

## Original Research Article

**CURB-65 Score in Indian Patients****Dr. Ramesh Kalhalli Narayanaswamy<sup>1</sup>, Dr. Rashmi Nanjappa<sup>2</sup>, Dr. Vinay Badri<sup>3</sup>, Dr. Pankaja Ramesh<sup>4</sup>**<sup>1</sup>Professor, Dr. B. R. Ambedkar Medical College, Bengaluru, Karnataka & Former Associate professor, M S Ramaiah Medical College Bengaluru, Karnataka.<sup>2</sup>Post Graduate, Dr. B. R. Ambedkar Medical College, Bengaluru, Karnataka<sup>3</sup>Post Graduate, M S Ramaiah Medical College, Bengaluru, Karnataka<sup>4</sup>Physician, Navachetana Hospital, Bengaluru, Karnataka**\*Corresponding author**

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**Abstract:** Community acquired pneumonia is the most common cause of morbidity and mortality. Various scores have been proposed as a tool for augmenting clinical judgment for stratifying patients with community-acquired pneumonia (CAP) and predict the outcome in the same. The objectives were to study the relation of CURB-65 score and outcome in pneumonia in Indian patients. CURB-65 is the recommended severity score in the CAP guidelines of the British Thoracic Society (BTS). Because it is followed predominantly in western countries and not in India, study was undertaken to observe and interpret CURB 65 in Indian scenario. A total of 164 patients admitted with symptoms of pneumonia aged above 65years evaluated for CURB-65 score. 164 patients diagnosed to have CAP are included in the study, have been evaluated for CURB-65 score at the time of admission and were given the score from 0 to 5. Among 164 patients, 107 patients were having score 3 and above have been observed to have increased need for ICU admission and mortality. 47 patients with CURB-65 score 3, death observed in 19 patients; 43 with score 4, death observed in 27 patients; 17 with score 5, 13 deaths were observed. CURB 65 of score 3 and above is associated with highest ICU admissions and mortality.

**Keywords:** CURB 65, community-acquired pneumonia (CAP)

**INTRODUCTION**

Pneumonia is the infection of pulmonary parenchyma. Despite being the cause of significant morbidity and mortality, pneumonia is often misdiagnosed, mistreated and underestimated [1]. Community acquired pneumonia (CAP) is a common disorder with an incidence of about 20% to 30% in developing countries compared to an incidence of 3% to 4% in developed countries [2].

The spectrum of pneumonia severity ranges from mild, which can frequently be treated on an out-patient basis, to very severe, with multiple complications and high mortality, so determining the pneumonia severity is key in pneumonia management. Even with the use of extensive laboratory testing and invasive procedures; aetiological confirmation being achieved in no more than 45% to 70% of patients [3]. *Streptococcus pneumoniae* is the most commonly

isolated pathogen responsible for 35% to 60% of cases [4]. Studies reported during the last two decades from India have also reported a higher prevalence of *Klebsiella pneumoniae* among culture positive pneumonias [5].

Major national and specialist society guidelines support the use of severity assessment in guiding clinical decisions regarding the site of care and level of medical intervention required. To aid severity assessment in CAP, a number of severity scores have been validated to predict the need for intensive-care unit (ICU) admission and mortality. CURB-65 was developed and validated by Lim *et al.*; [6] and has subsequently been shown to have moderate discrimination for the prediction of mortality in CAP.

The 2007 American Thoracic Society/Infectious Diseases Society of America

guidelines on community-acquired pneumonia recommend the use of the CURB-65 assessment instrument (confusion, blood urea nitrogen- 20 mg/dL, respiratory rate-30 breaths/min, blood pressure <90/60 mm Hg, and age >65 years). The score is calculated by assigning one point for each of the above criteria. It is the recommended severity score in the CAP guidelines of the British Thoracic Society (BTS). The simplicity of the CURB-65 score (5 variables) favor its use over the more complex Pneumonia Severity Index (20 variables). The CURB-65 and the simplified CRB-6 (which excludes blood urea nitrogen) have been extensively validated, and give results comparable to those of the Pneumonia Severity Index. It is hoped that the knowledge of relevant prognostic factors might be useful for early identification of patients at high risk requiring intensive care treatment. Prognostic scoring systems for CAP have been developed to address these issues. The two prominent tools for this purpose are the pneumonia severity index (PSI), developed in the USA after pneumonia outcome research trial (PORT), and the BTS rule, which has recently been modified to the CURB-65 rule [7].

#### AIMS AND OBJECTIVES

The aim of the study was to study the relation of CURB-65 score and outcome in pneumonia. And since, CURB-65 is the recommended severity score in the CAP guidelines of the British Thoracic Society (BTS). Because it is followed predominantly in western countries and not in India, study was undertaken to observe and interpret CURB 65 in Indian scenario.

#### MATERIALS AND METHODS:

A Multi centric study consisting of 164 patients presenting with symptoms of pneumonia ie, fever, cough with expectoration, breathlessness, altered sensorium to the outpatient department and emergency ward of MS Ramaiah Medical college Hospital, Dr. B.R. Ambedkar medical college and Sri Devaraj Urs Medical college & hospital between December 2010 to January 2015, admitted in ICU and wards have been assessed for CURB-65 score at the time of admission. Score is given based on the clinical examination and laboratory parameters as: consciousness: 1=altered sensorium- defined as a Mental Test Score of 8 or less, or new disorientation in person, place or time; BUN =BUN>7mmol/L; Respiratory rate =>20cycles/min; Blood pressure = systolic BP <90mmhg, diastolic BP <60mmhg, Score 1 point for each feature present, CURB-65 score 0 was likely suitable for home treatment, score of 1 or 2 was consider hospital referral and 3 or 4 for urgent hospital admission . Age >65years.All patients above 65years are included in the study and patients aged <65years are excluded. The results are statistically analysed and tabulated.

#### RESULTS:

During the study 164 patients were evaluated consisting 93(56.70%) male patients and 71(43.29%) female patients. 59(35.97%) were aged between 65-69years; 48(29.26%) were between 70-74years; 35(21.34%) were aged between 75-79years; 22(13.41%) were aged 80years and above.

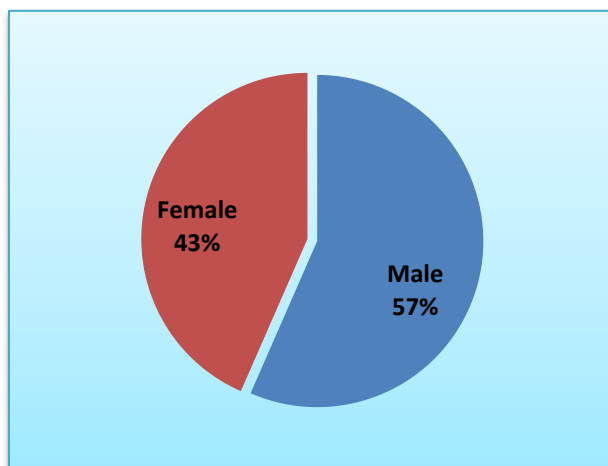
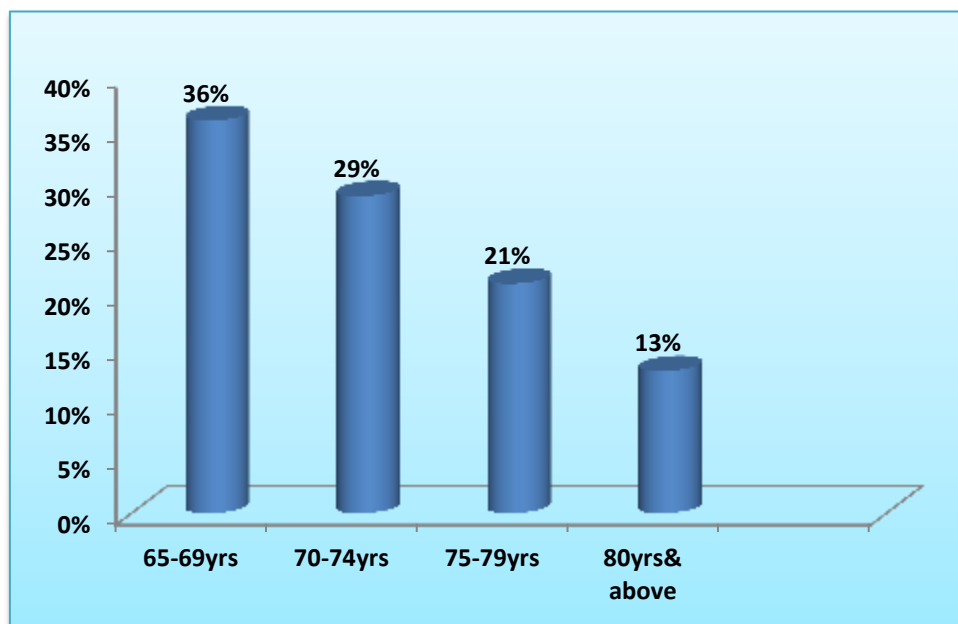


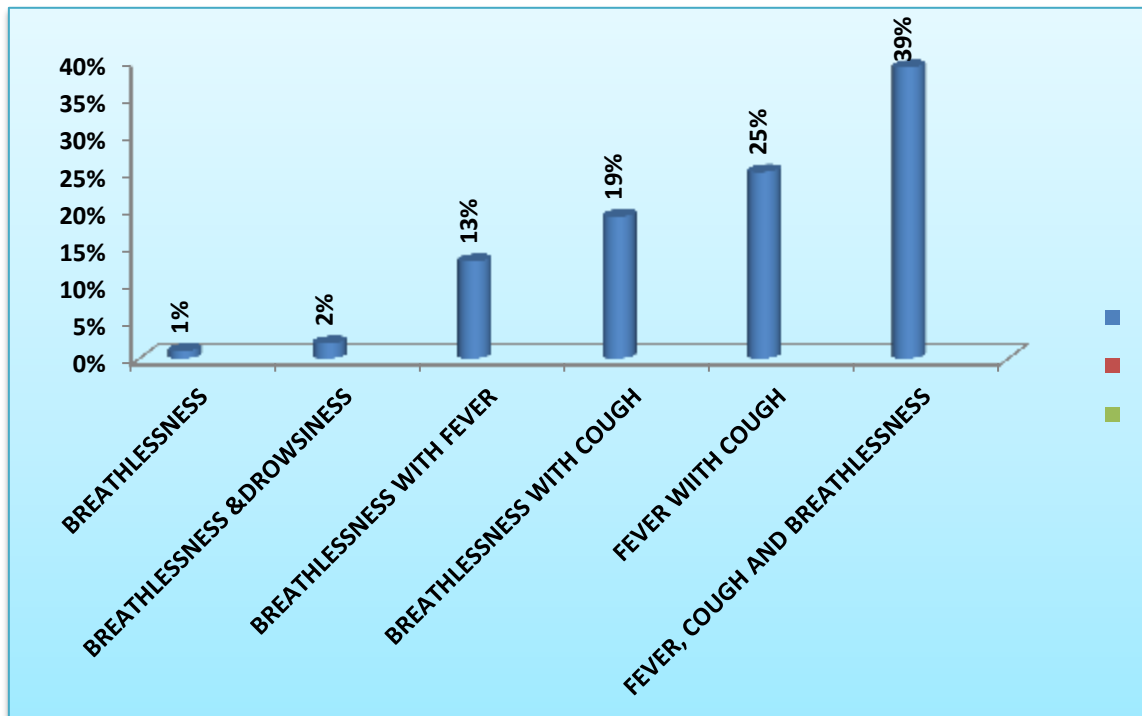
Fig 1: Sex Distribution of Patients



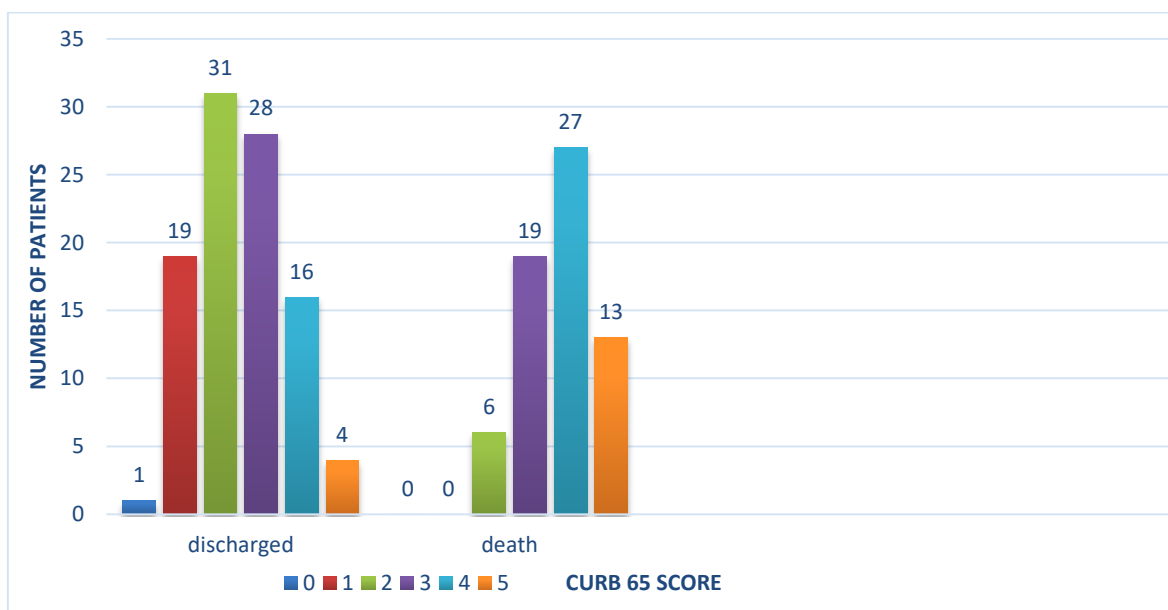
**Fig 2: Age Distribution of Patients**

The most common presentation is fever, cough with expectoration and breathlessness (38.66%), followed by fever with cough (25.33%), cough with

breathlessness (19.33%), fever with breathlessness (13.33%), breathlessness and drowsiness (2%), breathlessness (1.33%).



**Fig 3: Distribution of Symptoms in Patients**



**Fig 4:** shows the relation of CURB-65 score and outcome in pneumonia.

Among 164 patients, 1 patient had CURB-65 score of 0 and 19 patients with score of 1, were treated and discharged. 37 patients with score of 2, 6 deaths were observed. Among 47 patients with score of 3, 19(40.42%) deaths were observed. Similarly 43 patients with score of 4, 27(62.79%) deaths were observed. Of the 17 patients with score of 5, 13(76.47%) deaths were observed with the p value of 0.026 highly statistically significant.

**DISCUSSION:**

This study assessed the outcome of CAP using the CURB-65 score and found it to be a convenient tool for assessing CAP patients. In the initial management of patients with suspected CAP the clinician is faced with diagnostic and prognostic challenges, each challenge corresponding to a specific management decision. This emphasizes the importance of prompt, accurate diagnosis and severity of illness which corresponds to decisions regarding the intensity of management. The decision regarding the most appropriate site of care, including whether admission to hospital is warranted, is the first and single most important decision in the overall management of CAP. It has consequences both for the level of treatment received by the patient as well as the overall costs of treatment [8].

In our study patients with CURB-65 score of 3 and above showed higher rates of ICU admission and mortality. The CURB-65 score has a major advantage in its simplicity. A simple severity assessment tool, the

CURB-65score, accurately classifies patients with CAP into different management groups: patients with CURB-65 scores of 0 who are at very low risk of mortality (0%) and who, thus, may be suitable for home treatment; patients with scores of 1 who are at a relatively low risk of mortality (1.1%) and who also may be suitable for home treatment, but who need additional criteria for admission decision; patients with scores of 2 who are at intermediate risk of mortality (7.6%) and who should be considered for short-stay inpatient treatment; and patients with scores . who are at high risk of mortality (26.7%) and who should be managed as having severe pneumonia.

These four groups correlate significantly with key CAP management points: 1) admission decision criteria; 2) the timing of the switch from intravenous to oral antibiotics; and 3) discharge from the hospital. The CURB-65 score can also be used as a severity adjustment measure. Likewise, the CRB-65 score (which omits the blood urea result) may help general practitioners in the community decide when to hospitalise a patient with CAP.

**CONCLUSION:**

In conclusion, CURB-65 score is one of the simple tools to assess the severity and outcome in CAP. By using the knowledge of these criteria, patients of CAP can be better prognosticated as regards severity of their illness with consequently better triaging of patients, utilisation of resources and appropriate

treatment to improve the outcome in this disease in Indian scenario.

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