physical examination and clinical symptoms showed additional breathing sounds in the form of rales during auscultation, a respiratory rate of 28 breaths per minute, and the presence of sputum that was difficult to expel even though the patient had a productive cough. This condition led to a medical diagnosis of bronchopneumonia. Theoretically, this condition is consistent with the explanation (Potter & Perry, 2018), which states that children's airways are narrower and more prone to blockage due to mucus accumulation or inflammation. This is reinforced by the opinion (Smeltzer & Bare, 2017) that

lower respiratory tract infections can increase sputum production, causing gas exchange disorders and triggering additional breathing efforts.

The primary nursing diagnosis established is Ineffective Airway Clearance, defined by SDKI (2017) as the client's inability to clear the airway of secretions or obstructions to maintain adequate ventilation. The priority of this problem is determined based on its direct relationship to the patient's survival. Referring to Virginia Henderson's theory of basic needs, normal breathing is a fundamental need, so disturbances in this function become the main focus of nursing interventions.

Nursing actions provided include independent and collaborative interventions. The main actions include chest physiotherapy, oxygen therapy, semi-Fowler position, and nebulization with combivent (salbutamol and ipratropium bromide). Monitoring of breathing patterns, additional breathing sounds, and sputum volume is carried out strictly for three consecutive days. This intervention refers to SIKI Airway Management (I.01011), with the target of SLKI Improved Airway Status (L.01002), which is characterized by normal breathing patterns, easy sputum removal, no retractions, and decreased rales.

The effectiveness of chest physiotherapy is a key aspect in overcoming airway obstruction. Percussion, vibration, and postural drainage techniques have been shown to help move sputum from the lower to upper airways for expectoration. (Hockenberry et al., 2019) explains that this therapy is very effective in improving ventilation and preventing atelectasis. In the case of An. RFM, chest physiotherapy showed results where the patient began to expel phlegm, respiratory rate decreased from 28 breaths per minute to 24 breaths per minute, and rales began to decrease.

Table 4.1 Results of Chest Physiotherapy Implementation

Day	Objective Data Before Intervention	Objective Data After Intervention
Day 1	• RR: 30 breaths/minute • Chest wall retraction • Coarse rales • Thick sputumthat is difficult to expel	• RR: 28 breaths per minute • Rales still present • Sputum begins to be expectorated, although still thick
Day 2	• RR: 28 breaths per minute • Rhonchi is moderate • Sputum is becoming thinner	• RR: 26 breaths per minute • Wheezing has decreased • Sputum is easier to expel
Day 3	• RR: 26 breaths per minute • Moderate rales • Sputum is becoming thinner	• RR: 24 breaths per minute • Fine rales • Sputum is expelled when coughing

Research by Azmy et al. (2022) also showed similar results, where chest physiotherapy conducted for three days was able to normalize pulse rate, respiration, and oxygen saturation in children with bronchopneumonia. These findings further reinforce that chest physiotherapy is effective in overcoming ineffective airway clearance. In addition, Nurhayati et al. (2022) in their study at RSI Banjarnegara emphasized that the application of chest physiotherapy integrated with the nursing care process successfully increased the effectiveness of coughing, reduced sputum production, and resolved abnormal breathing sounds such as grok-grok after three days of treatment.

Post-intervention evaluation showed gradual improvement. In addition to reduced rales and shortness of breath, patients also showed increased activity, appetite, and appeared more

comfortable during sleep. These results are consistent with a study by (Aryani & Argarini, 2023b), which demonstrated the effectiveness of inhalation therapy followed by chest physiotherapy in accelerating the resolution of airway obstruction in children with bronchopneumonia. These clinical improvements also demonstrate the success of the family-centered care approach through educating the patient's mother about effective coughing techniques and sleeping positions that support respiratory function.

In this case study, several other nursing issues emerged as a result of the bronchopneumonia infection experienced by An. RFM, including hyperthermia, nutritional deficiency, knowledge deficit, and infection risk. These four diagnoses were analyzed based on the patient's clinical data, nursing theory, and evidence-based practice underlying the interventions and evaluations during the nursing care process.

The problem of hyperthermia arose as the body's response to the active infection. On the first day of treatment, the patient's body temperature reached 38.8°C with an increase in pulse and respiratory rate, accompanied by other symptoms such as warm skin, dry mucous membranes, and decreased appetite. Laboratory results showed leukocytosis, further confirming the presence of an inflammatory process. According to (Doenges, 2018), an increase in body temperature is a response to the activation of the hypothalamus by pyrogens released during the infection process. Pediatric literature explains that children

are more prone to dehydration during fever because their body surface area is larger than their body weight, causing fluid loss to occur more quickly (Kliegman & Joseph, 2019). Within Roy's adaptation theory framework, hyperthermia is understood as a form of maladaptation of the body to infectious stressors, which requires intervention to help the body readapt physiologically and behaviorally. Nursing interventions provided include warm compresses, removal of layered clothing, fluid administration, and collaboration in the administration of antipyretics and antibiotics. A three-day evaluation showed a gradual decrease in body temperature to 36.8°C, indicating the success of the interventions that had been carried out.

Along with the active infection process, An. RFM also experienced a decrease in appetite and inadequate nutritional intake. The patient only consumed about a quarter of the meal portion in the first two days, accompanied by symptoms of weakness and dry mouth mucosa. In systemic infection, the body requires more energy to support the immunological process, so that lack of intake actually worsens the clinical condition (Wong et al., 2021). Nursing care focused on providing high-calorie and high-protein meals in small but frequent portions, as well as creating comfort during the eating process. This intervention was also accompanied by educating the mother about the importance of nutritional intake while the child was sick. This approach is in line with the principles of holistic pediatric nursing, covering biological, psychological, social, and environmental aspects. Monitoring results showed that the patient's weight increased from 20 kg to 20.5 kg on the third day, and the oral mucosa appeared more moist, indicating a significant improvement in nutritional status. This success shows that the intervention has been effective, although monitoring is still needed to ensure long-term nutritional stability.

The parents' lack of understanding of their child's condition was also an important issue identified in the assessment. The parents considered their child's cough and fever to be minor illnesses that could be treated at home. This lack of knowledge led to a delay in seeking medical help and increased the risk of complications. When given an explanation of their child's condition, the mother appeared confused and repeated the same questions several times. Based on the SDKI (2017) criteria, this condition indicates a knowledge deficit, which requires gradual educational intervention appropriate to the information recipient's capacity. The intervention was carried out through verbal education using simple language and leaflets. Evaluation was conducted using the teach-back method, and the results showed that on the

third day, the patient's mother was able to explain her child's condition, the therapy being administered, and the steps for further care at home. These findings confirm that structured and communicative education is very important in empowering families during the process of caring for their children.

In addition, An. RFM's clinical condition also showed a high risk of secondary infection during the treatment process. The patient was treated in a shared ward without special isolation, using intravenous infusions and breathing aids, and was in an environment that was not fully controlled in terms of visitor hand hygiene. High body temperature and increased leukocyte levels further increased this risk. The WHO (2020) emphasizes that nosocomial infections are common in inpatient care environments that do not implement strict infection control, especially regarding hand hygiene. Nursing interventions were carried out through the application of aseptic techniques when manipulating equipment, monitoring vital signs, educating families about hand hygiene and visitor restrictions, and collaborating in the administration of intravenous antibiotics. Evaluation on the third day showed significant improvement: body temperature decreased, leukocyte count began to drop to 16,514/mm^3, and the child appeared more comfortable. Additionally, the patient's mother demonstrated increased understanding of the importance of infection prevention. This demonstrates that the nursing interventions provided not only impacted the patient's clinical condition but also led to behavioral changes in the family that supported the healing process.

CONCLUSION

a. Assessment of the patient with a medical diagnosis of bronchopneumonia revealed complaints of fluctuating fever, difficult-to-expel phlegmy cough, and shortness of breath, especially when lying down. The child appeared weak, had dry oral mucosa, and decreased appetite. Vital sign examination results showed a body temperature of 38.8°C, respiratory rate of 28 breaths per minute, with rhonchi sounds in both lungs. Laboratory results showed leukocytosis (21,920/µl), and chest radiology showed bilateral perihilar infiltrates supporting the presence of lower respiratory tract infection.
b. The nursing diagnosis for patients with bronchopneumonia is based on the data found, namely ineffective airway clearance related to secretions buildup, hyperthermia related to the infection process, nutritional deficit related to decreased appetite, knowledge deficit related to lack of information about the disease, and risk of infection related to inadequate secondary immune defense.
c. Nursing planning is formulated according to the nursing diagnosis with the following objectives: clean and effective airway, return to normal body temperature, fulfillment of nutritional needs, increased parental knowledge, and prevention or suppression of infection. Nursing implementation includes providing chest physiotherapy and nebulizers to help expel sputum, positioning the patient in a semi-Fowler position, applying warm compresses, antipyretics, and antibiotics as indicated. High-calorie and high-protein foods are given according to the child's tolerance, and intake is monitored. Gradual education is provided to parents about the disease, care during hospitalization, and infection prevention measures. In addition, signs of infection and the cleanliness of equipment and the child's surroundings are monitored.
d. At evaluation, nursing problems showed gradual improvement. Ineffective airway clearance began to be resolved, as indicated by easier sputum discharge and decreased respiratory rate. Hyperthermia improved with a temperature drop from 38.8°C to 36.8°C. Nutritional intake increased from ¼ portion to almost 1 portion per meal, and weight increased from 20 kg to 20.5 kg. Education for parents was effective, as shown by increased understanding and the ability to repeat information. The risk of infection

was reduced, as indicated by a decrease in leukocyte count and the patient's increasingly stable general condition.

RECOMMENDATIONS

a. For Nursing Science
The results of this case study are expected to enhance knowledge and enrich scientific evidence in the comprehensive development of nursing science. It is important for nurses to continue to improve their competence in applying nursing interventions that are appropriate to the individual patient's condition. Therefore, educational institutions and nursing training providers are expected to develop a curriculum based on current evidence-based practice and equip nurses with clinical skills that are applicable and relevant to the challenges of nursing services in various service settings.

b. For Muhammad Sani General Hospital
Muhammad Sani Regional General Hospital is expected to strengthen the standards of nursing care for children with bronchopneumonia by developing structured clinical guidelines that support the implementation of holistic nursing interventions. The hospital is also advised to provide regular training on the management of respiratory disorders in children and to ensure the availability of supporting facilities such as breathing aids, oxygen, and family education media. These efforts will improve the quality of nursing care and accelerate the patient recovery process.

c. For Patients and Families
Families are expected to play an active role in supporting the child's treatment process, including ensuring a comfortable sleeping position, maintaining hand hygiene, meeting fluid and nutritional needs, and understanding the warning signs to watch out for. Continuous education for parents needs to be provided both during the child's treatment and after returning home, so that follow-up care can be carried out appropriately. Optimal family involvement is key to accelerating recovery and preventing disease recurrence.

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