



Emergency Nursing Care for Mrs. R with Respiratory System Impairment due to Chronic Obstructive Pulmonary Disease (COPD) in the ICU of Vita Insani Hospital, Pematangsiantar City

Mhd Ishan Alkafi¹, Abdul Basit Lubis²

1, 2) Nursing Academy of the 1st/Bukit Barisan Military District, Pematangsiantar

✉ Corresponding author:

mihsanalkafi@gmail.com, basitlubis37@gmail.com

Abstract

Chronic Obstructive Pulmonary Disease (COPD) is a chronic lung disease characterized by progressive airflow obstruction, which leads to impaired gas exchange and shortness of breath. It is estimated that around 3.5 million people worldwide died from it. This study aims to provide and describe emergency nursing care for Mrs. R with a COPD diagnosis. Methods: This study employs a qualitative descriptive design with a case study approach involving a 67-year-old patient with COPD over a period of three days (April 28–30, 2026) Results: Based on the assessment results, the nursing problems identified were ineffective airway clearance, ineffective breathing pattern, and impaired gas exchange. The interventions carried out included monitoring respiration, providing a semi-Fowler position, oxygen therapy, suctioning, effective coughing exercises, as well as collaborating on pharmacological therapy. After three days of care, the patient's condition improved, marked by less shortness of breath, increased oxygen saturation, reduced secretions, and a more effective breathing pattern. Conclusion: Comprehensive emergency nursing care for COPD patients can improve airway cleanliness, enhance breathing, and support patient recovery in the ICU. Recommendations: Comprehensive nursing care for COPD patients helps improve airways, breathing function, and the recovery process in the ICU.

Keywords: Emergency Nursing Care: Respiratory System Disorders – Chronic Obstructive Pulmonary Disease (COPD).

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a progressive lung disease characterized by airflow limitation due to a chronic inflammatory response to exposure to harmful particles or gases. According to the World Health Organization (WHO), COPD is the fourth leading cause of death worldwide, with approximately 3.5 million deaths in 2021, most of which occur in low- and middle-income countries. In Indonesia, the prevalence of COPD is approximately 5.6%, while in the Riau Islands Province it is 2.1%. In North Sumatra Province, COPD cases remain quite high, with the largest distribution in Tebing Tinggi City, followed by North Labuhanbatu Regency and Serdang Bedagai Regency (Erviana, Atrie, & Sihombing, 2025).

Chronic obstructive pulmonary disease (COPD) is a disease characterized by airflow limitation that is not fully reversible. Airflow limitation is usually progressive and is associated with abnormal lung inflammation due to noxious particles or gases, which causes airway narrowing, mucus hypersecretion, and changes in the pulmonary vascular system (Erviana, Atrie & Sihombing, 2025). According to the World Health Organization (WHO), Chronic Obstructive Pulmonary Disease (COPD) is a lung disease that causes limited airflow and breathing problems.



In 2021, Chronic Obstructive Pulmonary Disease (COPD) was also the fourth leading cause of death in the world, causing 3.5 million deaths or approximately 5% of all global deaths. Nearly 90% of deaths or approximately 3,150,000 cases occurred in individuals under 70 years of age or 40–69 years of age as the group most at risk of death from COPD, especially in low- and middle-income countries, tobacco smoking contributed approximately 30–40% of cases or approximately 1,050,000 to 1,400,000 cases, in addition to other factors such as indoor air pollution.

Data in Indonesia shows that the prevalence of Chronic Obstructive Pulmonary Disease (COPD) reaches approximately 5.6% of the total population, meaning that out of every 100 people, approximately 5–6 suffer from COPD. In the Riau Islands Province, the prevalence of COPD is recorded at approximately 2.1% with an estimated number of cases of approximately 47,700 people, placing this region in the low to moderate prevalence category. Based on these data, it can be concluded that there are quite significant differences between provinces in Indonesia in terms of the number and percentage of COPD sufferers, which are influenced by variations in risk factors, environmental conditions, and lifestyles of the people in each region (Erviana, Atrie, & Sihombing, 2025).

Based on the North Sumatra Provincial Health Profile (2024), cases of Chronic Obstructive Pulmonary Disease (COPD) were found in several districts/cities. The highest number of cases was in Tebing Tinggi, with 3,103 people, or approximately 52.7% of the total reported cases. Furthermore, in North Labuhanbatu Regency, there were 1,102 people with COPD, or approximately 18.7%. In Serdang Bedagai Regency, there were 876 people with COPD, or approximately 14.9%. Meanwhile, in Pakpak Bharat Regency, there were 346 people with COPD, or approximately 5.9%. In Tanjungbalai, there were 264 people with COPD, or approximately 4.5%, and the lowest number was in Samosir Regency, with 202 people with COPD, or approximately 3.4% of the total recorded cases.

Data from Vita Insani Hospital in Pematangsiantar shows that the number of COPD patients treated in the ICU increased from 145 cases in 2023 to 172 cases in 2024. Initial survey results indicate that COPD patients treated in the ICU generally present with acute exacerbations accompanied by shortness of breath, coughing up phlegm, wheezing, and decreased oxygen saturation, thus requiring immediate treatment to prevent impaired gas exchange and respiratory failure.

COPD patients in the ICU require emergency nursing care focused on the Primary Survey (ABCDE) approach to maintain the airway, optimize ventilation, and prevent life-threatening complications. Research by Mardiyati, Ari, and Deoni (2022) showed that the application of the Active Cycle of Breathing Technique (ACBT), Pursed Lips Breathing Technique (PLBT), and the tripod position reduced respiratory rate from 32 to 27 breaths/minute and increased oxygen saturation from 89% to 92%. Furthermore, research by Manullang, Jundapri, and Pratama (2024) concluded that the application of emergency nursing care through primary and secondary surveys was effective in addressing clinical problems in COPD patients according to the patient's condition and needs. Research purposes Able to provide nursing care to patients with Chronic Obstructive Pulmonary Disease (COPD) in the ICU Room of Vita Insani Hospital, Pematangsiantar City

RESEARCH METHODS

The research design used in this research is qualitative descriptive research with a case study approach. (Moleong, 2021) Qualitative research is "research that produces descriptive data in the form of written or spoken words from people and observable behavior." Moleong explains that this research is very useful in understanding behavioral patterns and social interactions in depth. This research uses a case study approach that aims to describe the picture of how Nursing Care is provided to patients with respiratory system disorders with a medical diagnosis of chronic



obstructive pulmonary disease (COPD) in the ICU of Vita Insani Hospital, Pematangsiantar City. This research was conducted in the ICU room of the hospital. Vita Insani of Pematangsiantar City. The subject for this study was 1 respondent who was diagnosed at Chronic Obstructive Pulmonary Disease.

RESULTS AND DISCUSSION

The results of this discussion were carried out on 1 respondent, namely Mrs. R, who experienced respiratory system disorders with a medical diagnosis of chronic obstructive pulmonary disease (COPD). This research was conducted at Vita Insani Hospital Pematang Siantar which is located in the city center, precisely at Jalan Merdeka No. 329, Pahlawan Village, East Siantar District, Pematangsiantar City, North Sumatra 21132. with 1 respondent entitled Emergency Nursing Care for Chronic Obstructive Pulmonary Disease (COPD) in the ICU Room of Pematang Siantar City. Nursing care in the case of Chronic Obstructive Pulmonary Disease (COPD) was carried out on patient Mrs. R during the treatment period, namely from April 28 to April 30, 2026 in the ICU room. Nursing care was carried out systematically through the stages of the nursing process which included assessment, determination of nursing diagnosis, intervention planning, implementation, and evaluation. In this discussion, the researcher describes the suitability between theory and practice found in the case of Mrs. R, and compares it with the results of case studies and related journals, so as to provide a clear, directed, and scientifically accountable picture.

Assessment

Based on the results of the assessment on April 28, 2026, of Mrs. R in the Intensive Care Unit (ICU) of Vita Insani Hospital, Pematangsiantar, data was obtained that the patient experienced acute exacerbation of Chronic Obstructive Pulmonary Disease (COPD) with the main complaints of severe shortness of breath, cough with phlegm, decreased consciousness, and general weakness. Physical examination showed a respiratory rate of 34 times/minute, use of accessory respiratory muscles, chest wall retraction, wheezing and rhonchi breath sounds, and oxygen saturation (SpO_2) 85% before oxygen therapy which increased to 93% after mechanical ventilation. Blood gas analysis results showed pH 7.31, $PaCO_2$ 58 mmHg, PaO_2 60 mmHg, and SaO_2 89% indicated gas exchange disorders in the form of hypoxemia and hypercapnia.

These findings are consistent with the theory that acute COPD exacerbations are characterized by airflow obstruction leading to impaired ventilation, secretion retention, hypoxemia, and hypercapnia. Clinical manifestations such as shortness of breath, tachypnea, productive cough, use of accessory muscles, wheezing, and decreased oxygen saturation are key characteristics requiring immediate treatment.

The results of this study align with research by Mardiyanti, Ari Pebru Nurlaily, and Deoni Vioneery (2022) which reported that COPD patients generally experience shortness of breath, tachypnea, use of accessory muscles, and decreased oxygen saturation. Research by Chandra Wulan Nur Fadillah et al. (2026) also stated that COPD patients often experience productive cough, accumulation of secretions, wheezing, and impaired airway clearance. In addition, Manullang et al. (2024) emphasized that a comprehensive assessment using the ABCDE approach is crucial for early identification of respiratory disorders in COPD patients. Thus, the results of Mrs. R's assessment demonstrate a congruence between the theory and the patient's clinical condition, thus serving as the basis for establishing a nursing diagnosis and developing appropriate interventions.

Nursing Diagnosis.a) Ineffective airway clearance related to retained secretions is characterized by the family saying the patient has had shortness of breath since 2 days before admission to the hospital and is getting worse, the family saying the patient has difficulty expelling phlegm, the family saying the patient has a history of COPD, the patient is attached to an EET and ventilator, RR 34x/minute, additional wheezing breath sounds are heard, there are secretions in the airway so



that suction is performed, use of accessory respiratory muscles, chest wall retraction, decreased Spo₂. B) Ineffective breathing pattern related to airway obstruction is characterized by the family saying the patient has had increasingly severe shortness of breath, the family saying the patient seems to have difficulty breathing during activity, RR 34x/minute, rapid and shallow breathing, use of accessory respiratory muscles, chest wall retraction and is attached to a ventilator. c) Gas exchange disorders related to changes in the alveolar-capillary membrane are characterized by the family saying that the patient's shortness of breath is getting worse, Spo₂ is decreasing, somnolent consciousness (GCS 9), the patient is using a ventilator, pH 7.31, paCO₂ 58 mmHg, paO₂ 60 mmHg and SaO₂ 89%.

Nursing Interventions, a) Ineffective Airway Clearance

The goal of nursing is to improve airway clearance, characterized by reduced secretions, decreased adventitious breath sounds, improved respiratory rate, more effective coughing, and increased oxygen saturation. Interventions include monitoring respiratory status and secretions, suctioning as indicated, maintaining airway patency, educating the family, and collaborating on nebulizers, bronchodilators, and mucolytics to address secretion retention. b) Ineffective Breathing Pattern

The nursing goal is to improve breathing patterns, with indicators such as improved respiratory rate, reduced use of accessory muscles, more regular breathing patterns, and increased oxygen saturation. Interventions include monitoring breathing patterns and oxygen saturation, providing a semi-Fowler's position, maintaining oxygen and ventilator therapy, family education, and collaboration in administering bronchodilators, corticosteroids, and inhalation therapy to improve ventilation. c) Impaired Gas Exchange

The goal of nursing is to improve gas exchange, indicated by increased oxygen saturation, reduced signs of hypoxia, increased consciousness, and improved blood gas analysis results. Interventions include monitoring respiratory status, oxygen saturation, blood gas analysis, maintaining mechanical ventilation and airway patency, family education, and collaborative oxygen and pharmacological therapy to improve tissue oxygenation and prevent respiratory failure.

Nursing Implementation, a) Ineffective Airway Clearance

Nursing implementation was carried out for 3 x 8 hours by monitoring the frequency, rhythm, and depth of breathing, auscultation of additional breath sounds, monitoring the amount, color, odor, and consistency of secretions, suctioning through an endotracheal tube (ETT) as indicated, maintaining airway patency, educating the family, and collaborating on administering nebulizers, bronchodilators, and mucolytics. The results of the implementation showed that secretions were decreasing, the consistency was thinner, rhonchi and wheezing decreased, the airway was more patent, so that the problem of ineffective airway clearance was partially resolved. b) Ineffective Breathing Pattern

Nursing implementation was carried out through monitoring the frequency, rhythm, depth of breathing, use of accessory muscles, chest wall retraction, adventitious breath sounds, and oxygen saturation, maintaining a semi-Fowler's position, maintaining oxygen and ventilator therapy according to the medical program, and collaboration in administering bronchodilators and corticosteroids. The implementation results showed a decrease in respiratory frequency from 34 breaths/minute to 26–28 breaths/minute, reduced use of accessory muscles and chest wall retraction, a more regular breathing pattern, and an increase in oxygen saturation of up to 95%. This indicates that the problem of ineffective breathing patterns was partially resolved. c) Impaired Gas Exchange

Nursing implementation was carried out through monitoring respiratory status, oxygen saturation, blood gas analysis results, signs of hypoxia, and level of consciousness, maintaining



the ventilator and airway patency through suction when necessary, maintaining a semi-Fowler's position, providing education to the family, and collaborating in administering oxygen therapy, bronchodilators, corticosteroids, and ventilator evaluation according to the patient's condition. The implementation results showed that oxygen saturation increased from 85% to 95%, respiratory rate decreased, use of accessory muscles decreased, level of consciousness increased from GCS 9 to GCS 11, and signs of hypoxia decreased. However, the patient still required a ventilator so that the problem of impaired gas exchange was partially resolved.

Evaluation

Based on the results of the evaluation during three days of nursing care for Mrs. R with a medical diagnosis of acute exacerbation of Chronic Obstructive Pulmonary Disease (COPD) in the ICU of Vita Insani Hospital, Pematangsiantar, the development of the patient's condition showed improvements in the three nursing diagnoses raised. However, all problems have not been completely resolved because the patient still requires a mechanical ventilator, oxygen therapy, and intensive respiratory monitoring. a) Ineffective Airway Clearance

A three-day evaluation showed gradual improvement. Secretion production decreased from thick, yellowish-white secretions to clear, white secretions with a thinner consistency. Additional breath sounds in the form of wheezing and rhonchi decreased, oxygen saturation increased from 93% to a stable level of around 95%, and no further secretion obstruction was found in the ETT. However, because the patient still required ventilation and suctioning as indicated, the problem of ineffective airway clearance was declared partially resolved. b) Ineffective Breathing Pattern

Evaluation showed a decrease in respiratory rate from 34 breaths/minute to 26–28 breaths/minute, a more regular breathing pattern, reduced use of accessory muscles and chest wall retraction, and stable oxygen saturation at 93–95%. Despite improvements in respiratory function, the patient remained dependent on a mechanical ventilator, so the diagnosis of ineffective breathing pattern was declared partially resolved. c) Impaired Gas Exchange

During the three days of evaluation, there was an increase in gas exchange capacity, marked by an increase in oxygen saturation to 95%, a decrease in wheezing, no cyanosis, and an increase in the level of consciousness from GCS 9 to GCS 11. However, the patient still required mechanical ventilation and oxygen therapy, so the diagnosis of gas exchange disorder was declared partially resolved.

Overall, the nursing evaluation showed improvement in the patient's respiratory condition after continuous nursing interventions. These results align with research by Chandra Wulan Nur Fadillah et al. (2026), which found that airway management, oxygen therapy, and systematic respiratory monitoring can increase oxygen saturation, reduce shortness of breath, and improve respiratory conditions in COPD patients, although in some cases, patients still require intensive care.

CONCLUSION

The evaluation results showed that all three nursing diagnoses had progressed well. Secretion production decreased, adventitious breath sounds decreased, respiratory rate improved from 34 breaths/minute to 26–28 breaths/minute, oxygen saturation increased from 85% to stable at 95%, and the level of consciousness increased from GCS 9 to GCS 11. However, the patient still required mechanical ventilation and further therapy, so all three nursing diagnoses were considered partially resolved and required ongoing monitoring.

SUGGESTION

It is hoped that future researchers who are interested in taking up the topic of critical nursing will develop this case study by involving a larger number of patients (not just focusing on



one respondent) and extending the observation period of care in the ICU to obtain a broader and more valid clinical picture.

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