

The researchers who constitute the Global Initiative for Chronic Obstructive Lung Disease have been standardizing the preventive and treatment practices for COPD; this has greatly benefited patients because the natural history of COPD is chronic and is characterized by a progressive decline in pulmonary function, as well as by recurrent exacerbations and frequent hospitalizations.³ Cigarette smoking is linked to COPD in most cases, but environmental pollution also plays a role. Occupational air pollution and smoke from household stoves are also significant contributors to the development of COPD.³

The disease is progressive and gradually incapacitates respiratory functions in some patients. A COPD diagnosis should be made in the presence of dyspnea, chronic coughing that produces sputum, and a history of exposure to the disease's risk factors. The clinical course of COPD is interrupted by acute exacerbations which present with acute worsening of respiratory symptoms and therefore necessitates the use of additional therapy and hospital admission in severe cases. Acute exacerbations of COPD are common causes of admission to the intensive care unit (ICU), where non-invasive mechanical ventilation (NIV) and invasive mechanical ventilation (IMV) are applied to treat acute respiratory failure.³ Acute exacerbations of COPD constitute approximately 2% of all ICU admissions.^{4,5} Previous studies have reported that the primary reason for the acute deterioration in COPD patients is not necessarily exacerbation, but other factors such as pneumonia, pulmonary edema, cardiac arrhythmias, surgery, pneumothorax, sepsis, and pulmonary embolism may also be responsible.⁶⁻⁸

The development of acute respiratory failure, which often requires ventilatory support, worsens the prognosis of the disease^{3,4} as well as increasing health care costs.^{5,6}

COPD exacerbations are a leading cause of death and morbidity. Reported in-hospital mortality associated with COPD exacerbation ranges from 11% to 32%.^{9,11,12,13} However, mortality is much higher in patients requiring IMV, at 47%.⁶ IMV has decreased

since use of NIV has been linked to lower intubation and mortality rates and due to more rapid improvement in physiological parameters in COPD patients with acute respiratory failure due to acute exacerbations.¹⁴ NIV is now recommended as a first-line therapy for patients with COPD who suffer from acute hypercapnic respiratory failure.¹⁵

This study aimed to examine the characteristics and mortality in COPD patients admitted to the ICU due to acute hypercapnic respiratory failure over 2 years. Moreover, we intended to examine the variables associated with short-term mortality in this population.

Materials And Methods

Study was conducted in ICU of Islami Bank central hospital, Kakrail from January 2024 to December 2025 and it is a retrospect observational study. Data were collected from patients file documented data; permission was taken from hospital authority.

The parameters documented were Acute Physiology and Chronic Health Evaluation (APACHE) II score, age, sex, comorbidities, smoking status, etiology of respiratory failure, laboratory tests (within the first 6 hours), vital signs, Glasgow coma score (GCS), mechanical ventilation duration and type, renal replacement therapy, vasopressor use during the ICU stay, length of stay (LOS) in ICU and ICU mortalities. Circulatory shock within the first 24 hours of admission was defined as a cardiovascular comorbidity.

The study's primary outcome measure was to determine ICU mortality rates. The secondary outcome was to evaluate the differences between survivors and non-survivors.

Descriptive data were reported as mean with standard deviation or median with interquartile range (IQR, 25%–75%). For normally distributed variables, the student t-test was used, while for non-normally distributed variables, the Mann-Whitney U-test was used, and for categorical variables, the chi-square or Fisher's exact test was used. Variables yielding P-values <0.100 at univariate testing between survivors and non-survivors were included in forward stepwise-