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Original Article

Internal Medicine Section

DECAF Score and BAP-65, the Tools for Prognosis in Acute Exacerbation of Chronic Obstructive Pulmonary Disease: A Prospective Observational Study

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ABSTRACT

Introduction: Acute Exacerbations of Chronic Obstructive Pulmonary Disease (AECOPD) result in significant morbidity and mortality. It is 3rd most common cause of death worldwide. Still, there is no proper prognostic scoring system available. The increasing mortality has been attributed to the smoking, epidemic and the advanced age of the world's population. Exacerbations are uncommon in early COPD and are more common in moderate-to-severe disease.

Aim: To validate and compare the Dyspnoea, Eosinopaenia, Consolidation, Acidaemia, Atrial Fibrillation (DECAF) score and Blood Urea Nitrogen (BUN), Altered mental status, Pulse-age 65 (BAP-65) as tools of prognostication in AECOPD.

Materials and Methods: A hospital-based prospective, observational study was conducted in the Department of General Medicine at Government Medical College Kota, Rajasthan, India. The duration of the study was two years, from December 2020 to December 2022. A total of 100 patients (84 males and 16 females), who were admitted with AECOPD were included. DECAF and BAP-65 scores, length of hospital stay, need for mechanical ventilation and mortality was recorded on a proforma and later analysed using Statistical Package for Social Sciences (SPSS) version 22.0. A Receiver Operating Characteristic (ROC) curve was drawn for comparison of the accuracy of both the scoring systems.

Results: The mean age of the study participants was 64.91±11.78 years. Analysing the data statistically, the BAP-65 class and DECAF score with mortality, need for mechanical ventilation, and duration of hospital stay showed a significant association. Comparing DECAF with BAP-65, DECAF showed higher predictive accuracy in mortality {Area Under Curve (AUC)- DECAF=0.933 BAP-65-0.929) and duration of hospital stay (AUC-DECAF=0.753 BAP-65=0.929}) whereas, BAP-65 showed higher accuracy in predicting the need for mechanical ventilation (AUC-DECAF=0.851 BAP-65=0.916).

Conclusion: Since, there was a good association between BAP-65 classes, as well as, the DECAF score and outcomes in AECOPD, these can be used as an assessment tool in predicting outcomes in patients presenting with AECOPD. It is better to use DECAF for predicting the length of hospital stay and mortality and BAP-65 for predicting the need for mechanical ventilation.

Keywords: Hospital stay, Mechanical ventilation, Mortality

INTRODUCTION

The COPD is defined as "a heterogeneous lung condition characterised by chronic respiratory symptoms (dyspnoea, cough, sputum production, and/or exacerbations) due to abnormalities of the airways (bronchitis, bronchiolitis) and/or alveoli (emphysema) that cause persistent, often progressive, airflow obstruction" [1]. A COPD exacerbation is characterised by an acute change in a patient's dyspnoea, cough, or sputum that is beyond normal variability and that is sufficient to warrant a change in therapy. COPD-related deaths are now the world's third leading cause of death [2,3]. The increasing mortality has been attributed to the smoking, epidemic and the advanced age of the world's population. Exacerbations are uncommon in early COPD and are more common in moderate to severe disease [4]. In the short term, they often have a significant impact on health status and expose people to the risks of acute respiratory failure and death. Even though COPD exacerbations are both common and fatal, obtaining an accurate prognosis for patients hospitalised with an exacerbation is difficult. Home-based care has been shown to represent a valuable alternative for many patients visiting Emergency Departments (EDs), allowing them to avoid or shorten hospital stays. However, most patients with AECOPD, who visit EDs are hospitalised [5]. In that context, assessing the severity of AECOPD is mandatory to guide management decisions. The location of care, early escalation of care, suitability for end-of-life care, and suitability for early supported hospital discharge are all decisions, that could be aided by a clinical mortality prediction tool in AECOPD. This could help to reduce morbidity and mortality and guide the most effective use of resources [6]. A few clinical scores that measures the severity of AECOPD have recently been established, including the BAP-65, Confusion, Uraemia, Respiratory rate, Blood pressure, age ≥65 years (CURB-65), Community-acquired Pneumonia (CAP), and Acute Physiology And Chronic Health Evaluation II (APACHE II) risk scores, in an effort to aid doctors in making judgements about patients, who experience such episodes [7,8]. However, due to a lack of data, none of them are widely used. Two of them are DECAF and BAP-65.

The DECAF score was first proposed by Steer J et al., [7]. He studied 920 patients from diverse geographical locales. The five strongest variables-dyspnoea, eosinopaenia, consolidation, acidemia, and atrial fibrillation- were selected and assigned values according to the regression coefficient, which was found to be better than other scores in predicting mortality with a ROC curve of 0.86 {95% Confidence Interval (CI): 0.82-0.89}. The BAP-65 (greater than or equal to 109 beats/minute, and age >65 years) was first validated in 2011, and than it was analysed on 34,699 admissions across 177 hospitals in the US. According to the study's findings, BAP-65 may be a useful adjunct in the initial evaluation of AECOPD [8]. But this cannot be used wildly, due to a lack of comparative studies and proper guidelines.

The present study was aimed to validate, and compare the recently added composite physiological score, i.e., the DECAF score, with the BAP-65 class for prediction of the need for invasive ventilator support, duration of hospital stay, and mortality in patients admitted with an AECOPD.

MATERIALS AND METHODS

A hospital-based prospective observational study was conducted in the Department of General Medicine at Government Medical College Kota, Rajasthan, India. The duration of the study was two years, from December 2020 to December 2022 (IEC number 27).

Inclusion criteria: A total of 100 patients, who were admitted with AECOPD, were included in the study after taking valid consent.

Exclusion criteria: Co-morbidity with expected to limit survival to less than 12 months (as metastatic malignancy), patients with heart failure, Other diseases like post-tubercular destruction of the lung, interstitial lung disease, asthma and age less than 40 years were excluded from the study.

Sample size calculation: The sample size was calculated using the formula:

$$\text{Sample size} = Z^2_{alpha/2}\, PQ/d^2,$$

where P=prevalence, Q=(100-P), d=absolute precision, and Z alpha/2=standard normal deviation, which is 1.96 for a 95% CI. Confidence Interval (CI). Considering the prevalence of COPD in India is 7% (as per the study conducted by Verma A et al., [9]) and the "d" value is five, the sample size to achieve a 95% CI was 98.

Study Procedure

After initial evaluation and blood investigations, both the DECAF score [Table/Fig-1] and BAP-65 class [Table/Fig-2,3] were applied to each patient. The clinical profile of the patients' were assessed. The duration of hospital stay, need for ventilatory support, and mortality rates were also assessed.

Variables	Score
Dyspnoea eMRCD 5a	1
eMRCD 5b	2
Eosinopaenia (<0.05*10⁹/L)	1
Consolidation	1
Acidaemia (pH<7.3)	1
Atrial fibrillation	1
Total	**6**

[Table/Fig-1]: DECAF score [7].
eMRCD: Extended medical research council dyspnoea score

Variables	Point
BUN ≥25 mg/dL	1
Altered mental status (GCS <14 or disoriented)	1
Pulse ≥109 beats/minute	1
Total score	**3**

[Table/Fig-2]: BAP-65 score [7].
BUN: Blood urea nitrogen; GCS: Glasgow coma scale

BAP-65 class	BAP-65 score	Age (in years)
1	0	<65
2	0	>65
3	1	Any age
4	2	Any age
5	3	Any age

[Table/Fig-3]: BAP-65 class [7].

STATISTICAL ANALYSIS

Data was analysed using SPSS version 22.0. Chi-square test or Fischer's-exact test (for 2×2 tables only) were used as test of significance for qualitative data. The p-value (probability that the result is true) of <0.05 was considered as statistically significant after assuming all the rules of statistical tests. The ROC analysis was calculated to determine optimal cut-off value for total DECAF score and total BAP-65 score.

RESULTS

A total of 100 patients were presented with AECOPD were included in the study. The mean age of the population was 64.91±11.78 years with 84 males and 16 females. A total of 58 (58%) of the patients had one or the other co-morbidity. There were 13 deaths in the study period (mortality was 13%). The demographic data of the patients shown in [Table/Fig-4] [10].

Variables	N	Mean±SD	Median (IQR)	Range
Age (in years)	100	64.91±11.78	66 (57.25,72)	40-101
Systolic BP (mmHg)	100	128.6±20.35	130 (110,140)	90-190
Diastolic BP (mmHg)	100	83.2±10.81	80 (80,90)	60-110
Respiratory rate (beats/minute)	100	29.82±7.13	28 (26,32)	20-40
Pulse (beats/minute)	100	101.74±21.78	98 (88,120)	70-150
Saturation (SpO_2)	100	78.07±15.2	86 (70,88)	30-92
Glassgow coma scale [11]	100	14.14±2.19	15 (15,15)	6-15
Haemoglobin (gm%)	100	12.96±2.66	12.7 (11.4,14.6)	6-19.7
Total WBC count (cells/µL)	100	9.38±4.22	8.6 (6.63,11.68)	3.4-24.84
Neutrophils (%)	100	76.49±16.14	80 (69.25,88.45)	48-97
Eosinophils/Lt (10^5)	100	0.38±0.59	0.16 (0.01,0.4)	0-3.5
Urea (mg/dL)	100	43.53±26.49	38 (26.25,53.75)	8-189
Creatinin (mg/dL)	100	1.49±2.18	1.2 (0.8,1.5)	0.1-21
pH	100	7.4±0.12	7.42 (7.3,7.48)	7.06-7.68
PCO_2	100	52.07±13.17	48 (42.03,58.95)	27.3-87.9
BUN	100	21.92±12.97	20 (14,26)	4-90

[Table/Fig-4]: Demographic and biochemical data of the patient [10].
BP: Blood pressure; WBC: White blood cells; Pco_2: Partial pressure of carbon dioxide; BUN: Blood urea nitrogen

A maximum of 31 patients out of 100 had a DECAF score of one. Only one patient each in DECAF score 5 and 6. When the same patients were tabulated according to BAP-65 class, the maximum (36 patients) were in BAP class 3. Only 10 patients had the maximum BAP class of 5 [Table/Fig-5]. A total of 8 (61.5%) out of 13 patients who died, had a BAP-65 class 5. No one died in BAP-65 classes 1 and 2. A total of 8 (80%) patients out of 10 with BAP class 5 were declared dead, leaving only two alive. A total of 6 (60%) of 10 patients with a DECAF score of 4-6 were declared, and only 4 (40%) were discharged. No one died in DECAF score 1 or 2. On the other hand, out of the total of 13 patients who were expired, 6 (46.15%) had a DECAF score of 4-6; no one had a score of 0 or 1 [Table/Fig-6].

DECAF score	Cases	BAP class	Cases
0	30	1	19
1	31	2	24
2	20	3	36
3	9	4	11
4	8	5	10
5	1	-	-
6	1	-	-
Total	100		100

[Table/Fig-5]: Distribution of the patients in terms of DECAF score and BAP-65.

There was a significant difference in BAP class (Chi-square value: 49.861, p-value <0.001), DECAF score (Chi-square value: 43.216, p-value <0.001), and outcome. Out of 24 patients, who required

BAP-65 classes	Outcome		Total
	Alive n (%)	Dead n (%)	
I	19 (100)	0	19
II	24 (100)	0	24
III	34 (94.44)	2 (5.56)	36
IV	8 (72.73)	3 (27.27)	11
V	2 (20)	8 (80)	10
DECAF score			
0	30 (100)	0	30
1	31 (100)	0	31
2	18 (90)	2 (10)	20
3	4 (44.4)	5 (55.6)	9
4-6	4 (40)	6 (60)	10
Total	87 (100)	13 (100)	100

[Table/Fig-6]: BAP class, DECAF score and outcome.
n=Number of patients; %: Percentage

mechanical ventilatory support (invasive or non invasive), 9 (37.5% of total mechanical ventilation) patients belonged to BAP-65 class 5, and no one belonged to BAP class 1 or 2. A total of 9 (90%) of the 10 patients with BAP-65 class 5, required mechanical ventilation which was statistically significant. Out of 10 patients with a DECAF score of 4-6, 8 (80%) patients were treated with mechanical ventilation, whereas, only one patient with a DECAF score of 0 was treated with invasive ventilatory support. On the other hand, out of the total of 24 patients, who were on mechanical ventilation, eight patients had a DECAF score of 4-6 [Table/Fig-7].

BAP-65 classes	Oxygen support		Total
	Simple/Non re-breathable mask n (%)	Mechanical ventilation n (%)	
I	19 (100)	0	19
II	24 (100)	0	24
III	29 (80.56)	7 (19.44)	36
IV	3 (3.67)	8 (72.73)	11 (11)
V	1 (10)	9 (90)	10 (10)
DECAF score			
0	29 (96.67)	1 (3.34)	30
1	27 (87.10)	4 (12.9)	31
2	16 (80)	4 (20)	20
3	2 (22.22)	7 (88.88)	9
4-6	2 (20)	8 (80)	10
Total	76 (100)	24 (100)	100 (100)

[Table/Fig-7]: BAP-65 class, DECAF score and mechanical ventilation.

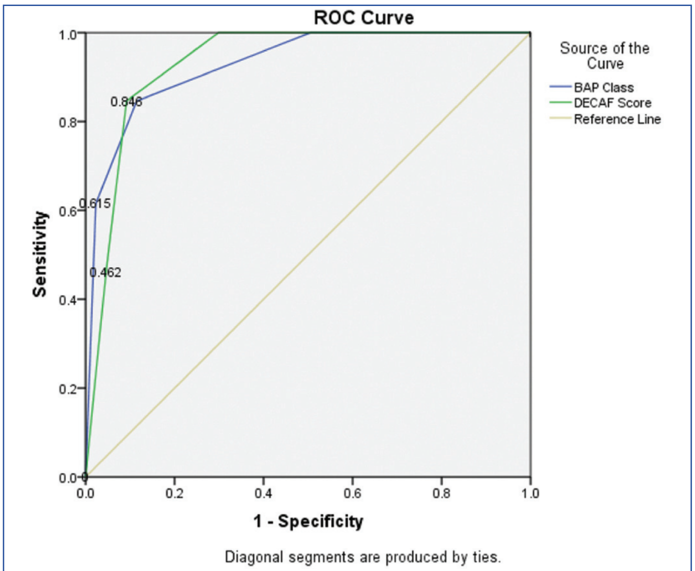
Their was a significant difference in the modality of assisted ventilation and BAP-65 class. (Chi-square value: 52.189, p-value: 0.001) and DECAF score. (Chi-square value: 40.76, p-value <0.001). A total of 14, out of 87 alive patients were required to stay in the hospital for more than 10 days, among whom 1 (7.9%) patient had a BAP class of 5, and 5 (35.7%) had a BAP class of 4. Among 34 patients, who had hospital stays of less than five days, 15 (44.1%) were in BAP class 1, and no one was in BAP class 5. None of the 19 patients in BAP class 1 required a hospital stay of more than 10 days. Among 14 patients, who stayed for more than 10 days, 3 (21.4%) had a DECAF score of 4-6, 2 (14.3%) had a DECAF score of 3, and 7 (50.0%) had a DECAF score of 2. None of the 30 patients in DECAF score 0 required a hospital stay for more than 10 days as shown in [Table/Fig-8].

Their was a significant difference in days of hospital stay with BAP-65 class (Chi-square value: 39.647, p-value <0.001) and DECAF score (Chi-square value-30.42, p-value 0.0024). AUC for DECAF score and BAP-65 class for predicting mortality was

BAP-65 classes	Hospital stay (in days)			Total
	<5 n (%)	6-10 n (%)	>10 n (%)	
I	15 (44.1)	4 (10.3)	0	19 (21.8)
II	12 (35.3)	12 (30.8)	0	24 (27.6)
III	6 (17.6)	20 (51.3)	8 (57.1)	34 (39.1)
IV	1 (2.9)	2 (5.1)	5 (35.7)	8 (9.2)
V	0	1 (2.6)	1 (7.1)	2 (2.3)
DECAF score				
0	17 (46.8)	13 (34.2)	0	30 (34.5)
1	13 (37.1)	16 (42.1)	2 (14.3)	31 (35.6)
2	4 (11.4)	7 (18.4)	7 (50)	18 (20.7)
3	1 (2.9)	1 (2.6)	2 (14.3)	4 (4.6)
4-6	0	1 (2.6)	3 (21.4)	4 (4.6)
Total	35	38	14	87

[Table/Fig-8]: BAP-65 class, DECAF score and days of hospital stay.

0.933 and 0.929, respectively [Table/Fig-9]. Both DECAF score and BAP-65 were validated in predicting the mortality DECAF score showed slightly higher accuracy than BAP-65 in predicting mortality [Table/Fig-10].



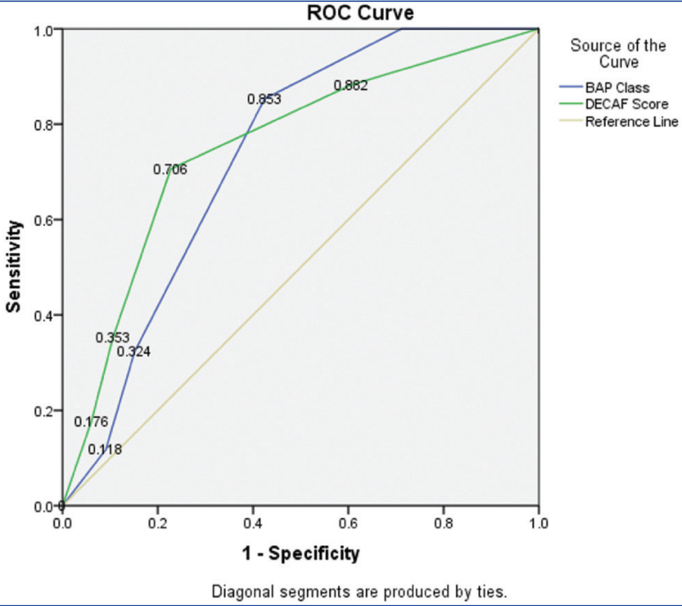
[Table/Fig-9]: ROC curve for DECAF score and BAP-65 for predicting mortality comparison.

Area under the curve					
Test result variable (s)	Area	Standard error[a]	Asymptotic significance[b]	Asymptotic 95% CI Lower bound	Asymptotic 95% CI Upper bound
BAP-65 class	0.929	0.035	<0.001	0.860	0.998
DECAF score	0.933	0.026	<0.001	0.881	0.985

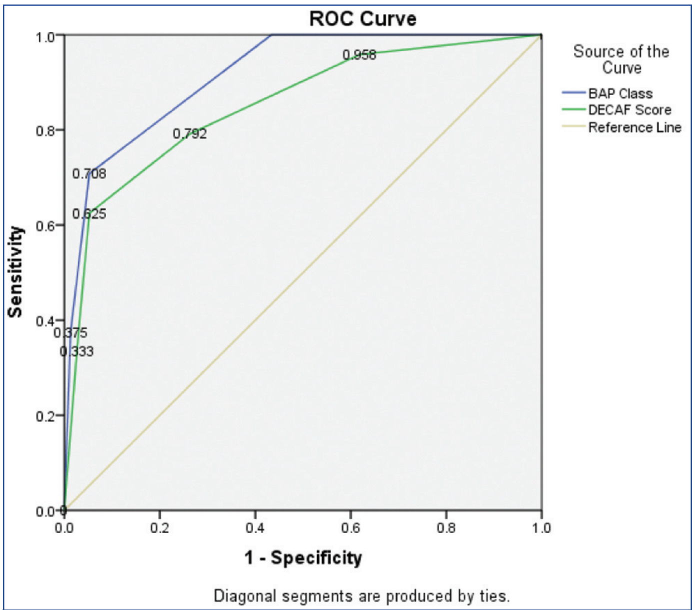
[Table/Fig-10]: Area under curve (AUC) for DECAF score and BAP-65 for predicting mortality.
[a]Under the nonparametric assumption; [b]Null hypothesis: true area=0.5; CI: Confidence interval

The AUC for DECAF score and BAP-65 class for predicting days of hospital stay >6 days is 0.753 and 0.734, respectively [Table/Fig-11]. Both DECAF score and BAP-65 are validated in predicting the days of hospital stay >6 days. DECAF score showed slightly higher accuracy than BAP-65 in comparing days of hospital stay >6 days [Table/Fig-12]. AUC for DECAF score and BAP-65 class for predicting need of mechanical ventilation were 0.851 and 0.916, respectively [Table/Fig-13].

Both DECAF score and BAP-65 are validated in need of mechanical ventilation. BAP-65 Class showed slightly higher accuracy than DECAF in comparing need of mechanical ventilation [Table/Fig-14].) The DECAF cut-off of 2 and BAP-65 class cut-off of 3, showed better sensitivity and specificity profile as defected in the [Table/Fig-15].



[Table/Fig-11]: ROC curve for DECAF score and BAP-65 prediction of the days of hospital stay >6 days.



[Table/Fig-13]: ROC curve for DECAF and BAP-65 in prediction of need of mechanical ventilation.

Area under the curve					
				Asymptotic 95% CI	
Test result variable(s)	Area	Standard error[a]	Asymptotic significance[b]	Lower bound	Upper bound
BAP-65 class	0.734	0.049	<0.001	0.638	0.830
DECAF score	0.753	0.052	<0.001	0.650	0.856

[Table/Fig-12]: AUC for prediction of the days of hospital stay >6 days.
[a]Under the non parametric assumption
[b]Null hypothesis: true area=0.5; CI: Confidence interval

Area under the curve					
				Asymptotic 95% CI	
Test result variable (s)	Area	Standard error[a]	Asymptotic significance[b]	Lower bound	Upper bound
BAP-65 class	0.916	0.030	<0.001	0.857	0.974
DECAF score	0.851	0.048	<0.001	0.757	0.944

[Table/Fig-14]: AUC for prediction of need of mechanical ventilation.
[a]Under the non parametric assumption; [b]Null hypothesis: true area=0.5; CI: Confidence interval

Parameters	Standard	True negative	True positive	False negative	False positive	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Diagnostic accuracy (%)	Kappa statistics	p-value
DECAF score cut-off of 2	Days of hospital stay (cut-off median 6)	51	24	10	15	70.60	77.30	61.50	83.60	75	0.4620	<0.001
	Mechanical ventilation	56	19	5	20	79.20	73.70	48.70	91.80	75	0.4350	<0.001
	Outcome	61	13	0	26	100	70.10	33.30	100	74	0.3790	<0.001
BAP class cut-off of 3	Days of hospital stay (cut-off median 6)	38	29	5	28	85.30	57.60	50.90	88.40	67	0.3680	<0.001
	Mechanical ventilation	43	24	0	33	100	56.60	42.10	100	67	0.3850	<0.001
	Outcome	43	13	0	44	100	49.40	22.80	100	56	0.2030	<0.001

[Table/Fig-15]: Comparison of DECAF score and BAP-65 score in predicting mortality and need of mechanical ventilation and duration of hospital stay.
PPV: Positive predictive value; NPV: Negative predictive value

DISCUSSION

One out of every eight ED admissions is due to COPD, a robust prognostication tool is required in the current scenario [11]. The purpose of the present prospective study was to validate and compare the BAP-65 and DECAF scores in AECOPD, in terms of outcomes such as identifying morbidities (in the form of length of hospital stay and the need for mechanical ventilation which are, lacking in literatures) and mortality. In the present study, the mortality rate was 13%. It is similar to the study by Steer J et al., which was 10.4% [7], 7.7% in Echevarria C et al., 7.58% in Yousif M and El Wahsh RA, 12.5% in Nafae R et al., and 17% in the study done by Kumar H and Choubey S, possibly reflecting different thresholds for hospital admission among different countries [12-15].

The analysis of the data obtained in the present study demonstrates that, the BAP-65 class and DECAF correlate well with length of stay, in-hospital mortality, and the need for mechanical ventilation [15]. Overall the percentage of patients needing mechanical ventilation in present study was comparable to the study done by Suryakumari V, [Table/Fig-16] [8,16-19]. Overall, the percentage of mortality in the present study was closely comparable with the study done by Tabet R and Ardo C, [Table/Fig-17] [8,16-19]. Nafae R et al., study categorised the DECAF score in to low risk (DECAF 0-1), moderate risk (DECAF score 2) and severe (DECAF 3-6) with the mortality rate 3.7, 7.7, 37, respectively. The results are similar to present study [Table/Fig-18] [7,12,14,20]. Other studies, such as Yousif M and El Wahsh RA, Nafae R et al., Sangwan V et al., discovered that both the DECAF score and the BAF 65 produced excellent results in predicting patient mortality [13,14,21]. Present study also had a similar result. The authors supported the Steer J et al., study while comparing the two scores [Table/Fig-19] [7,8,13,14,21-23].

The studies done by Sangwan V et al., and Magdy AL et al., both supported DECAF, as well as, BAP-65 in predicting the need for mechanical ventilation [Table/Fig-20] [8,21,23]. The present study also showed slightly better performance by the DECAF score, when

Studies	Shorr AF et al., [8]	Tabak YP et al., [16]	Tabet R and Ardo C, [17]	Germini F et al., [19]	Suryakumari V, [18]	Present study
Sample size	34699	88074	980	2908	80	100
Year of study and place	2011, United States	2009 United States	2013, Labenon	2014, Italy	2017 Andhra Pradesh, India	2022 Rajasthan, India
Class 1	2.1	0.3	0	0.8	0	0
Class 2	2.2	0.2	2.2	1.2	0	0
Class 3	8.4	1.2	1.6	1.6	4.16	19.44
Class 4	30.1	5.5	3.8	3.8	33.33	72.72
Class 5	54.6	12.4	4.7	4.7	100	90

[Table/Fig-16]: Comparison of need for MV (i%) among study patients in various BAP-65 classes [8,16-19].

Studies	Shorr AF et al., [8]	Tabak YP et al., [16]	Tabet R and Ardo C, [17]	Germini F et al., [19]	Suryakumari V, [18]	Present study
Sample size	34699	88074	980	2908	80	100
Year of study and place	2011, United States	2009 United States	2013, Lebanon	2014, Italy	2017 Andhra Pradesh, India	2022 Rajasthan, India
Class 1	0.5	0.3	0	0.8	0	0
Class 2	1.4	1	0	2.1	0	0
Class 3	3.7	2.2	4.8	2.6	0	5.55
Class 4	12.7	6.4	23.2	8.2	8.33	27.27
Class 5	26.2	14.1	72	15.9	80	80.00

[Table/Fig-17]: Comparison of mortality (%) in different BAP-65 class in various studies [16-20].

DECAF score	Memon MA et al., [20]	Nafae R et al., [14]	Steer J et al., [7]	Echevarria C et al., [12]	Present study
Sample size	162	200	920	880	100
Year of study and place	2019 Jamshoro	2014 Egypt	2012 UK	2016 UK	2022 India
Score 0	2.9	3.7	0.5	0	0
Score 1	2.6		2.1	1.5	0
Score 2	9.7	7.7	8.4	5.4	10
Score 3	15.9	37	24	15.3	55.55
Score 4-6	64		Score 4- 45.6 Score 5- 70	33.55	60

[Table/Fig-18]: Comparison of mortality (%) among DECAF score in various studies [7,12,14,20].

Studies	Sample size	Year and place of study	DECAF score	BAP-65
Steer J et al., [7]	920	2012 United Kingdom	0.86 (95% CI: 0.82-0.89)	0.72
Yousif M and El Wahsh RA, [13]	264	2016 Egypt	0.828	0.861
Magdy A et al., [23]	50	2020 Egypt	0.982	0.991
Shorr AF et al., [8]	34699	2011, United States	-	0.77 (95% CI: 0.76-0.78)
Nafae R at al., [14]	200	2014 Egypt	0.83	-
Sangwan V et al., [21]	50	2017 India	0.905 (95% CI: 0.791-1.000)	0.915 (95% CI: 0.828-1.001)
Parras A et al., [22]	164	2017 Spain	0.848	0.860
Present study	100	India	0.933	0.929

[Table/Fig-19]: Comparison of AUROC for predicting mortality among various studies [7,8,13,14,21-23].

compared with the BAP-65 in predicting the need for mechanical ventilation. There were no studies available to compare with mechanical ventilation and varies classes of DECAF score and duration of hospital stay as of now.

Studies	Sample size	Year of study and place	DECAF score	BAP-65 class
Shorr AF et al., [8]	34699	2011, United States	-	0.78 (95% CI: 0.78-0.79)
Sangwan V et al., [21]	50	2017 India	0.881 (95% CI: 0.790-0.972)	0.797 (95% CI: 0.665-0.928)
Lolah MA et al., [23]	50	2020 Egypt	0.911	0.836
Present	100	India	0.851	0.916

[Table/Fig-20]: AUROC of various scoring systems in various studies for predicting mechanical ventilation [8,21,23].

Limitation(s)

Lack of post hospital follow-up data, which would be necessary for validation of predictive factors, found in the present study was a major limitation. The number of female patients enrolled in the study was quite small, lesser than expected. However, since consecutive patients were recruited, this has to be considered as corresponding to what occurs in the real life setting.

CONCLUSION(S)

Both the BAP-65 and DECAF scoring systems seems to be simple and promising models for predicting outcomes, the need for mechanical ventilation, and the duration of a hospital stay in AECOPD. The study recommends to use the DECAF score for predicting mortality, as well as, days of hospital stay; and the BAP-65 score for the need for mechanical ventilation.

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