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ORIGINAL ARTICLE

Comparison of AIMS65 vs pre-endoscopy Rockall score for the prediction of in-hospital mortality in patients with Upper Gastrointestinal Bleeding at a tertiary care hospital of Punjab, Pakistan: which one is better?

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ABSTRACT… Objective: To compare the AIMS65 score with the pre-endoscopy Rockall score among patients presenting with upper gastrointestinal bleeding for the prediction of in-hospital mortality. **Study Design:** Analytical Cross-sectional study. **Setting:** Medical Unit III, Sahiwal Teaching Hospital. **Period:** August 2025 to March 2026. **Methods:** 123 patients who presented with upper GI bleeding in the emergency department were enrolled. For each patient AIMS 65 and Pre-endoscopy Rockall score was calculated. Data analysis was performed using SPSS. Area under the Curve (AUC) was determined for both scores using Receiver Operating Characteristic (ROC) analysis. A p-value of <0.05 was considered statistically significant. **Results:** The mean age of the patients was 55.90 ± 14.7 years. Male patients were 56.1% in proportion. The total mortality rate in the hospital was found out to be 24.4%. AUC for AIMS65 and pre-endoscopy Rockall scores was 0.844 (95% CI: 0.772–0.917; p<0.001) and 0.834 (95% CI: 0.766–0.903; p<0.001), respectively. Both scores showed good predictive performance for in-hospital mortality. The difference between the two was minimal (0.010) and not statistically significant. **Conclusion:** AIMS 65 and Pre-endoscopy Rockall score are both equally effective for the prediction of in-hospital mortality among UGIB patients.

Key words: AIMS65, Mortality, Pre-endoscopy Rockall Score, Upper Gastrointestinal Bleeding.

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INTRODUCTION

A type of bleeding originating from the esophagus, stomach, or duodenum is called Upper GI Bleeding. In the ICD-10 system, upper gastrointestinal bleeding (UGIB) is classified under categories such as hematemesis, melena, and gastrointestinal hemorrhage.[1] UGIB is a common medical emergency worldwide and can be serious if not managed on time. The estimated annual incidence is 48-160 cases per 100,000 population, with higher incidence in males and elderly people.[2] It's also prevalent in Asia. In Korea, the incidence of hospitalization is 30.7 cases per 100,000 person-years.[3] In Pakistan is 50-150 new cases are reported each year per 100,000 population, demonstrating that it is commonly seen in practice. Despite advances in diagnostic and treatment methods, UGIB still causes considerable morbidity. The worldwide mortality is 5% but in Pakistan it is much higher (10% to 25%) based on various patient characteristics and diagnostic causes.[4-6]

There are various scoring systems to determine the severity and predict the outcomes of UGIB. These include the Baylor bleeding score, Rockall score and the Cedars-Sinai Medical Center (CSMC) Predictive Index, which include endoscopic features. Some scoring systems can be applied before performing endoscopy, including the Glasgow-Blatchford score, modified Glasgow-Blatchford score, pre-endoscopy Rockall score, T-score system, and AIMS65 score.[7,8]

While numerous studies have assessed these scores, there is still a lack of evidence from Pakistan comparing them or showing superiority of one score over the other.[9-11]

Here, we compare the AIMS65 score and the pre-endoscopy Rockall score in assessing in-hospital mortality in UGIB patients. The pre-endoscopy Rockall score was chosen as the Rockall score is

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difficult to calculate in emergency settings, particularly in resource poor settings. Risk stratification in the early stages allows prompt management and better outcomes. Therefore, this study aims to determine which of these scoring systems performs better in predicting in-hospital mortality.

METHODS

An analytical cross-sectional study was conducted at Sahiwal Teaching Hospital over eight months (August 2025 to March 2026) after obtaining Institutional Review Board approval (letter no. 320/IRB/SLMC/SWL). Following formula was used for calculating the sample size.

$$\text{Sample size} = \frac{Z_{1-\alpha/2}^{2}\, p(1-p)}{d^{2}}$$

In this formula, Z_1-α/2 was taken as 1.96 at a 5% level of significance (P < 0.05), the expected population proportion (p) was assumed to be 0.09 based on previous studies[9], and the margin of error (d) was 0.05. The final sample size was 123 patients. Patients diagnosed with UGIB based on ICD-10 criteria were included. Exclusion criteria included non-UGIB diagnoses, inability to calculate either score, death or discharge from the emergency department, and patients leaving against medical advice. Informed consent was obtained from all patients; where not possible, consent was taken from first-degree relatives. A convenience sampling technique was used. Patients were evaluated, and relevant data were recorded. They were then admitted and followed throughout their hospital stay. A structured data collection proforma was used. SPSS version 26 was used to perform the data analysis. Frequencies and distributions were calculated, and results were presented in tables and bar charts. ROC analysis was applied to compare both scoring systems, with p <0.05 considered significant.

RESULTS

123 patients with a mean age of 55.90 ± 14.7 years were included. There were 69 (56.1%) males and 54 (43.9%) females. A normal data distribution was shown by Shapiro-Wilk test (p = 0.239); therefore, results were expressed as mean ± standard deviation. Table-I presents the predicted mortality outcomes based on the AIMS65 and pre-endoscopy Rockall scores.

TABLE-I

Predicted mortality as per AIMS 65 and Rockall scores among the patients

Variables	Groups	Frequency	Percentage
Gender	Male	69	56.1
	Female	54	43.9
Predicted Mortality as pr AIMS 65	0.30%	27	22.0
	1.20%	26	21.1
	10.30%	34	27.6
	16.50%	4	3.3
	24.50%	10	8.1
	5.30%	22	17.9
Predicted Morality as per Rockall Score	0.20%	30	24.4
	11%	11	8.9
	2.40%	11	8.9
	24.60%	16	13.0
	39.60%	25	20.3
	48.90%	23	18.7
	5.60%	5	4.1
	50%	2	1.6

FIGURE-1

Predicted mortality as per the AIMS 65 score

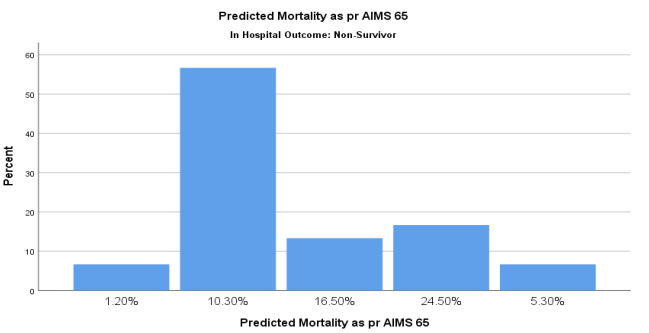
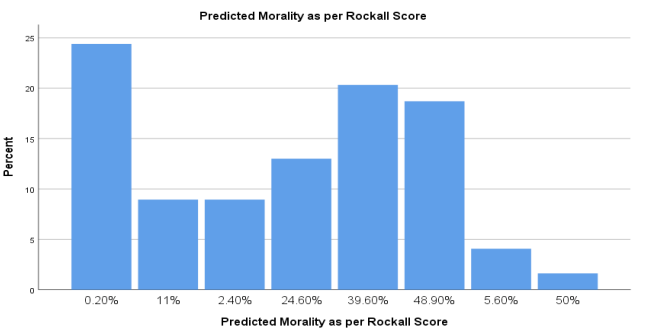


FIGURE-2

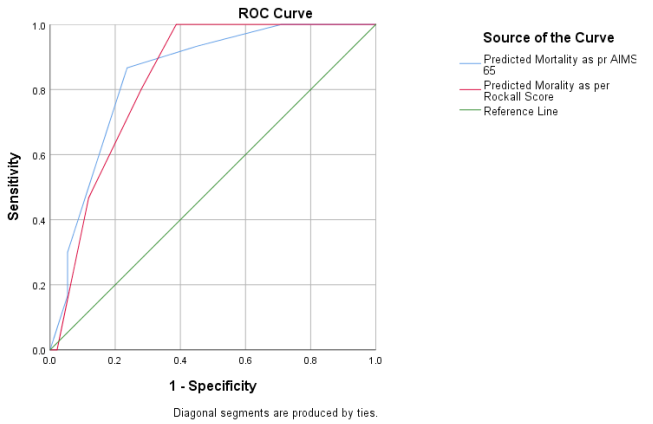
Predicted mortality as per the Pre-endoscopy Rockall score



The total in-hospital mortality rate was 24.4% (30 patients). Receiver Operating Characteristic analysis showed that the AIMS65 score achieved an AUC of 0.844 (95% CI: 0.772–0.917; p < 0.001), whereas the pre-endoscopy Rockall score yielded an AUC of 0.834 (95% CI: 0.766–0.903; p < 0.001). Both scores showed good predictive accuracy. However, the difference between them was minimal (0.010) and not statistically significant indicating that neither of them showed superiority over the other. This is shown in Figure-3.

FIGURE-3

The ROC Curve of the two Scores



DISCUSSION

In this study, the predictive performance of AIMS 65 and pre-endoscopy Rockall score for in-hospital mortality prediction was assessed. A greater proportion of the study population consisted of male patients. The results indicate that both scoring systems performed comparably when applied in emergency settings.

For the prediction of outcomes in patients with upper GI bleeding, several studies have evaluated different scoring systems. Most of these studies have reported a predominance of male participants.[12-15] Hyett et al. showed that the AIMS65 score outperformed the Glasgow-Blatchford score in predicting in-hospital mortality (AUROC 0.85 vs. 0.66; p < 0.01).[12] In contrast, Yaka et al. found that the Glasgow-Blatchford and AIMS65 scores were comparable in their predictive ability (AUC 0.85 vs. 0.81; p = 0.342).[13] Similarly, Kim et al. evaluated AIMS65, Glasgow-Blatchford, and pre-endoscopy Rockall scores and reported that although AIMS65 showed relatively better predictive performance, the difference was not statistically significant (p = 0.07).[14] Moreover, comparative studies on UGIB have reported that both are reliable in predicting mortality in the hospital, with no significant superiority of one over the other (p < 0.001).[15] In Pakistan, the AIMS65 score has been validated in several studies for predicting patient outcomes[9-11]; however, studies directly comparing these two scoring systems are still scarce.

In our study, there was higher number of male patients (56.1%). This finding was consistent with the studies done earlier. This could be due to the reason that males patient have higher occurrence of cirrhosis and portal hypertension in countries like Pakistan. The overall mortality rate in this study was 24.4% (30 patients), which is relatively higher compared to some other reports. This may be attributed to a greater proportion of patients presenting with decompensated liver disease and higher risk scores on both assessment tools. Such patients are more likely to experience adverse outcomes due to coagulopathy, increased susceptibility to infections, nutritional deficiencies, and progression to multi-organ failure. Additionally, delayed presentation to healthcare facilities may have contributed to the increased mortality observed.

As the study was conducted in a single government tertiary care hospital in Pakistan with a relatively small sample size, the findings may primarily reflect the situation in public sector hospitals in Punjab and may not be generalizable to other healthcare settings, such as private institutions where earlier presentation is more common. Therefore, multicenter studies with larger sample sizes are recommended to enhance the generalizability of these findings.

CONCLUSION

Both AIMS65 and pre-endoscopy Rockall scores are equally effective for the prediction of in-hospital mortality in patients with UGIB. Neither of the two scoring systems showed superiority over the other.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Saad Ahmad:** Drafting.
2	**Muhammad Usman Ghani:** Data analysis.
3	**Muhammad Hunzla:** Formatting.
4	**Fatima Hassan:** Referencing.
5	**Uzma Amin:** Data collection.
6	**Maryam Sarwar:** Reviewing.