e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(3); 1367-1375

Original Research Article

To Assess the Usefulness of the Glasgow Scoring System in Predicting Severity of Acute Pancreatitis: A Prospective Observational Study

Hanief Mohamed Dar[1], Mustafa Ali[2], Rameez Raja[3], Padma thinles[4], Umar mukhtar[5]

[1]Assistant Professor, Department of General Surgery, GMC, Srinagar, India
[2]Postgraduate Scholar, Department of General Surgery, GMC, Srinagar, India
[3]Postgraduate Scholar, Department of General Surgery GMC, Srinagar, India
[4]Postgraduate Scholar, Department of General Surgery, GMC, Srinagar, India
[5]Postgraduate Scholar, Department of General Surgery, GMC, Srinagar, India

Received: 01-12-2025 / Revised: 15-01-2026 / Accepted: 28-02-2026
Corresponding author: Dr. Mustafa Ali
Conflict of interest: Nil

Abstract

Background: Acute pancreatitis is a prevalent surgical emergency characterized by a very varied clinical trajectory, ranging from a mild, self-limiting sickness to a severe, life-threatening condition marked by multi-organ failure and considerable mortality. Identifying patients at risk of developing severe acute pancreatitis early on is still a clinical challenge, but it is very important for proper triage, monitoring, and timely escalation of therapy. Several prognostic scoring systems have been created to guess how bad a condition would go. The Glasgow Scoring System (sometimes called the Glasgow-Imrie score) is one of the most used since it uses clinical and laboratory data that is usually available.

Objectives: The goal of this study was to see how useful and accurate the Glasgow Scoring System was at predicting the severity of acute pancreatitis and how it affected clinical outcomes like ICU admission, radiographic severity, complications, and death.

Methods: A prospective observational study was performed in the Department of Minimal Access and General Surgery at a tertiary care teaching hospital for a duration of one and a half years. Adult patients diagnosed with acute pancreatitis were recruited according to established inclusion and exclusion criteria. The Glasgow score parameters were evaluated within 48 hours of admission. The severity of the disease was linked to both clinical outcomes and radiological findings. A statistical analysis was conducted to ascertain the sensitivity, specificity, predictive values, and overall diagnostic accuracy of the Glasgow score.

Results: The study comprised 65 participants who had acute pancreatitis. The Glasgow score showed a strong link to how bad the disease was, how many people were admitted to the ICU, and how bad the disease was according to CT scans. Patients with elevated Glasgow scores exhibited prolonged hospitalizations, heightened complication rates, and inferior outcomes. A Glasgow score of 3 or higher was shown to be a reliable way to tell if someone has a serious illness.

Conclusion: The Glasgow Scoring System is an easy-to-use, useful, and accurate way to quickly figure out how bad acute pancreatitis is. Its use can help doctors find individuals who are at high risk and may need more careful surveillance and early intense treatment, especially in places where resources are limited.

Keywords: Acute Pancreatitis; Glasgow Scoring System; Severity Assessment; Prognostic Scoring; Intensive Care.

DOI: 10.25258/ijcpr.18.3.218

Introduction

Acute pancreatitis (AP) is an acute inflammatory condition of the pancreas characterized by a wide range of clinical severity. While most patients experience moderate illness and achieve full recovery, around 20–25% advance to severe acute pancreatitis (SAP), characterized by pancreatic necrosis, systemic inflammatory response, chronic organ failure, and considerable mortality [1–3]. The general mortality rate for acute pancreatitis is said to be between 3% and 5%. However, for people with severe disease, the death rate can be as high as 20% to 40%, especially if they have chronic organ failure that lasts more than 48 hours [4–6]. So, it is very important to find patients who are at risk for severe disease early on so that they can be closely watched, given early aggressive resuscitation, nutritional assistance, and transported to intensive care units as soon as possible.[4,7] Gallstones and

alcohol use are the predominant causes of acute pancreatitis, with additional etiologies including hypertriglyceridemia, drug-induced pancreatitis, post-endoscopic retrograde cholangiopancreato graphy, trauma, and idiopathic origins [2,3,7]. The clinical manifestation varies from minor epigastric pain to a life-threatening systemic disease characterized by multiorgan failure.

The pathogenesis of severe acute pancreatitis entails the premature activation of pancreatic enzymes, resulting in autodigestion, the production of inflammatory mediators, endothelial dysfunction, capillary leakage, and systemic inflammatory response syndrome. This chain reaction can quickly lead to failure of the lungs, kidneys, and circulatory system, usually within the first 48 to 72 hours of the disease starting [8,9].

Several prognostic scoring systems have been created to make it easier to figure out danger early on. Conventional approaches like the Ranson criteria and APACHE II score offer significant prognostic insights but are hindered by delayed evaluation, complexity, and diminished applicability in standard clinical environments [8-10]. As a result, simpler scoring systems like the BISAP and Glasgow Scoring System have become more popular.

The Glasgow Scoring System, or Glasgow-Imrie score, is a modified version of the Ranson criteria. It looks at nine clinical and laboratory data within 48 hours of admission. A score of three or above means the sickness is very bad [10,11–15]. Because it uses tests that are usually available, it is quite useful for a lot of people.

Even though there are newer biomarkers and scoring algorithms, many facilities still utilize the Glasgow score. But because patients are different in terms of age, health problems, and healthcare resources, it needs to be tested locally to see how accurate it is at predicting outcomes. The purpose of this study was to evaluate the efficacy of the Glasgow Scoring System in forecasting the severity and outcomes of acute pancreatitis within a tertiary care hospital environment. [12,13]

Materials and Methods

Study Design and Setting: This prospective observational study was carried out at the Postgraduate Department of Minimal Access and General Surgery at a tertiary care teaching hospital in North India for a duration of one and a half years.

The facility functions as a principal referral center, accommodating a heterogeneous patient demographic from both urban and rural areas. The study aimed to assess the efficacy of the Glasgow Scoring System in forecasting the severity of acute pancreatitis and its association with clinical and radiological outcomes.

Ethical Considerations: Before the study began, the Institutional Review Board and the Institutional Human Ethics Committee gave their consent. The study protocol adhered to the ethical criteria established in the Declaration of Helsinki. Before enrolling, all participants or their legally authorized representatives signed a document giving their written informed permission. Patient anonymity was rigorously upheld during the study, and data were anonymised prior to analysis.

Study Population: Adult patients diagnosed with acute pancreatitis and admitted to the General Surgery Department were evaluated for eligibility. The diagnosis was made when at least two of the following criteria were met:

1. Distinctive stomach discomfort indicative of acute pancreatitis,
2. Serum amylase and/or lipase values exceeding three times the upper limit of normal,
3. Radiological proof of acute pancreatitis on ultrasound or computed tomography.

Inclusion Criteria

- Patients who are at least 18 years old
- Recently diagnosed cases of acute pancreatitis
- Patients who were admitted throughout the research period
- Having all of the clinical and lab data ready within 48 hours of admission

Exclusion Criteria

- Patients with chronic pancreatitis or recurrent acute pancreatitis
- Kids and teens as patients
- Patients whose laboratory data were insufficient and unattainable within 48 hours
- Patients with concurrent severe chronic systemic diseases that may complicate outcome evaluation

The study included 65 patients who met the requirements for inclusion.

Data Collection and Clinical Assessment: All patients had a thorough clinical evaluation when they were admitted. This included taking their history with a focus on the cause of their symptoms, how much alcohol they drank, gallstone disease, other health problems they had, and how long their symptoms had been going on. A comprehensive physical examination was conducted, emphasizing hemodynamic stability, abdominal abnormalities, and indications of systemic involvement.

Baseline tests were done when the patient was admitted and again as needed throughout the first 48 hours. To make sure that the data was

consistent, it was recorded using a pre-designed and pre-tested proforma. The following factors were recorded:

- Information about the people (age, sex)
- What causes acute pancreatitis
- Signs of life and health
- Tests done at the lab
- Results from radiology
- Clinical outcomes such as ICU admission, complications, length of hospital stay, and mortality

Glasgow Scoring System Assessment: The Glasgow Scoring System was used to figure out how bad the acute pancreatitis was. The scoring criteria were assessed within the initial 48 hours after hospital admission. Each parameter that met or surpassed the set threshold value got one point. The factors that were taken into account were:

- People who are older than 55
- More than 15,000 white blood cells per mm^3
- Blood sugar level is more than 10 mmol/L
- Urea in serum is more than 16 mmol/L
- Arterial PaO_2 is less than 60 mmHg
- Calcium in the blood is less than 2.0 mmol/L
- Serum albumin is less than 32 g/L.
- Lactate dehydrogenase in serum is more than 600 IU/L
- Alanine aminotransferase or aspartate aminotransferase levels higher than 200 IU/L

The highest score was 9. If the Glasgow score was less than 3, the patient had moderate acute pancreatitis. If the score was 3 or above, the patient had severe acute pancreatitis.

Radiological Evaluation: At the time of admission, all patients had abdominal ultrasound to check for pancreatic enlargement, gallstones, and fluid collections around the pancreas. Contrast-enhanced computed tomography (CECT) of the abdomen was conducted when clinically warranted, especially in patients with suspected severe illness, persistent symptoms, or clinical deterioration. We used the Computed Tomography Severity Index (CTSI) to figure out how bad the radiological damage was. Findings like pancreatic necrosis, peripancreatic collections, and the degree of inflammation were recorded and compared to Glasgow scores.

Outcome Measures: The main outcome measure was the Glasgow Scoring System's prediction of how bad the acute pancreatitis will be. Secondary outcome measures encompassed: • Need for admission to the intensive care unit

- The growth of local or systemic problems
- How long the patient stays in the hospital
- Mortality: Patients were monitored throughout their hospitalization until discharge or death.

Statistical Analysis: We put the data into an organized database and used typical statistical software to look at it. Continuous variables were represented as mean ± standard deviation or median with interquartile range, contingent upon data distribution. Frequencies and percentages were used to show categorical variables. We used the right statistical methods to compare the groups with mild and severe acute pancreatitis. For categorical variables, the chi-square test or Fisher's exact test was employed. For continuous variables, the Student's t-test or Mann–Whitney U test was used as needed.

We looked examined the Glasgow Scoring System's diagnostic performance by looking at its sensitivity, specificity, positive predictive value, negative predictive value, and overall diagnostic accuracy. We used receiver operating characteristic (ROC) curve analysis to see how well the Glasgow score could predict severe illness and ICU admission. A p-value below 0.05 was deemed statistically significant.

Results

Study Population: A total of 65 patients diagnosed with acute pancreatitis were included in the study. All patients fulfilled the inclusion criteria and had complete clinical, laboratory, and outcome data available within 48 hours of admission. The study population was stratified into mild acute pancreatitis and severe acute pancreatitis groups based on the Glasgow Scoring System.

Demographic Characteristics

Age Distribution: The age of the patients ranged from early adulthood to elderly age groups, with a mean age concentrated in the middle decades of life. The majority of patients belonged to the 31–50 years age group, reflecting the typical demographic profile of acute pancreatitis in the region. Patients aged >55 years constituted a higher proportion of the severe acute pancreatitis group compared to the mild group, indicating a significant association between advancing age and disease severity.

Table 1: Age distribution of study participants

Age Group (years)	Frequency (n)	Percentage (%)
21–40	27	41.54
41–60	21	32.31
61–80	15	23.08
>80	2	3.08
Total	**65**	**100.00**

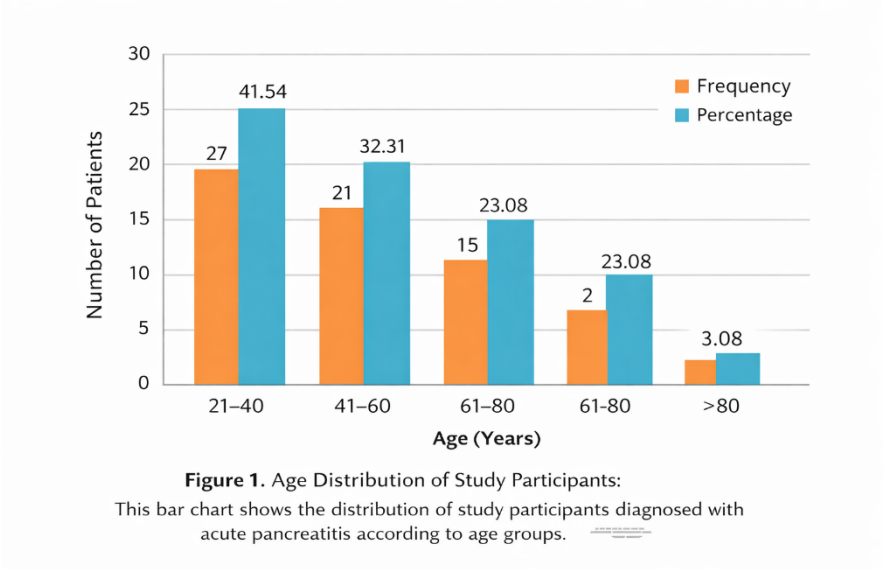

Figure 1. Age Distribution of Study Participants:
This bar chart shows the distribution of study participants diagnosed with acute pancreatitis according to age groups.

Figure 1: illustrates the graphical representation of age distribution among patients.

Gender Distribution: Of the 65 patients, male patients predominated, accounting for a substantial majority of cases. Female patients constituted a smaller proportion of the study population. Severe acute pancreatitis was more frequently observed among male patients; however, the difference in severity distribution between genders did not reach strong statistical significance.

Table 2. Gender distribution of study participants

Gender	Frequency (n)	Percentage (%)
Male	24	36.92
Female	41	63.08
Total	65	100.00

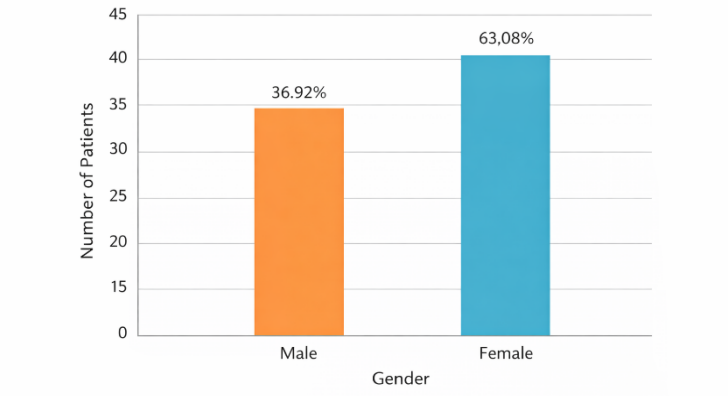

Figure 2. Gender Distribution of Study Participants:
This bar chart illustrates the distribution of study participants diagno-sed with acute pancreatitis according to gender.

Figure 2: depicts the gender-wise distribution of patients.

Etiology of Acute Pancreatitis: Gallstone disease was identified as the most common etiological factor, followed by alcohol-related pancreatitis. Other etiologies included idiopathic causes and less frequent secondary causes. Severe acute pancreatitis was more commonly associated with alcohol-related etiology compared to gallstone disease.

Table 3. Distribution of Etiology According to Severity of Acute Pancreatitis

Etiology	Mild n (%)	Moderate n (%)	Severe n (%)
Gallstone-induced (GSI)	23 (71.9)	15 (78.9)	10 (71.4)
Non-gallstone-induced (NGSI)	9 (28.1)	4 (21.1)	4 (28.6)

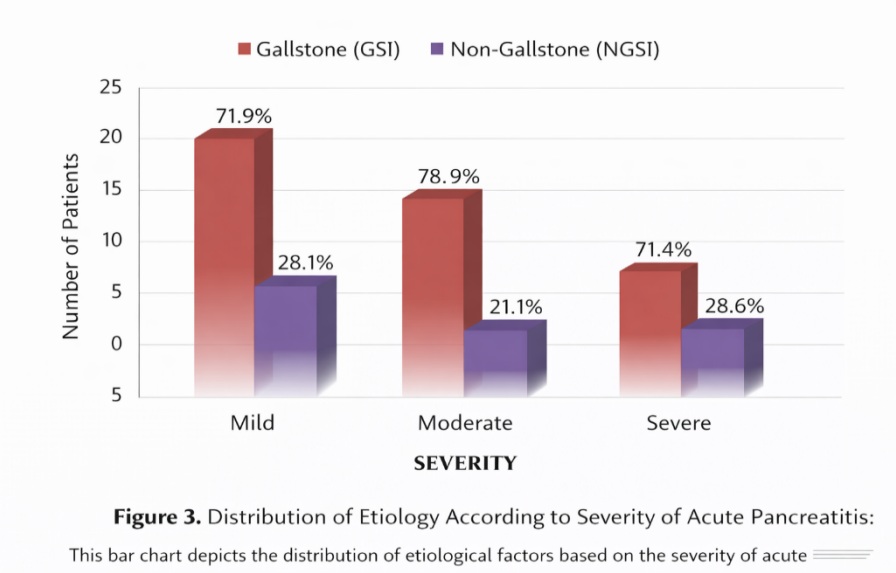

Figure 3: Distribution of Etiology According to Severity of Acute Pancreatitis.

Distribution of Glasgow Scores: The Glasgow scores ranged from 0 to ≥5 among the study population. Most patients with mild acute pancreatitis had scores below 3, whereas patients classified as severe had Glasgow scores ≥3.

Table 4. Distribution of Glasgow Scores among Study Participants (n = 65)

Glasgow Score	Number of Patients (n)	Percentage (%)
1	10	15.40
2	22	33.80
3	9	13.80
4	10	15.40
5	11	16.90
6	3	4.60
Total	**65**	**100.00**

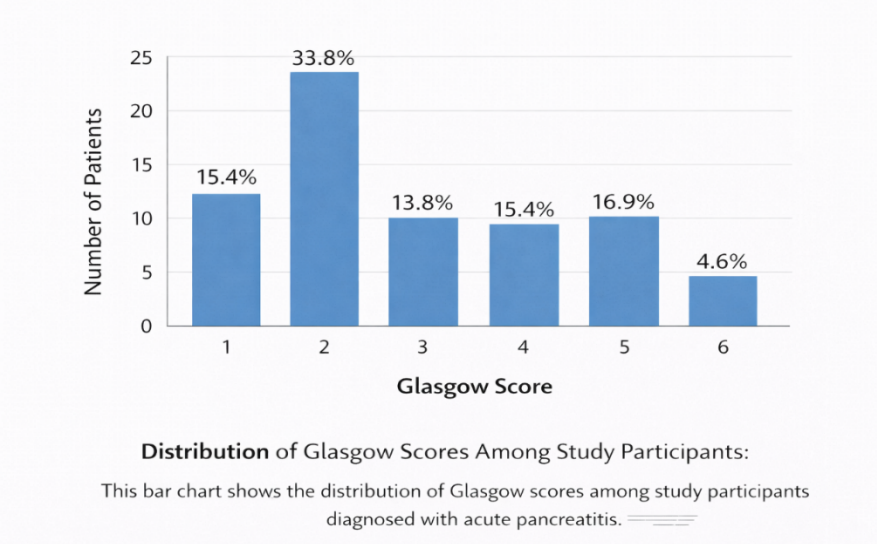

Figure 4: Distribution of Glasgow scores among study participants

Laboratory Parameters and Severity Correlation: Comparison of laboratory parameters revealed significantly abnormal values in patients with severe acute pancreatitis. Elevated white blood cell counts, blood urea levels, lactate dehydrogenase, transaminases, and reduced serum calcium and albumin were more frequently observed in the severe group.

Table 5 presents a comparative analysis of laboratory parameters across Glasgow severity groups.

Table 5: Comparison of Laboratory Parameters across Glasgow Severity Groups

Laboratory Parameter (Mean ± SD)	Mild (n = 32)	Moderate (n = 19)	Severe (n = 14)	P-value
White blood cell count (×10⁹/L)	13.8 ± 3.7	15.5 ± 2.6	16.9 ± 3.4	0.015
Blood urea (mg/dL)	25.0 ± 8.3	31.4 ± 14.2	46.7 ± 20.3	<0.001
Serum albumin (g/dL)	3.9 ± 0.6	3.7 ± 0.6	3.1 ± 0.5	<0.001
Serum calcium (mg/dL)	8.4 ± 0.5	8.0 ± 0.5	7.8 ± 0.6	0.002
Lactate dehydrogenase (U/L)	284.4 ± 123.1	374.4 ± 193.8	424.1 ± 164.1	0.014
PaO_2 (mmHg)	57.3 ± 15.9	44.9 ± 10.7	47.4 ± 14.5	0.008
Blood glucose (mg/dL)	120.5 ± 41.2	113.7 ± 15.5	197.7 ± 85.5	<0.001
AST/ALT (U/L)	111.5 ± 106.1	135.3 ± 132.7	135.4 ± 112.4	0.710

Radiological Severity and Glasgow Score Concordance: Contrast-enhanced computed tomography was performed in patients with suspected severe disease. A strong concordance was observed between Glasgow score ≥3 and higher CT Severity Index (CTSI) values. Patients with higher Glasgow scores were more likely to show pancreatic necrosis, peripancreatic fluid collections, and extensive inflammatory changes on CT imaging.

Table 6 shows the concordance between Glasgow score and CT Severity Index.

Table 6: Concordance between Glasgow Scoring System and CT Severity Index

Glasgow Severity (Clinical)	CT Mild	CT Moderate	CT Severe	Total
Mild (Score 0–2)	24	8	0	32
Moderate (Score 3–4)	5	10	4	19
Severe (Score 5–6)	0	5	9	14
Total	**29**	**23**	**13**	**65**

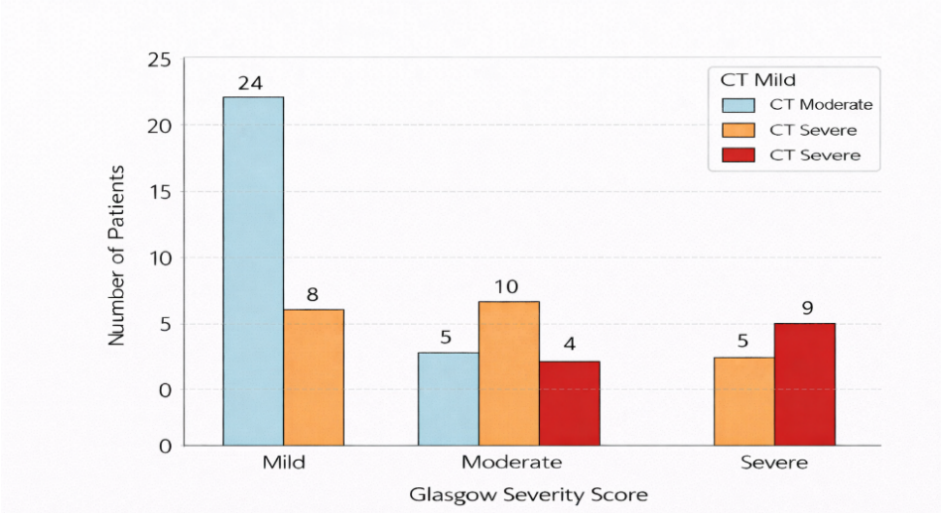

Figure 5. Concordance Between Glasgow Score and CT Severity Index:

This bar chart compares the Glasgow Severity Score with the corresponding CT Severity Inde among patients diagnosed with aanccpatis

Figure 5: illustrates the comparison between Glasgow severity score and CT severity index.

Clinical Outcomes

ICU Admission: Patients classified as severe acute pancreatitis based on the Glasgow score had a significantly higher requirement for ICU admission compared to those with mild disease. Receiver operating characteristic (ROC) curve analysis demonstrated good predictive ability of the Glasgow score for ICU admission.

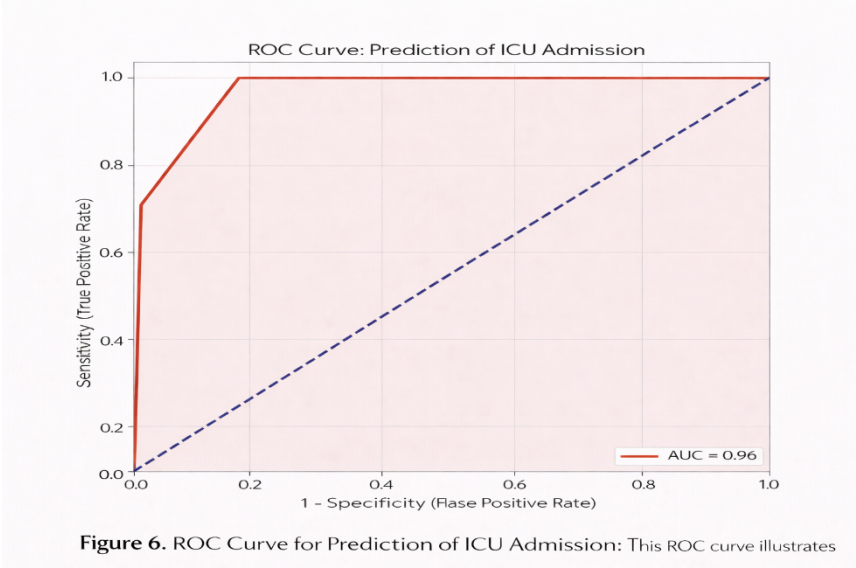

Figure 6. ROC Curve for Prediction of ICU Admission: This ROC curve illustrates

Figure 6: shows the ROC curve for prediction of ICU admission.

Duration of Hospital Stay: The duration of hospital stay increased progressively with increasing Glasgow severity scores. Patients with severe acute pancreatitis required prolonged hospitalization compared to those with mild disease.

Figure 7. Duration of Hospital Stay across Glasgow Severity Groups

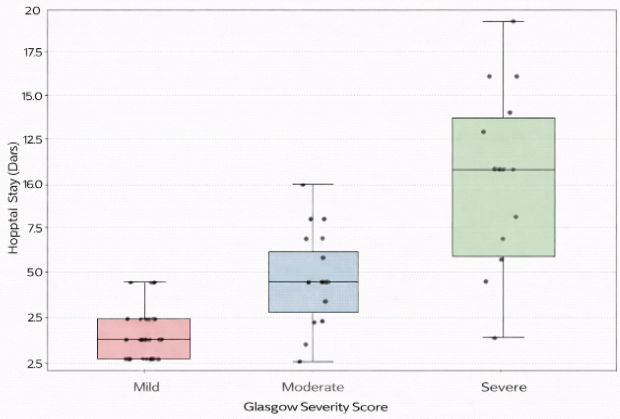

Figure 7. ROC Curve for Prediction of ICU Admission: This boxplot chart illustrates the duration of hospital stay for patients with acute pancenatitis classified into

Figure 7: depicts the duration of hospital stay across Glasgow severity groups.

Complications: Local and systemic complications were more frequent among patients with severe acute pancreatitis. These included pancreatic necrosis, organ failure, and sepsis.

Table 7 summarizes the distribution of clinical outcomes stratified by severity.

Table 7. Distribution of Clinical Outcomes Stratified by Glasgow Severity Score

Outcome	Mild GSS (n = 32)	Moderate GSS (n = 19)	Severe GSS (n = 14)	P-value
Hospital stay (days, Mean ± SD)	4.3 ± 1.3	7.2 ± 2.2	12.0 ± 4.8	<0.001
ICU admission, n (%)	0 (0)	0 (0)	3 (21.4)	0.003
Mortality, n (%)	0 (0)	0 (0)	3 (21.4)	0.003

Mortality Analysis: Mortality was observed exclusively among patients with severe acute pancreatitis. These patients typically had higher Glasgow scores, radiological evidence of severe disease, and multi-organ dysfunction.

Table 8 compares survivor and non-survivor profiles.

Table 8: Comparison of Survivors and Non-Survivors in Acute Pancreatitis

Parameter (Mean ± SD)	Survivors (n = 62)	Non-Survivors (n = 3)	P-value
Total Glasgow score	2.85 ± 1.40	5.67 ± 0.58	0.006
Age (years)	48.8 ± 18.3	64.0 ± 15.6	0.137
Hospital stay (days)	6.6 ± 3.6	11.3 ± 8.7	0.262
Blood urea (mg/dL)	30.6 ± 13.7	50.3 ± 39.6	0.324
White blood cell count (×10⁹/L)	14.9 ± 3.6	16.8 ± 3.5	0.317

Diagnostic Accuracy of Glasgow Score: Using a cut-off value of Glasgow score ≥3, the scoring system demonstrated good diagnostic accuracy for predicting severe acute pancreatitis. Sensitivity, specificity, positive predictive value, and negative predictive value were calculated and found to be clinically acceptable.

Table 9 presents the diagnostic accuracy parameters of the Glasgow score.

Table 9: Diagnostic Accuracy of Glasgow Score ≥ 3 for Predicting Adverse Outcomes

Outcome Predicted	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Accuracy (%)
Severe CT findings	100.0	61.5	39.4	100.0	69.2
Mortality	100.0	51.6	9.1	100.0	53.8
ICU admission	100.0	51.6	9.1	100.0	53.8

Discussion

It is important to be able to estimate how bad an illness will be early on in order to manage it well in the clinic. This prospective observational study assessed the efficacy of the Glasgow Scoring System in forecasting the severity of acute pancreatitis and its correlation with clinical outcomes at a tertiary care teaching hospital. The results of this study validate the enduring significance of the Glasgow score as a straightforward, pragmatic, and clinically meaningful predictive instrument.

This study found that acute pancreatitis mostly affected middle-aged persons, and most of them were men. This demographic trend aligns with several research from India and other regions, indicating a higher frequency among males, mostly due to increased exposure to etiological variables such as alcohol intake [2,3]. Older age was more often linked to severe disease, which fits with what we already know: older patients tend to have worse outcomes because they have less physiological reserve and more comorbidities [3,6].

Gallstone disease was identified as the principal cause of acute pancreatitis, succeeded by alcohol-induced pancreatitis. This distribution of causes is similar to what has been reported before in both developing and developed areas [2,7]. But patients with alcohol-related problems were more likely to have severe acute pancreatitis. This could be because they didn't come in right away, their pancreas was hurt again and over, and they weren't getting enough nutrition at the same time. The Glasgow Scoring System was directly linked to how bad the condition was in this study. Individuals with Glasgow scores of 3 or above were more prone to develop severe acute pancreatitis, necessitate admission to the ICU, have increased CT severity indices, and endure extended hospitalizations. These results align with the validation studies conducted by Blamey et al. and Imrie et al., which confirmed the Glasgow score as a dependable indicator of severe disease when the score surpasses three [10,11,15].

The laboratory indicators in the Glasgow score were strongly correlated with the severity of the illness. In severe cases, there was a higher incidence of elevated white blood cell count, serum urea, lactate dehydrogenase, and transaminases, as well as lower serum calcium and albumin levels. Hypoalbuminemia signifies systemic inflammation and capillary leak, which are pivotal in the pathophysiology of severe acute pancreatitis. Earlier research has independently associated diminished blood albumin concentrations with an elevated risk of chronic organ failure and mortality [6,7].

Contrast-enhanced computed tomography (CT) showed a strong link between higher Glasgow scores and higher CT Severity Index values. People with very high Glasgow scores were more likely to have pancreatic necrosis and fluid collections around the pancreas. This link shows that the Glasgow score is an excellent early bedside prediction that works well with the severity of the disease that is tested later on [14].

Receiver operating characteristic curve analysis in this study indicated that the Glasgow score had considerable discriminatory capability for forecasting ICU admission and serious illness. Comparable results have been exhibited in comparative studies assessing the Glasgow score against the APACHE II, BISAP, and Ranson grading systems [12,13]. Although APACHE II may exhibit slightly improved accuracy in specific

contexts, its complexity and necessity for iterative calculations restrict its general clinical utility [9].

In this trial, mortality was limited to individuals with severe acute pancreatitis and elevated Glasgow scores. This research emphasizes the necessity for early severity classification, as prompt intensive management may improve outcomes.

Researchers are looking into new biomarkers and prognostic models, but there is still no one method that has been proven to be the best way to predict how bad acute pancreatitis will be [6,13]. In this case, the Glasgow score is still very useful in areas where resources are limited because it is easy to use and based on tests that are often available.

The results of this study suggest that the Glasgow Scoring System is still a good way to immediately figure out how terrible acute pancreatitis is. If doctors use it, they can swiftly put patients into groups, keep a better eye on them, and deploy critical care resources more effectively.

Limitations of the Study

The current study, notwithstanding its merits, possesses specific limitations. The sample size was comparatively limited and sourced from a single tertiary care hospital, perhaps constraining the generalizability of the results.

Not all patients had contrast-enhanced computed tomography done the same way; the imaging was based on clinical needs. The study also lacked a clear head-to-head comparison with alternative rating systems as APACHE II or BISAP. Subsequent multicentric research featuring larger sample sizes and comparison analyses of various scoring systems may yield more substantial information concerning the most effective prognostic instrument for acute pancreatitis.

Conclusion

The Glasgow Scoring System is a straightforward, cheap, and dependable way to quickly figure out how bad acute pancreatitis is. A Glasgow score of 3 or above is a good way to find people who are more likely to get serious disease, complications, go to the ICU, or die. The Glasgow score is still very useful in everyday surgery, especially in places where resources are limited, because it is easy to use and based on parameters that are usually available. Using this grading system early on can help with timely intervention, better patient outcomes, and better use of healthcare resources.

References

1. Banks PA, Freeman ML. Practice guidelines in acute pancreatitis. Am J Gastroenterol. 2006;101(10):2379–2400.
2. Yadav D, Lowenfels AB. The epidemiology of pancreatitis and pancreatic cancer. Gastroenterology. 2013;144(6):1252–1261.
3. Forsmark CE, Vege SS, Wilcox CM. Acute pancreatitis. N Engl J Med. 2016;375(20): 1972–1981.
4. Tenner S, Baillie J, DeWitt J, Vege SS. American College of Gastroenterology guideline: management of acute pancreatitis. Am J Gastroenterol. 2013;108(9):1400–1415.
5. van Santvoort HC, Bakker OJ, Bollen TL, et al. A conservative and minimally invasive approach to necrotizing pancreatitis improves outcome. Gastroenterology. 2011;141(4):125 4–1263.
6. Petrov MS, Shanbhag S, Chakraborty M, Phillips AR, Windsor JA. Organ failure and infection of pancreatic necrosis as determinants of mortality in acute pancreatitis. Gastroenterology. 2010;139(3):813–820.
7. Vege SS, DiMagno MJ, Forsmark CE, Martel M, Barkun AN. Initial medical treatment of acute pancreatitis. Am J Gastroenterol. 2018;113(4):481–493.
8. Ranson JH, Rifkind KM, Roses DF, et al. Prognostic signs and the role of operative management in acute pancreatitis. Surg Gynecol Obstet. 1974;139(1):69–81.
9. Larvin M, McMahon MJ. APACHE-II score for assessment and monitoring of acute pancreatitis. Br J Surg. 1989;76(10):100–103.
10. Blamey SL, Imrie CW, O'Neill J, Gilmour WH, Carter DC. Prognostic factors in acute pancreatitis. Gut. 1984;25(12):1340–1346.
11. Imrie CW, Benjamin IS, Ferguson JC, et al. A single-centre double-blind trial of Trasylol therapy in acute pancreatitis. Br J Surg. 1978;65(5):337–341.
12. Chauhan S, Jain A, Sharma A, et al. Comparative evaluation of severity scoring systems in acute pancreatitis. Int Surg J. 2022;9(5):1123–1129.
13. Teng TZJ, Tan JH, Lee JM, et al. Sequential organ failure assessment score is superior to other prognostic indices in acute pancreatitis. Pancreatology. 2021;21(4):730–738.
14. Balthazar EJ, Robinson DL, Megibow AJ, Ranson JH. Acute pancreatitis: value of CT in establishing prognosis. Radiology. 1990;174(2):331–336.
15. Blamey SL, Carter DC, Imrie CW. Modified Glasgow prognostic criteria in acute pancreatitis. Br J Surg. 1984;71(8):649–653.