ORIGINAL RESEARCH

DOI: 10.4274/globecc.galenos.2025.09609
Glob Emerg Crit Care 2025;4(3):145-150

Predicting Mortality in Non-Variceal Upper Gastrointestinal Bleeding: A Comparative Analysis of Five Risk Scores

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Abstract

Objective: This study aimed to compare the predictive accuracy of five commonly used clinical scoring systems - albumin, international normalised ratio,altered mental status, systolic blood pressure, age (AIMS65), Charlson Comorbidity Index ≥2, in-hospital onset, albumin <2.5 g/dL, altered mental status, Eastern Cooperative Oncology Group performance status ≥2, and steroid use (CHAMPS), age, blood tests, and comorbidities (ABC), Glasgow-Blatchford score (GBS), and Complete Rockall score (CRS)- in estimating in-hospital mortality among patients presenting with non-variceal upper gastrointestinal bleeding (UGIB).

Materials and Methods: This retrospective, single-center observational study included 917 adult patients diagnosed with non-variceal UGIB between January 2020 and January 2025. Clinical data were extracted from electronic medical records. Each patient's risk scores (AIMS65, CHAMPS, ABC, GBS, and CRS) were calculated based on admission data. The predictive performance of each scoring system for in-hospital mortality was assessed using receiver operating characteristic curve analysis, and area under the curve (AUC) values were compared using the DeLong test.

Results: The overall in-hospital mortality rate was 5.2%. AIMS65 demonstrated the highest predictive performance (AUC: 0.815, 95% confidence interval: 0.788-0.840), significantly outperforming GBS (AUC: 0.631, p<0.001) and showing comparable accuracy to CHAMPS (AUC: 0.801, p=0.493). The CHAMPS score also showed good discriminatory power, particularly in high-risk patients. The ABC score (AUC: 0.708) and CRS (AUC: 0.702) demonstrated moderate predictive ability, while GBS had the lowest accuracy.

Conclusion: Among the five evaluated scoring systems, AIMS65 exhibited the best performance in predicting in-hospital mortality in non-variceal UGIB patients, followed closely by CHAMPS.

Keywords: Gastrointestinal hemorrhage, risk assessment, prognosis, mortality, emergency medical services

Introduction

Acute upper gastrointestinal bleeding (UGIB) is a frequently encountered and potentially life-threatening clinical condition in emergency departments and hospitals [1]. Despite advances in pharmacological and endoscopic therapies, the estimated mortality rate for UGIB remains between 2% and 10% [2,3]. Non-variceal causes-such as peptic ulcers, gastritis, and Mallory-Weiss tears-account for a significant proportion of UGIB cases. Early risk stratification in these patients is critically important for reducing both mortality and morbidity [4].

Risk scoring systems have been developed to support clinical decision-making, predict patient prognosis, and guide appropriate treatment strategies [4]. Currently, several risk scores are commonly used in clinical practice, including the Glasgow-Blatchford score (GBS); albumin, international normalised ratio,altered mental status, systolic blood pressure, age (AIMS65) age, blood tests, and comorbidities (ABC score); Charlson Comorbidity Index (CCI) ≥2, in-hospital onset, albumin <2.5 g/dL, altered mental status, Eastern Cooperative Oncology Group (ECOG) performance status ≥2, and steroid use (CHAMPS

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Received: 04.06.2025 **Accepted:** 22.07.2025 **Epub:** 22.09.2025 **Publication Date:** 30.12.2025

Cite this article as: Gürlevik E, Ayan C. Predicting mortality in non-variceal upper gastrointestinal bleeding: a comparative analysis of five risk scores. Glob Emerg Crit Care. 2025;4(3):145-150

score); and the Complete Rockall score (CRS) [5-8]. However, there is ongoing debate regarding the relative accuracy and predictive value of these scoring systems for in-hospital mortality [5,9].

The aim of this study is to compare the predictive performance of the CHAMPS, GBS, AIMS65, ABC, and CRS scores in estimating in-hospital mortality among patients with non-variceal UGIB. The findings are expected to provide clinically relevant guidance for physicians in managing these patients more effectively.

Materials and Methods

Ethics, Study Design, and Data Collection

This study was approved by the University of Health Sciences Türkiye, Bakırköy Dr. Sadi Konuk Training and Research Hospital Ethics Committee on May 21, 2025 (protocol number: 2025/157, decision number: 2025-10-07, date: 21.05.2025). The research was conducted in accordance with the ethical principles of the Declaration of Helsinki and international data protection standards [10]. Due to the retrospective nature of the study, the requirement for additional informed consent was waived by the ethics committee. However, all patients provided written informed consent regarding the diagnosis and treatment of UGIB as part of standard clinical care upon admission.

Data Handling and Confidentiality

Clinical data were obtained in encrypted form from the hospital's electronic medical record system and stored in a secure database accessible only to the research team. During the analysis phase, all personal identifiers were anonymized, and only clinical parameters were evaluated. The data processing procedures strictly adhered to the standards of the General Data Protection Regulation to ensure patient privacy [11]. The methodological design and findings of the study were reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology guidelines for observational research [12].

Study Design

This single-center, retrospective observational study was conducted in the emergency department of a tertiary care training and research hospital, involving patients diagnosed with non-variceal UGIB. The study site is a high-volume referral center, with approximately 400,000 emergency department visits annually, continuous 24-hour endoscopy availability, and frequent referrals from surrounding healthcare facilities for suspected UGIB cases.

Study Population

This retrospective study included adult patients (aged ≥18 years) who presented to the emergency department of University of Health Sciences Türkiye, Bakırköy Dr. Sadi Konuk Training and Research Hospital between January 1, 2020, and January 1, 2025, and were diagnosed with non-variceal UGIB. Diagnosis of UGIB was confirmed endoscopically and supported by at least one of the following clinical criteria: (1) presence of hematemesis or melena; or (2) a drop of ≥2 g/dL in hemoglobin levels compared to previous values. Exclusion criteria included (1) bleeding secondary to endoscopic mucosal resection, and (2) cases with insufficient data to calculate risk scores. These criteria were applied to ensure a homogeneous study population and enhance the reliability of the findings.

Data Collection and Definitions

All cases presenting to the hospital during the specified study period were retrospectively reviewed using the hospital's electronic medical record system. Medical records of patients diagnosed with non-variceal UGIB were examined in detail, and the relevant data were recorded using a pre-designed standardized data collection form. This form included demographic characteristics (age, sex, and comorbidities), presenting symptoms to the emergency department (hematemesis, melena, syncope, and altered mental status), and the setting of presentation (in-hospital vs. out-of-hospital onset).

The etiology of bleeding was classified as gastric ulcer, duodenal ulcer, or other causes. Vital signs at presentation (systolic blood pressure and pulse rate) and laboratory parameters (hemoglobin, albumin, creatinine, blood urea nitrogen, and international normalized ratio) were recorded. Additionally, data were collected on the patients' medication history (use of anticoagulants, antiplatelet agents, nonsteroidal anti-inflammatory drugs, corticosteroids, and antisecretory agents), physical performance status (ECOG performance status), comorbidity burden (CCI), and operative risk assessment (American Society of Anesthesiologists score).

Rebleeding was defined as the occurrence of fresh hematemesis, melena, or hemodynamic instability within seven days of the initial presentation, is confirmed endoscopically to have originated from the same source as the initial bleeding. The primary outcome of the study was all-cause in-hospital mortality.

Statistical Analysis

Data analyses were performed using SPSS Statistics for Windows, version 23.0 (SPSS Inc., Chicago, IL, USA) and MedCalc version 16.8.4 (MedCalc Software, Mariakerke, Belgium). The normality of distribution for continuous variables was assessed using the Kolmogorov-Smirnov test and histograms. Descriptive statistics were reported as mean ± standard deviation for normally distributed variables, and as median and interquartile range for non-normally distributed variables. Categorical variables

were expressed as counts and percentages (%). For group comparisons, Student's t-test was used for normally distributed continuous variables, while the Mann-Whitney U test was employed for non-normally distributed variables. The Pearson chi-square test was used to compare categorical variables.

The predictive performance of each risk scoring system was assessed using receiver operating characteristic curve analysis. The area under the curve (AUC) was calculated for each score, and comparisons between scores were made using the DeLong test. Based on previous literature, the cut-off values for low-risk classification were defined as follows: ABC score ≤3, AIMS65 ≤1, CHAMPS = 0, CRS ≤1, and GBS ≤1. High-risk thresholds were set at ABC score ≥8, AIMS65 ≥2, CHAMPS ≥3, CRS ≥5, and GBS ≥5 [4-9]. The performance of the prediction scores was evaluated in terms of sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and weighted accuracy. A $p<0.05$ was considered statistically significant.

Results

A total of 917 consecutive adult patients who met the eligibility criteria were included in the study (Figure 1). The mean age of the patients was 64.1±20.8 years, and 73.8% (n=677) were male. The rebleeding rate was 7.5% (n=69), and the in-hospital mortality rate was 5.2% (n=48). The mean age of patients who did not survive was significantly higher than that of survivors (78.9±9.7 vs. 63.4±21.1 years; $p<0.001$). The baseline characteristics of the study population are presented in Table 1.

The ABC score, AIMS65, CHAMPS, CRS, and GBS classified 57.3%, 72.1%, 24.5%, 12.4%, and 4.2% of patients, respectively, as low risk. The in-hospital mortality rates among these low-risk groups were 4.0%, 1.7%, 0.4%, 0.9%, and 2.3%, respectively. Conversely, the same scoring systems classified 10.6%, 27.9%, 11.3%, 47.3%, and 88.6% of patients, respectively, as high-risk. In-hospital mortality rates among the high-risk groups were calculated as 16.5% for the ABC score, 16.4% for AIMS65, 33.7% for CHAMPS, 9.2% for CRS, and 6.6% for GBS.

The sensitivity, specificity, PPV, and NPV of each scoring system in predicting in-hospital mortality are presented in Table 2. Among patients with non-variceal UGIB, the AIMS65 score demonstrated good predictive performance for in-hospital mortality, with an AUC of 0.815 [95% confidence interval (CI): 0.788-0.840]. The performance of the AIMS65 score was significantly superior to that of the GBS (AUC: 0.631, 95% CI: 0.599-0.663; $p<0.001$), and comparable to the CHAMPS score (AUC: 0.801, 95% CI: 0.773-0.872; $p=0.493$). It also showed statistically better discrimination than both the ABC score (AUC: 0.708, 95% CI: 0.678-0.738; $p=0.026$) and the CRS (AUC: 0.702, 95% CI: 0.671-0.731; $p=0.018$).

Discussion

This study aimed to evaluate and compare the predictive performance of five widely used clinical risk scoring systems, -CHAMPS, AIMS65, ABC score, GBS, and CRS-in estimating in-hospital mortality among patients presenting with non-variceal UGIB.

Emergency departments in Türkiye are often severely overcrowded [13], with approximately one million emergency surgical procedures performed annually [14]. In such high-volume and resource-constrained settings, clinical risk scoring systems play a pivotal role in optimizing triage and management decisions [15,16]. Moreover, these tools have proven particularly valuable during global crises such as pandemics, when infection control is paramount. By identifying patients at low risk, they help prevent unnecessary hospital admissions and support more efficient allocation of healthcare resources [17]. Our findings provide important insights into the relative strengths and limitations of these scoring systems in early mortality risk stratification-a process that is essential for guiding timely and appropriate patient management in emergency care settings.

Among the evaluated scoring systems, the AIMS65 demonstrated the highest predictive value for in-hospital mortality, with an AUC of 0.815 (95% CI: 0.788-0.840),

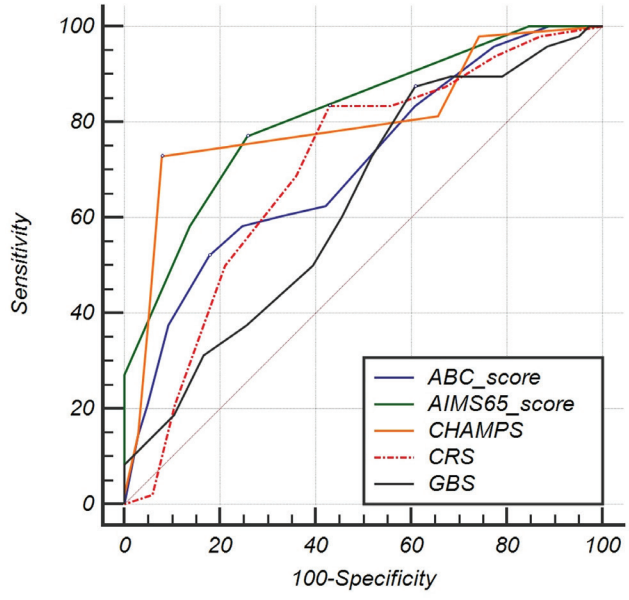

Figure 1. Receiver operating characteristic analysis of risk scores for predicting mortality

ABC: Age, blood tests, and comorbidities, AIMS65: Albumin <3.0 g/dL, international normalized ratio >1.5, altered mental status, systolic blood pressure <90 mmHg, and age ≥65 years, CHAMPS: Charlson Comorbidity Index ≥2, in-hospital onset, albumin <2.5 g/dL, altered mental status, Eastern Cooperative Oncology Group (ECOG) performance status ≥2, and steroid use, CRS: Complete Rockall score, GBS: Glasgow-Blatchford score

Table 1. Descriptive statistics of study population in terms of in-hospital mortality

Variable	Survivor n=869	Non-survivor n=48	p value
Age (years), mean ± SD	63.4±21.0	78.9±9.7	<0.001
Sex: female, n (%)	226 (26.0)	14 (29.2)	0.628
Systolic blood pressure (mmHg)	118.7±9.2	107.4±11.5	<0.001
Pulse (bpm)	83.7±11.6	114.2±19.3	<0.001
Hemoglobin (g/dL)	9.1±3.1	8.4±1.6	0.014
Albumin (g/dL)	3.4±0.8	2.7±0.8	<0.001
Creatinine (mg/dL)	1.0±0.3	1.3±0.8	0.038
INR	0.9±0.2	1.4±0.3	<0.001
Vomiting of fresh blood	248 (28.5)	29 (60.4)	<0.001
Melena, n (%)	700 (80.6)	33 (68.8)	0.047
Syncope	15 (1.7)	9 (18.8)	<0.001
Altered mental status	9 (1.0)	11 (22.9)	<0.001
Anticoagulants	112 (12.9)	8 (16.7)	0.450
Antiplatelet agents	169 (19.4)	12 (25.0)	0.347
NSAIDs	223 (25.7)	9 (18.8)	0.284
Steroids	45 (5.2)	4 (8.3)	0.344
Antisecretory agents	171 (19.7)	10 (20.8)	0.845
Cause of non-variceal UGIB, n (%)			
Gastric ulcer	394 (45.3)	23 (47.9)	0.100
Duodenal ulcer	358 (41.2)	14 (29.2)	
Others	117 (13.5)	11 (22.9)	
Scoring system, median IQR			
ABC score	3.6±2.6	5.9±2.9	<0.001
AIMS65 score	1.2±0.8	2.8±1.3	<0.001
CHAMPS score	1.6±1.1	3.1±1.4	<0.001
Complete Rockall score	4.9±3.5	7.5±2.9	<0.001
Glasgow-Blatchford score	10.0±4.5	12.2±4.0	<0.001
Rebleeding, n (%)	99 (11.4)	8 (16.7)	0.268

SD: Standard deviation, INR: International normalized ratio, NSAIDs: Non-steroidal anti-inflammatory drugs, UGIB: Upper gastrointestinal bleeding, IQR: Interquartile range, ABC: Age, blood tests, and comorbidities, AIMS65: Albumin <3.0 g/dL, international normalized ratio >1.5, altered mental status, systolic blood pressure <90 mmHg, and age ≥65 years, CHAMPS: Charlson Comorbidity Index ≥2, in-hospital onset, albumin <2.5 g/dL, altered mental status, Eastern Cooperative Oncology Group (ECOG) performance status ≥2, and steroid use

indicating good discriminatory performance. This finding is consistent with previous literature suggesting that AIMS65 is a reliable tool for predicting mortality in patients with UGIB [18]. Its simple structure, reliance on readily available clinical and laboratory parameters, and consistent performance across diverse patient populations make it particularly practical for use in routine clinical settings. Notably, AIMS65 outperformed GBS significantly, while showing comparable predictive ability to the CHAMPS, ABC, and CRS scores [4].

The CHAMPS score also demonstrated strong predictive capability, particularly within the high-risk classification group, which had a 32.4% mortality rate. Although the CHAMPS score lacks a universally accepted high-risk threshold, a cut-off of ≥3 was selected based on prior evidence suggesting, increased mortality with the accumulation of multiple adverse features [4,7]. This threshold also aligned with the mortality distribution in our cohort and allowed meaningful stratification. Further validation in diverse settings is needed. By incorporating variables such as ECOG performance status, albumin level, and steroid use, the CHAMPS score may offer enhanced prognostic accuracy, especially in elderly patients or those with significant comorbidities [4,7]. However, its lower sensitivity compared to AIMS65 (72.9% vs. 77.1%) may limit its utility as a standalone tool during the initial triage process. The ABC score and CRS showed moderate discriminatory ability, with AUCs of 0.708 and 0.702 respectively. Although both scores were able to identify high-risk patients associated with

Table 2. Risk scores and mortality prediction

	Score	Cut-off	Patients n (%)	Mortality n (%)	Sens. %	Spec. %	PPV, %	NPV, %
Low risk	CHAMPS	0	225 (24.5)	1 (0.4)	97.2	25.8	6.8	99.6
	AIMS65	≤1	656 (71.5)	11 (1.7)	100	15.4	6.1	100
	ABC score	≤3	525 (57.3)	21 (4.0)	83.3	39.1	7.0	97.7
	GBS	≤1	44 (4.8)	1 (2.3)	100	2.76	5.4	100
	CRS	≤1	114 (12.4)	1 (0.9)	97.2	13.0	5.9	99.1
High-risk	CHAMPS	≥3	108 (11.8)	35 (32.4)	72.9	92.1	6.4	97.1
	AIMS65	≥2	261 (28.5)	37 (14.2)	77.1	74.2	14.2	98.3
	ABC score	≥8	97 (10.6)	16 (16.5)	37.5	90.7	18.2	95.6
	GBS	≥5	730 (79.6)	43 (5.9)	89.6	20.9	5.9	97.3
	CRS	≥5	434 (47.3)	40 (9.2)	83.3	54.6	9.2	98.3

PPV: Positive predictive value, NPV: Negative predictive value, CHAMPS: Charlson Comorbidity Index ≥2, in-hospital onset, albumin <2.5 g/dL, altered mental status, Eastern Cooperative Oncology Group (ECOG) performance status ≥2, and steroid use, AIMS65: Albumin <3.0 g/dL, international normalized ratio >1.5, altered mental status, systolic blood pressure <90 mmHg, and age ≥65 years, ABC: Age, blood tests, and comorbidities, GBS: Glasgow-Blatchford score, CRS: Complete Rockall score

higher mortality rates, their lower sensitivity and specificity values suggest that their predictive effectiveness may be limited when used independently [19,20]. Nonetheless, when applied in conjunction with more robust tools such as AIMS65 or CHAMPS, they may provide additional value, particularly in complex clinical scenarios.

The ABC score, which incorporates age, basic laboratory results, and comorbidity burden, has been proposed as a simplified tool for mortality risk stratification in gastrointestinal bleeding [21]. Its moderate performance in this study (AUC: 0.708) is consistent with international data, highlighting its utility in settings where rapid decision-making is required. Although it did not out-perform AIMS65 or CHAMPS, its reliance on objective parameters and ease of use may make it a practical alternative in centers lacking comprehensive clinical assessment resources. Further validation across different healthcare systems could help define its role in UGIB management pathways.

Although the GBS is widely used in the assessment of UGIB, it demonstrated poor performance in predicting in-hospital mortality in this study. This finding aligns with previous research indicating that GBS is more effective in predicting the need for clinical interventions such as blood transfusion or endoscopy rather than mortality itself [22]. Its high sensitivity (89.6%) coupled with low specificity (20.9%) suggests a tendency to overestimate mortality risk. In clinical practice, scoring systems with a high NPV, such as AIMS65 and CHAMPS, are particularly useful for identifying low-risk patients who may be suitable for conservative management. On the other hand, although their PPVs are relatively low, these scores can aid in the early identification of high-risk patients who may require intensive monitoring or intervention.

Study Limitations

This study has several limitations. First, its retrospective and single-center design may introduce selection and information bias, thereby limiting the generalizability of the findings. Since the study was conducted in a well-resourced tertiary care hospital with 24-hour endoscopy access, the results may not be fully applicable to rural or resource-limited settings. Future multicenter studies are needed to confirm these findings in more diverse healthcare environments. Second, the study focused exclusively on non-variceal UGIB cases, which restricts the applicability of the results to patients with variceal bleeding. Finally, although the scoring systems were calculated based on data obtained at the time of admission, dynamic changes in patients' clinical conditions and physician judgment during management may have influenced the outcomes.

Conclusion

In conclusion, this study demonstrates that the AIMS65 score has the highest predictive value for in-hospital mortality among patients with non-variceal UGIB, with the CHAMPS score offering comparable utility. The use of these scoring systems for early risk stratification can support clinical decision-making and facilitate more efficient allocation of healthcare resources in the management of UGIB patients.

Ethics

Ethics Committee Approval: This study was approved by the University of Health Sciences Türkiye, Bakırköy Dr. Sadi Konuk Training and Research Hospital Ethics Committee on May 21, 2025 (protocol number: 2025/157, decision number: 2025-10-07, date: 21.05.2025). The research was conducted in accordance with the ethical principles of the Declaration of Helsinki and international data protection standards.

Informed Consent: Retrospective study.

Footnotes

Authorship Contributions

Surgical and Medical Practices: E.G., C.A, Concept: E.G., C.A, Design: E.G., C.A, Data Collection or Processing: E.G., C.A, Analysis or Interpretation: E.G., C.A, Literature Search: E.G., C.A, Writing: E.G., C.A.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Wuerth BA, Rockey DC. Changing epidemiology of upper gastrointestinal hemorrhage in the last decade: a nationwide analysis. Dig Dis Sci. 2018;63:1286-93.
2. Lee PL, Yang KS, Tsai HW, Hou SK, Kang YN, Chang CC. Tranexamic acid for gastrointestinal bleeding: a systematic review with meta-analysis of randomized clinical trials. Am J Emerg Med. 2021;45:269-79.
3. Hearnshaw SA, Logan RF, Lowe D, Travis SP, Murphy MF, Palmer KR. Acute upper gastrointestinal bleeding in the UK: patient characteristics, diagnoses and outcomes in the 2007 UK audit. Gut. 2011;60:1327-35.
4. Aydin H, Berikol GB, Erdogan MO, Gemici E, Doğan H. CHAMPS score in predicting mortality of patients with acute nonvariceal upper gastrointestinal bleeding. Revista da Associação Médica Brasileira,2023;69,e20221052.
5. Ak R, Hökenek NM. Comparison of AIMS65 and Glasgow Blatchford scores in predicting mortality in patients with upper gastrointestinal bleeding. Rev Assoc Med Bras. 2021;67:766-70.
6. Rockall TA, Logan RF, Devlin HB, Northfield TC. Risk assessment after acute upper gastrointestinal haemorrhage. Gut. 1996;38:316-21.
7. Matsuhashi T, Hatta W, Hikichi T, Fukuda S, Mikami T, Tatsuta T, et al. A simple prediction score for in-hospital mortality in patients with nonvariceal upper gastrointestinal bleeding. J Gastroenterol. 2021;56:758-68.
8. Laursen SB, Oakland K, Laine L, Bieber V, Marmo R, Redondo-Cerezo E, et al. ABC score: a new risk score that accurately predicts mortality in acute upper and lower gastrointestinal bleeding: an international multicentre study. Gut. 2021;70:707-16.
9. Martínez-Cara JG, Jiménez-Rosales R, Úbeda-Muñoz M, de Hierro ML, de Teresa J, Redondo-Cerezo E. Comparison of AIMS65, Glasgow-Blatchford Score, and Rockall Score in a European series of patients with upper gastrointestinal bleeding: performance when predicting in-hospital and delayed mortality. United European Gastroenterol J. 2016;4:371-9.
10. World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. JAMA, 2013;310:2191-4.
11. General Data Protection Regulation (GDPR). Regulation (EU) 2016/679 of the European Parliament and of the Council. Official Journal of the European Union. 2016;L119, 1-88.
12. Von Elm E, Altman DG, Egger M, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Annals of Internal Medicine. 2007;147:573-577.
13. Beştemir A, Aydın H. Yıllık 300 milyon hasta muayenesi; Türkiye'de 2. ve 3. basamak kamu sağlık tesisleri acil servis ve poliklinik hizmetlerinin değerlendirilmesi. Sakarya Tıp Dergisi,2022;12:496-502.
14. Beştemir A, Aydın H, & Tuncar, A. The Impact of the COVID-19 Pandemic on Emergency Surgical Operations in State Hospitals in Turkey: A Retrospective and Descriptive Study. Eurasian J Emerg Med, 2023;22(1):34.
15. Aydın H, Doğan H, Erdoğan MÖ. Comparison of COVID-GRAM, 4C mortality, qSOFA, SIRS, NEWS, and MEWS in predicting mortality in COVID-19. Med J Bakirkoy. 2023;111-8.
16. Bozdereli Berikol G, Aydın H, Doğan H. Early discharging patients with chest pain using EDACS-ADP and COMPASS-MI risk predictors. Heart Vessels. 2022;1316-25.
17. Aydın H, Doğanay F, Erdoğan M, Doğan H, Beştemir A, & Tuncar A. Comparison of CCI, BISAP and APACHE II scoring systems to predict severe disease in patients with mild acute pancreatitis: a retrospective observational study. Cumhuriyet Medical Journal, 2022;44:460-9.
18. Robertson M, Majumdar A, Boyapati R, Chung W, Worland T, Terbah R, et al. Risk stratification in acute upper GI bleeding: comparison of the AIMS65 score with the Glasgow-Blatchford and Rockall scoring systems. Gastrointestinal Endoscopy, 2016;83:1151-60.
19. Wang CH, Chen YW, Young YR, Yang CJ, Chen IC. A prospective comparison of 3 scoring systems in upper gastrointestinal bleeding. Am. J. Emerg. Med. 2013;31:775-8.
20. Liu S, Zhang X, Walline JH, Yu X, Zhu H. Comparing the performance of the ABC, AIMS65, GBS, and pRS scores in predicting 90-day mortality or rebleeding among emergency department patients with acute upper gastrointestinal bleeding: a prospective multicenter study. J Transl Int Med 2021;9:114-22.
21. In KR, Oh YE, Moon HS, Jung S, Kang SH, Sung JK, et al. Comparison and validation of several scoring systems for non-variceal upper gastrointestinal bleeding: a retrospective study. Sci Rep. 2024;14:27940
22. Bryant RV, Kuo P, Williamson K, Yam C, Schoeman MN, Holloway RH, et al. Performance of the Glasgow-Blatchford Score in predicting clinical outcomes and intervention in hospitalized patients with upper GI bleeding. Gastrointestinal endoscopy, 2013;78:576-83.