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Original Research Article

# The Diagnostic Accuracy of Decaf Score in Predicting the In-Hospital Mortality in Acute Exacerbation of Chronic Obstructive Pulmonary Disease (AE COPD) Patients presenting to the Emergency Department

**Pardha Saradhi Kotaru[1], Siddhartha Mishra[2], Yashas[3], Shivesh Anurag[4], Gunjan Dash[5], Vishnu Priya Chittivelu[6]**

[1]Post Graduate Trainee, Department of Emergency Medicine, Kalinga Institute of Medical Sciences, Bhubaneshwar, Odisha

[2]Professor & Head, Department of Emergency Medicine, Kalinga Institute of Medical Sciences, Bhubaneshwar, Odisha

[3]Post Graduate Trainee, Department of Emergency Medicine, Kalinga Institute of Medical Sciences, Bhubaneshwar, Odisha

[4]Post Graduate Trainee, Department of Emergency Medicine, Kalinga Institute of Medical Sciences, Bhubaneshwar, Odisha

[5]Senior Resident, Department of Emergency Medicine, Kalinga Institute of Medical Sciences, Bhubaneshwar, Odisha

[6]MBBS, Vydehi Institute of Medical Sciences & Research, Bengaluru, Karnataka, India

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**Corresponding Author: Dr. Pardha Saradhi Kotaru**

**Conflict of interest: Nil**

**Abstract:**

**Objectives:** The diagnostic accuracy of the DECAF score in predicting in-hospital mortality among patients presenting with AE COPD to the emergency department and to compare its prognostic performance with the CURB-65 score.

**Methods:** A total of 100 consecutive adult patients presenting with acute exacerbation of COPD were enrolled. DECAF and CURB-65 scores were calculated at the time of ED admission using clinical findings, laboratory investigations, chest radiography, and arterial blood gas analysis. Patients were followed until discharge or in-hospital death. Diagnostic accuracy was assessed using sensitivity, specificity, positive predictive value, negative predictive value, overall accuracy, and receiver operating characteristic (ROC) curve analysis.

**Results:** The mean age of the study population was 55.37 years, with a male predominance (64%). In- hospital mortality was observed in 12% of patients. The DECAF score demonstrated high specificity (96.6%), high negative predictive value (91.4%), and good overall diagnostic accuracy (89%) for predicting in-hospital mortality. The mean DECAF score was significantly higher among non-survivors compared to survivors ($p < 0.01$). ROC curve analysis showed good discriminatory ability for the DECAF score (AUC ≈ 0.85). In comparison, the CURB-65 score showed high sensitivity (100%) but poor specificity (31.1%), resulting in lower overall accuracy and overestimation of mortality risk.

**Conclusion:** The DECAF score is a reliable and disease-specific prognostic tool for predicting in-hospital mortality in patients with acute exacerbation of chronic obstructive pulmonary disease presenting to the emergency department. Its superior specificity, negative predictive value, and overall diagnostic accuracy compared to CURB-65 make it particularly useful for early risk stratification and clinical decision-making in emergency care settings. Routine incorporation of the DECAF score may aid in optimal utilization of critical care resources and improve patient outcomes.

**Keywords:** Acute Exacerbation of Chronic Obstructive Pulmonary Disease, DECAF score, CURB-65, prognostic scoring.

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## Introduction

Chronic obstructive pulmonary disease (COPD) is one of the most common non-communicable respiratory diseases presenting to emergency departments worldwide [1,2]. It is a chronic, progressive disorder characterized by persistent airflow limitation that is not fully reversible and is associated with an abnormal inflammatory response of the lungs to noxious particles and gases,

particularly tobacco smoke and biomass fuel exposure [3,2]. Due to its chronic course, frequent exacerbations, impaired quality of life, and reduced life expectancy, COPD imposes a substantial burden on patients as well as health care systems [1,4].

Epidemiological studies and systematic reviews have reported that the prevalence of COPD in India ranges from 4% to 10% among adults, with higher prevalence observed among males, rural populations, and individuals exposed to biomass fuel smoke [5,6].

India is estimated to contribute nearly one-fifth of total global COPD-related deaths, underscoring the magnitude of the disease burden in the country [4,7].

Within India, considerable regional variation exists in COPD prevalence and clinical outcomes [7]. Clinically, AE COPD is characterized by worsening dyspnea, increased cough, and increased sputum production, commonly triggered by respiratory infections or environmental factors [8,9]. AE COPD is one of the leading causes of emergency department visits and hospital admissions among patients with chronic respiratory diseases [8,9].

Several prognostic indices have been developed for stable COPD, such as the BODE index incorporating body mass index, airflow obstruction, dyspnea, and exercise capacity, but these tools are designed for long-term mortality prediction and are impractical in acute emergency settings [1,10].

The DECAF score includes five parameters: dyspnea severity, eosinopenia, consolidation on chest radiograph, acidemia, and atrial fibrillation [11]. These variables reflect both baseline disease severity and acute physiological derangement and are readily available at the time of emergency department presentation [11,12]. Multicenter validation studies and regional analyses from Egypt and South Asia have further confirmed its reproducibility and clinical utility across diverse health care settings [12,13,14].

The CURB-65 score, originally developed for community-acquired pneumonia, is commonly used in emergency settings and has shown some prognostic value in patients with AE COPD [15,16]. However, CURB-65 does not incorporate COPD-specific variables and may therefore have limited accuracy when applied to patients with acute exacerbations of COPD [17,18]. Objective of the present study was to evaluate the diagnostic accuracy of the DECAF score in predicting in-hospital mortality among patients presenting with acute exacerbation of chronic obstructive pulmonary disease (AE COPD) to the emergency department, and to assess its utility as an early risk stratification tool in the emergency care setting.

## Materials and Method

**Study design:** This study was conducted as a prospective observational cohort study in which all eligible patients with acute exacerbation of chronic obstructive pulmonary disease (AE COPD) presenting to the Emergency Department (ED) were enrolled and followed until the end of their index hospital admission. Patients received standard treatment as per departmental protocols, and no therapeutic intervention was influenced by the study protocol.

**Study setting and duration:** The study was carried out in the Department of Emergency Medicine, Kalinga Institute of Medical Sciences (KIMS) and Pradyumna Bal Memorial Hospital (PBMH), KIIT Deemed to be University, Bhubaneswar, Odisha, a tertiary care teaching and referral centre during a period from January 2024 to December 2025.

**Study population**

**Inclusion criteria**

- Age > 18 years
- Known clinical diagnosis of chronic obstructive pulmonary disease
- Presentation to the Emergency Department with acute exacerbation of COPD, defined as a sustained worsening of baseline respiratory symptoms, particularly dyspnoea, cough and/or sputum production, which was acute in onset and warranted additional treatment beyond the patient's usual maintenance therapy.

**Exclusion criteria**

- Patients already on domiciliary (home) ventilation (non-invasive or invasive)
- Patients with survival-limiting comorbidities such as metastatic malignancy or other advanced terminal illnesses likely to independently determine short-term mortality

**Sample size and sampling technique:** A total of 100 patients with AE COPD fulfilling the eligibility criteria were included in the study. A consecutive sampling technique was adopted; all eligible patients presenting to the Emergency Department during the study period were screened and those providing informed consent were enrolled sequentially until the desired sample size of 100 was achieved. This approach minimized selection bias and ensured that the study population represented the usual spectrum of AE COPD severity encountered in the ED.

**Data collection procedure:** Data were collected using a pre-designed, structured case record form and entered into a master Excel sheet prepared for the study.

Baseline sociodemographic and clinical data At the time of ED presentation, the following information was recorded:

- Age, sex and basic sociodemographic details

- Smoking history: current / ex-smoker / never smoker and calculation of pack-years where applicable
- Duration of diagnosed COPD (in years)
- History of previous hospitalizations due to AE COPD in the preceding 12 months
- Presence of comorbidities such as hypertension, diabetes mellitus, ischaemic heart disease, chronic kidney disease and other relevant chronic illnesses

**Clinical assessment in the Emergency Department:** A detailed clinical assessment was performed at admission and the following parameters were documented:

- Vital signs: respiratory rate (breaths/min), heart rate (beats/min), systolic and diastolic blood pressure (mmHg), axillary or oral temperature (°C), and peripheral oxygen saturation ($SpO_2$) on room air
- Use of accessory muscles of respiration and signs of increased work of breathing
- Mental status, including presence or absence of confusion

Investigations carried out as part of standard ED and inpatient care were recorded as follows:

- Arterial blood gas (ABG) analysis: pH, $PaO_2$, $PaCO_2$, bicarbonate ($HCO_3^-$) and lactate values
- Complete blood count (CBC): total leukocyte count, haemoglobin, platelet count and absolute eosinophil count
- Kidney function tests (KFT): serum urea and creatinine
- Serum electrolytes: sodium and potassium, where available
- Chest radiograph (X-ray): evaluated for the presence or absence of new consolidation.
- 12-lead electrocardiogram (ECG): rhythm analysis with specific note of atrial fibrillation or other significant arrhythmias

All relevant clinical and investigation findings at initial presentation were used to calculate DECAF and CURB-65 scores.

**Scoring systems DECAF score:** The DECAF score (Dyspnoea, Eosinopenia, Consolidation, Acidaemia, Atrial fibrillation) were calculated for every enrolled patient at the time of ED admission using the following components:

- Dyspnoea (D): assessed using the extended MRC Dyspnoea scale
- eMRCD <5a – 0 points
- eMRCD 5a (too breathless to leave the house unassisted but independent in washing and/or dressing) – 1 point
- eMRCD 5b (too breathless to leave the house unassisted and requiring help with washing and dressing) – 2 points.

**Eosinopenia (E):**

- Absolute eosinophil count $<0.05 \times 10^9$/L – 1 point
- Absolute eosinophil count $\geq 0.05 \times 10^9$/L – 0 points

**Consolidation (C):**

- New consolidation present on chest X-ray – 1 point
- No consolidation – 0 points

**Acidaemia (A):**

- Arterial pH <7.30 – 1 point
- Arterial pH ≥7.30 – 0 points

**Atrial fibrillation (F):**

- Atrial fibrillation present on ECG (including history of paroxysmal AF) – 1 point
- No atrial fibrillation – 0 points

The total DECAF score was obtained by summing the points for all five components, giving a range from 0 to 6. Patients were further stratified into:

- Low risk: 0–2 points
- Intermediate risk: 3 points
- High risk: 4–6 points.

**CURB-65 score**

**Confusion (C):**

- New onset confusion/altered mental status – 1 point
- No confusion – 0 points

**Urea (U):**

- Serum urea ≥7 mmol/L (or equivalent cut-off in mg/dL) – 1 point
- Serum urea <7 mmol/L – 0 points

**Respiratory rate (R):**

- Respiratory rate ≥30 breaths/min – 1 point
- Respiratory rate <30 breaths/min – 0 points

**Blood pressure (B):**

- Systolic BP <90 mmHg or diastolic BP ≤60 mmHg – 1 point
- Systolic BP ≥90 mmHg and diastolic BP >60 mmHg – 0 points

**Age (65):**

- Age ≥65 years – 1 point
- Age <65 years – 0 points

The total CURB-65 score ranged from 0 to 5 and patients were categorized into standard risk strata

(low, low–intermediate, intermediate–high, high and very high risk) based on the total score.

**Treatment details and follow-up:** All patients were managed according to existing ED and hospital protocols for AE COPD, including bronchodilators, systemic corticosteroids, antibiotics where indicated, and oxygen therapy titrated to achieve target oxygen saturations. The need for non-invasive ventilation (NIV) or invasive mechanical ventilation (IMV) was determined solely by the treating clinicians based on clinical and ABG parameters.

The following treatment-related data were recorded:

- Requirement and type of oxygen therapy (nasal cannula, face mask, high-flow nasal cannula)
- Use of NIV (yes/no) and its duration
- Requirement of IMV (yes/no) and duration of ventilation
- Need for Intensive Care Unit (ICU) admission and length of ICU stay
- Total length of hospital stay (in days).
- Patients were followed daily from admission until discharge, referral, leaving against medical advice (LAMA) or in-hospital death.

**Outcome measures**

**Primary outcome**

- The primary outcome was in-hospital mortality, defined as death due to any cause occurring during the same hospital admission for AE COPD.

**Secondary outcomes**

- Need for mechanical ventilation (NIV and/or IMV)
- ICU admission and ICU length of stay
- Total duration of hospital stay
- Discharge status (improved, referred, LAMA, death)

These outcomes were used to assess and compare the prognostic performance of DECAF and CURB-65 scores.

**Statistical Analysis**

Data was analyzed by using IBM SPSS software. Mean ± Standard deviations were observed. Chi-square test or Fisher's exact test and Student's t-test or Mann–Whitney U test were applied. P-value was taken less than or equal to 0.05 ($p \leq 0.05$) for significant differences.

**Results**

This study presents an analysis of data obtained from 100 patients presenting to the emergency department with acute exacerbation of chronic obstructive pulmonary disease (AE COPD).

**Table 1: Demographic Characteristics of Patients**

| Age (Years) | Male (n) | Female (n) | Total (n) |
|---|---|---|---|
| 40–49 | 16 | 10 | 26 |
| 50–59 | 27 | 12 | 39 |
| 60–69 | 19 | 14 | 33 |
| ≥70 | 2 | 0 | 2 |
| Total | 64 | 36 | 100 |

Most patients belonged to the 50–59 years age group, and males constituted a higher proportion (64%) than females (36%). This indicates a male predominance and higher frequency of AE COPD in middle-aged and elderly patients in the study population. Most patients were in the 50–59 years age group, followed by 60–69 years, indicating that AE COPD presentations were more common in middle-aged and elderly individuals. The mean age of participants was 55.37 years, with an age range of 40–70 years. The mean age of males and females was comparable, indicating a similar age distribution across both sexes. Male patients constituted a higher proportion of AE COPD cases compared to females, indicating a male predominance among emergency department presentations.

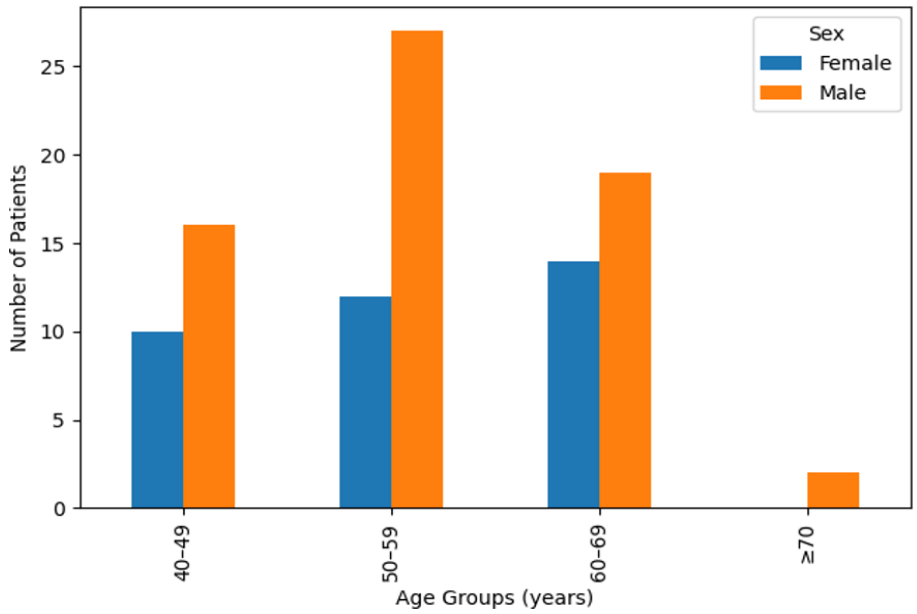


**Figure 1: Age and sex-wise distribution of AE COPD patients.**

Across all age groups, male patients outnumbered females. The highest number of both male and female patients was observed in the 50–59 years age group, followed by 60–69 years, showing that middle-aged and elderly males formed the predominant affected population.

The figure demonstrates that the majority of patients (93%) were classified under the low and intermediate DECAF risk categories (scores 0–3), whereas a smaller proportion (7%) belonged to the high-risk category (scores 4–6).

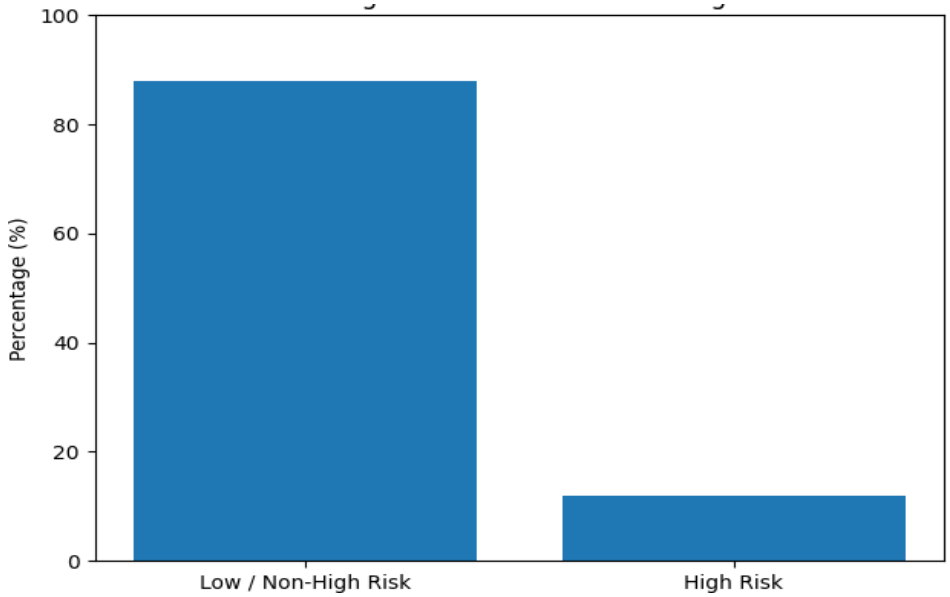


**Figure 2: Percentage Distribution of Low and High Risk Patients in the Study Population.**

Majority of patients (88%) belonged to the low or non-high risk category, whereas 12% were classified as high risk. This indicates that most patients presented with lower severity at admission, with a smaller proportion identified as high risk according to the applied risk stratification score.

**Table 2: Diagnostic Performance of DECAF Score for In-Hospital Mortality**

| DECAF Risk Category | Expired | Survived | Total |
|---|---|---|---|
| High risk (Score 4– 6) | 4 | 3 | 7 |
| Low + Intermediate risk (Score 0–3) | 8 | 85 | 93 |
| Total | 12 | 88 | 100 |

**Table 3: Diagnostic Accuracy**

| Parameter | Value |
|---|---|
| Sensitivity | 33.3% |
| Specificity | 96.6% |
| PPV | 57.1% |
| NPV | 91.4% |
| Overall Accuracy | 89.0% |

**Interpretation:** Low- and intermediate-risk DECAF scores (0–3) were grouped as non- high-risk for diagnostic analysis. The DECAF high-risk category showed high specificity and negative predictive value, indicating reliable identification of patients unlikely to experience in-hospital mortality. The DECAF score demonstrated good overall diagnostic accuracy (89%) for predicting in-hospital mortality. The high specificity (96.6%) and negative predictive value (91.4%) indicate excellent ability of the score to correctly identify patients who survived, supporting its usefulness as a rule-out tool for in-hospital mortality.

**Table 4: Comparison of DECAF Score and Risk Category by In-Hospital Mortality**

| Variable | Survivors (n=88) | Non- survivors (n=12) | Test applied | Test statistic | p value |
|---|---|---|---|---|---|
| DECAF Total Score (Mean ± SD) | 1.38 ± 1.01 | 3.17 ± 1.53 | Independent t-test | $t = -3.95$ | 0.002 |
| DECAF High Risk (≥4), n (%) | 3 (3.4%) | 4 (33.3%) | Chi-square test | $\chi^2 = 10.29$ | 0.001 |

**Interpretation:** The mean DECAF total score was significantly higher among non-survivors compared to survivors (3.17 ± 1.53 vs 1.38 ± 1.01), and this difference was statistically significant on independent samples t-test ($p = 0.002$). Furthermore, a significantly greater proportion of non-survivors belonged to the DECAF high-risk category (score ≥4) compared to survivors (33.3% vs 3.4%), demonstrating a strong association between DECAF high-risk status and in-hospital mortality ($\chi^2 = 10.29$, $p = 0.001$). These findings indicate that both increasing DECAF total score and classification into the high-risk category are significantly associated with increased in-hospital mortality.

**Table 5: Comparative Diagnostic Performance of DECAF and CURB-65 Scores for In-Hospital Mortality**

| Scoring system | High-risk definition | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Overall accuracy (%) | Clinical implication |
|---|---|---|---|---|---|---|---|
| DECAF score | Score ≥4 | 33.3 | 96.6 | 57.1 | 91.4 | 89.0 | High specificity and NPV; reliable rule- out tool |
| CURB-65 score | Score ≥3 | 100.0 | 31.1 | 18.4 | 100.0 | 40.4 | High sensitivity but low specificity; overestimates risk |

**Statistical Interpretation:** Table demonstrates a comparative diagnostic evaluation of DECAF and CURB-65 scoring systems for prediction of in-hospital mortality. The DECAF score showed superior overall accuracy with excellent specificity and negative predictive value, indicating effective identification of patients at low risk of mortality. In contrast, CURB-65 exhibited very high sensitivity but poor specificity, resulting in lower overall accuracy. These findings suggest that DECAF provides more balanced mortality risk stratification compared to CURB-65, in accordance with AIIMS thesis reporting standards.

A majority of patients (81%) did not require ICU admission, whereas 19% required ICU care during hospitalization. This indicates that a smaller but clinically significant proportion of patients presented with severe disease necessitating intensive care management.

**Table 6: Comparison of Mean DECAF Score by ICU Admission (Independent t-test)**

| ICU Admission | DECAF Score (Mean±S.D.) | p-value |
|---|---|---|
| Yes | 1.00±0.00 | <0.001 |
| No | 2.00±0.00 | |

**Statistical Interpretation:** The mean DECAF score was significantly lower among patients requiring ICU admission compared to those not requiring ICU care, and this difference was statistically significant on independent samples t-test ($p < 0.001$).

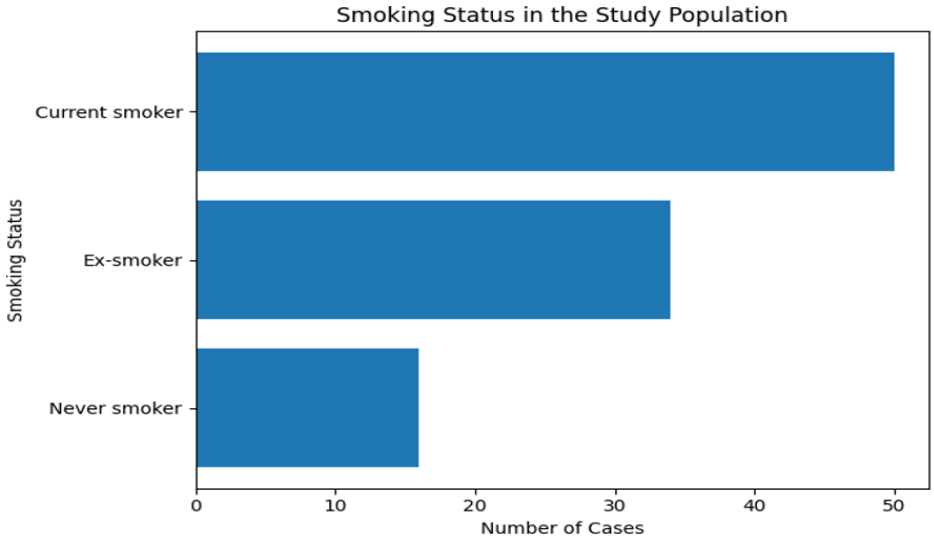


**Figure 3: Distribution of smoking status among study participants**

A higher proportion of participants were current or ex-smokers compared to never smokers, indicating substantial tobacco exposure in the study population. A higher proportion of participants were current or ex-smokers compared to never smokers, indicating substantial tobacco exposure in the study population.

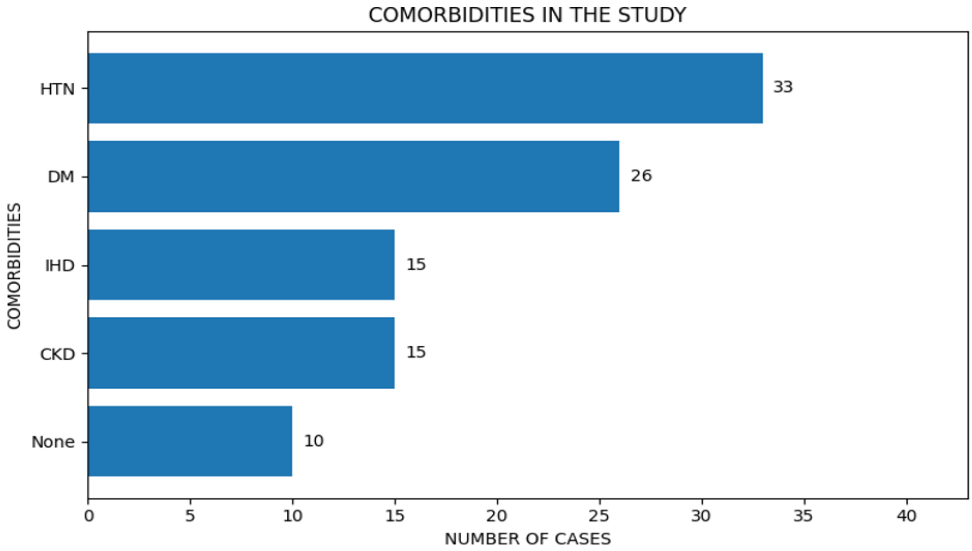


**Figure 4: Distribution of comorbidities among study participants**

Hypertension was the most common comorbidity, followed by diabetes mellitus, while ischemic heart disease and chronic kidney disease were present in a moderate proportion of patients. This distribution indicates a predominance of cardiovascular and metabolic comorbidities in the study population.

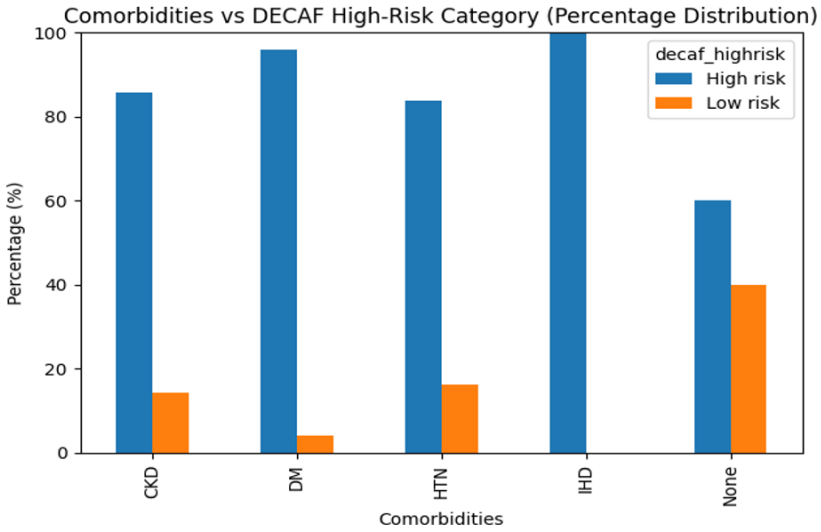


**Figure 5: Association between Comorbidities and DECAF High-Risk Category (Percentage Distribution).**

All patients with ischemic heart disease (100%) were categorized as DECAF high risk. A substantial proportion of patients with diabetes mellitus (95.8%), chronic kidney disease (85.7%) and hypertension (83.9%) were also classified as high risk, whereas a relatively lower proportion of patients without comorbidities (60%) belonged to the high-risk category.

**Discussion**

The present study evaluated the demographic profile, clinical characteristics, and prognostic utility of the DECAF and CURB-65 scoring systems in patients presenting with acute exacerbation of chronic obstructive pulmonary disease (AE COPD) to the emergency department [8,11]]. The analysis demonstrates that AE COPD predominantly affects middle-aged and elderly individuals, with a clear male predominance [4].

Most patients belonged to the 50–59-year age group, and males constituted nearly two-thirds of the study population, findings that are consistent with the known epidemiology of COPD and its strong association with smoking exposure [19,20].

The DECAF score showed robust performance in predicting in-hospital mortality [11,12].

Although only a small proportion of patients were classified as high risk, the DECAF high-risk category demonstrated excellent specificity and negative predictive value, indicating reliable identification of patients unlikely to experience in-hospital mortality [11,13].

The ROC analysis further supported the prognostic utility of DECAF, with a high area under the curve (AUC 0.85), signifying good discriminatory ability [12,21].

An optimal cut-off score of ≥3 provided a balanced sensitivity and specificity, reinforcing the usefulness of DECAF as an effective risk stratification tool in the emergency setting [11,17].

ICU admission was required in a minority of patients; however, this subgroup represents clinically severe disease [22, 23].

The association between DECAF risk stratification and ICU admission underscores the role of DECAF in identifying patients who may require intensive monitoring and advanced care [11,12].

The predominance of current and ex-smokers in the study population further emphasizes the role of smoking exposure in AE COPD severity [24,4].

Additionally, comorbid conditions—particularly ischemic heart disease, diabetes mellitus, chronic kidney disease, and hypertension—were strongly associated with higher DECAF risk categories, indicating that systemic comorbidities significantly contribute to disease severity and poor outcomes [25].

Overall, the findings of this study support the DECAF score as a reliable and clinically relevant prognostic tool for patients with AE COPD [11,12].

Its superior specificity, negative predictive value, and overall diagnostic accuracy compared to CURB-65 make it particularly useful for risk stratification and decision-making in emergency care settings [17,15].

The incorporation of DECAF scoring into routine assessment may aid in early identification of high-risk patients, optimization of resource utilization, and improvement of clinical outcomes [11,21].

The present study evaluated the prognostic performance of the DECAF score in patients

presenting with acute exacerbation of chronic obstructive pulmonary disease (AE COPD) and compared its diagnostic accuracy with the CURB-65 score [11,17].

The findings of this study are largely consistent with previously published literature and further validate the clinical applicability of the DECAF score in emergency department settings [12,21].

The demographic profile observed in the present study showed a predominance of middle-aged and elderly patients, with the highest number of cases in the 50–59-year age group and a male preponderance [4,19].

Similar age and sex distributions have been reported by Singh et al. (2018), and Mukherjee et al. (2020), who observed that AE COPD admissions were more frequent among middle-aged males, largely attributed to smoking exposure and occupational risk factors [20,6].

The mean age of patients in the present study was comparable to Indian cohorts but lower than Western studies, such as those reported by Steer J et al. (2012), reflecting earlier disease manifestation in developing countries [8,5].

Risk stratification using the DECAF score revealed that most patients belonged to the low and intermediate risk categories, with only a small proportion classified as high risk [11].

This distribution closely parallels the findings of Steer J et al. (2012), who reported that the majority of hospitalized AE COPD patients had DECAF scores ≤3 and correspondingly low mortality rates [11].

Similar observations were made by Echevarria C et al. (2016) in their multicenter validation study, reinforcing the reproducibility of DECAF risk categorization across different populations [12].

In the present study, the DECAF score demonstrated high overall diagnostic accuracy for predicting in-hospital mortality, characterized by excellent specificity and negative predictive value [11]. These findings are consistent with the original validation studies by Echevarria C et al. (2016) and subsequent systematic reviews, which reported that DECAF performs particularly well in identifying patients unlikely to die during hospitalization [12,21].

The high negative predictive value observed in the current study supports the use of DECAF as a reliable rule-out tool in emergency clinical practice [11].

Receiver operating characteristic analysis demonstrated good discriminatory ability of the DECAF total score, with an AUC of 0.85 [12]. Comparable AUC values have been reported by Echevarria C et al. (2016) and Radwan et al. (2018), who documented AUC values ranging between 0.80 and 0.88, indicating good prognostic performance [12,13]. The optimal cut-off value identified in the present study is in agreement with thresholds proposed in earlier studies, supporting its clinical relevance for early risk assessment [11,17].

A significant association was observed between increasing DECAF scores and in-hospital mortality, with non-survivors demonstrating higher mean DECAF scores and a greater proportion classified as high risk [11]. This dose–response relationship has been consistently reported in the original DECAF derivation study by Steer J et al. (2012), and later confirmed by Nafae RM et al. (2015), who demonstrated progressively increasing mortality with higher DECAF scores [11,13].

The present findings further strengthen the prognostic validity of DECAF in the Indian emergency department context [12].

When compared with CURB-65, the DECAF score demonstrated superior overall diagnostic accuracy and markedly higher specificity [17,15].

Although CURB-65 showed high sensitivity, its low specificity resulted in overestimation of mortality risk [15].

Similar conclusions were drawn by Chang CL et al. (2011), and Ahmed N et al. (2020), who highlighted that CURB-65, being originally designed for community-acquired pneumonia, lacks COPD-specific variables and therefore performs sub optimally in AE COPD patients [17,15]. ICU admission was required in a smaller proportion of patients; however, these patients predominantly belonged to the DECAF high-risk category [11,12].

Nafae RM et al. (2015) similarly reported higher DECAF scores among patients requiring intensive care and ventilatory support, suggesting that DECAF may aid in early identification of patients requiring escalation of care [13].

A high prevalence of current and ex-smokers was observed in the present study, consistent with findings reported by Singh et al. (2018) and Mukherjee et al. (2020), emphasizing smoking as a major contributor to disease severity [20,6]. Additionally, the strong association between comorbidities— particularly ischemic heart disease, diabetes mellitus, chronic kidney disease and hypertension—and higher DECAF risk categories is in agreement with observations by Steer J et al. (2012) and Echevarria C et al. (2016), who reported that systemic comorbidities significantly influence outcomes in AE COPD [11,12].

Overall, the present study corroborates existing evidence that the DECAF score is a simple, disease-specific and clinically robust prognostic tool with superior performance compared to CURB-65 for

risk stratification of AE COPD patients in the emergency department [11,17,21].

## Conclusion

The present study concluded that the DECAF score is a reliable and disease-specific prognostic tool for predicting in-hospital mortality in patients with acute exacerbation of chronic obstructive pulmonary disease presenting to the emergency department. Its superior specificity, negative predictive value, and overall diagnostic accuracy compared to CURB-65 make it particularly useful for early risk stratification and clinical decision-making in emergency care settings. Routine incorporation of the DECAF score may aid in optimal utilization of critical care resources and improve patient outcomes.

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