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St. Paul's Hospital Millennium Medical College**

Undergraduate Study Program

School of Medicine

**Clinical characteristics and outcome of patients with upper
gastrointestinal bleeding at Adult Emergency Outpatient
Department at SPHMMC**

Investigator: Dr Robel Bekele Abdi (Medical Intern)

A research report submitted to the School of Public Health, St. Paul's
Hospital Millennium Medical College in Partial Fulfillment of the
Requirements for the undergraduate Degree of Doctor of medicine.

Date April 2026

Addis Ababa, Ethiopia

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Clinical characteristics and outcome of patients with upper
gastrointestinal bleeding at Adult Emergency Outpatient Department at
SPHMMC: A retrospective study

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Abbreviations

AOR	Adjusted Odds Ratio
BUN	Blood Urea Nitrogen
CI	Confidence Interval
CKD	Chronic Kidney Disease
COVID-19	Coronavirus Disease 2019
DM	Diabetes Mellitus
ED	Emergency Department
EpiData	Epidemiological Data Entry Software
GI	Gastrointestinal
Hb	Hemoglobin
HTN	Hypertension
ICU	Intensive Care Unit
INR	International Normalized Ratio
IRB	Institutional Review Board
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
NVUGIB	Non-Variceal Upper Gastrointestinal Bleeding
OPD	Outpatient Department
OR	Odds Ratio
PPI	Proton Pump Inhibitor
SPHMMC	St. Paul's Hospital Millennium Medical College
SPSS	Statistical Package for the Social Sciences
UGIB	Upper Gastrointestinal Bleeding
VUGIB	Variceal Upper Gastrointestinal Bleeding

Abstract

Background: Upper gastrointestinal bleeding (UGIB) is a potentially life-threatening medical emergency that results in significant morbidity and mortality worldwide. In low- and middle-income countries, outcomes tend to be worse due to limited access to diagnostic and therapeutic services such as endoscopy. In Ethiopia, access to endoscopy remains poor, and local data on UGIB remain sparse. Notably, there is no published research on the clinical characteristics and outcomes of UGIB at the emergency outpatient department (OPD) of St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa.

Objective: The objective of this research is to assess the clinical characteristics and outcomes of patients presenting with upper gastrointestinal bleeding to the adult Emergency Outpatient Department at SPHMMC.

Method: A retrospective cross-sectional study was conducted from September 12 to November 21, 2025, using medical records of patients who presented with upper gastrointestinal bleeding (UGIB) between August 1, 2024, and July 31, 2025, at the Adult Emergency Outpatient Department of St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa. The study included all 369 adult patients (aged 18 years and above) diagnosed with UGIB during this period. A census of all 369 eligible patient records documented in the emergency department registry was included in the study, and records were reviewed using a structured checklist to extract data on sociodemographic characteristics, presenting symptoms, comorbid conditions, clinical and laboratory findings, treatment interventions, and outcomes.

The data were first entered into EpiData version 4.6 and then exported to SPSS version 27 for cleaning, processing, and analysis. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize patient characteristics. Bivariable logistic regression analyses were applied to identify factors associated with patient mortality.

Results: A total of 369 adult patients with UGIB were evaluated. The mean age was 42.28 ± 16.54 years, with 51.5% being under 40 years, and 65.3% were males. Key

risk factors included NSAID use (50.7%) and alcohol consumption (37.9%), with cirrhosis present in 28.7% of comorbidities. Overt UGIB symptoms were observed in 97.8% of patients, with hematemesis being the most common presentation (59.8% isolated, 30.7% combined with melena). Hemodynamic assessment revealed a mean systolic blood pressure (SBP) of 120.59 ± 16.339 mmHg. Non-survivors exhibited significantly lower SBP (106.60 vs 120.84 mmHg, $p=0.004$) and higher pulse rates (113.43 vs 101.72 bpm, $p=0.034$). The mean hemoglobin level was 9.396 ± 3.81 g/dL. Esophageal varices were the most frequent identified cause (15.4%), though etiology remained unknown in 76.05% of cases due to lack of endoscopic evaluation. Management primarily involved PPI therapy (52.0%) or PPI with blood transfusions (28.1%), with endoscopic intervention in only 2.7%. The overall in-hospital mortality rate was 1.9% ($n=7$). Bivariable analysis identified age (40–59 years: OR = 6.46, 95% CI: 1.23–33.85, $p = 0.0356$) as the only statistically significant factor associated with in-hospital mortality. Multivariable logistic regression was not performed due to the low number of mortality events.

Conclusion: UGIB in this cohort predominantly affected young adult males and was frequently associated with NSAID use, any level of alcohol consumption, and cirrhosis. While non-survivors presented with marked hemodynamic instability, age emerged as the sole statistically significant predictor of in-hospital mortality in bivariable analysis. The high proportion of unknown etiologies underscores the critical need for improved access to endoscopic evaluation. These findings highlight the importance of early identification of high-risk patients, particularly older adults, and prompt stabilization to improve outcomes in resource-limited settings.

Keywords: Upper gastrointestinal bleeding, Emergency department, Hematemesis, Melena, Mortality, Associated factors, Clinical outcomes, Ethiopia.

1. Introduction

1.1. Background

Upper gastrointestinal bleeding (UGIB) remains a significant medical emergency and a major cause of hospital admissions globally. Characterized by bleeding proximal to the ligament of Treitz, UGIB often presents with hematemesis, melena, or both, and varies in etiology, severity, and outcomes based on geography, comorbidities, and healthcare accessibility(1).

Globally, the incidence of UGIB ranges widely—from 15 to 172 per 100,000 person-years based on population demographics, underlying conditions, and diagnostic availability; despite a general decline in incidence in high-income countries over recent decades, UGIB continues to pose substantial clinical and economic burden in low-income settings (2–7). Case fatality rates for UGIB have been reported between 0.7% and 4.8%, with rebleeding rates ranging from 7.3% to 32.5% (2). Peptic ulcers, portal hypertension, and erosive mucosal lesions remain leading causes.(8–11). Prognosis is influenced by factors such as age, comorbidities, type of bleeding (variceal vs. non-variceal), and timely access to endoscopic interventions. Predictive scores such as the Glasgow-Blatchford and Rockall scores are widely used to triage and assess outcomes (10,12,13).

In low- and middle-income countries, including those in sub-Saharan Africa, UGIB outcomes tend to be poorer due to delayed presentation, limited diagnostic tools (particularly endoscopy), and inadequate access to blood transfusion and intensive care. For instance, mortality rates of up to 19% have been reported in countries like Rwanda (14), and limited therapeutic endoscopy access significantly increases mortality risk, as seen in Malawi and Tanzania (15,16). Similarly, studies in Nigeria and Tanzania have highlighted poor access to diagnostics and high mortality associated with delayed intervention and transfusion limitations (15,17)

In Ethiopia, UGIB is a common and life-threatening presentation. Historical data from Tikur Anbessa Hospital indicated duodenal ulcers and esophageal varices as leading causes of UGIB (18), findings echoed in more recent studies from tertiary centers in Addis Ababa. A 2022–2023 retrospective study from Tikur Anbessa and Yekatit 12

hospitals showed that hematemesis (63.8%) and hematemesis with melena (27.6%) were the most common presentations. However, a major concern was that more than half of the patients did not undergo endoscopy, limiting both diagnostic precision and therapeutic intervention. Esophageal varices were the most common endoscopic finding among those scoped. Behavioral and clinical risk factors—including alcohol use, comorbidities, and liver disease—were associated with more severe clinical presentations and prolonged hospital stays.(19)

1.2. Statement of Problem

Despite global advances in the diagnosis and management of UGIB, outcomes in resource-limited settings like Ethiopia remain suboptimal. The burden of UGIB in Addis Ababa, Ethiopia continues to be significant, yet data on its contemporary clinical profile, risk factors, and outcomes are limited (19). A substantial proportion of patients still do not receive endoscopic evaluation, the gold standard for diagnosis and management, due to infrastructural and systemic constraints (18,19). This not only delays appropriate interventions but also obscures the understanding of current etiologic patterns, particularly the shifting balance between variceal and non-variceal causes (18,19).

Additionally, behavioral factors such as alcohol use and smoking, and comorbid conditions like liver disease, appear to be increasing contributors to the severity and duration of UGIB cases (19). Yet, these associations are under-researched locally. The lack of robust, updated clinical data impedes the development of evidence-based protocols and resource allocation strategies.

There is, therefore, an urgent need for local research to characterize the clinical features, risk factors, and outcomes of UGIB patients in Addis Ababa, with the goal of informing policy, improving diagnostic access (particularly endoscopy), and enhancing patient outcomes in both emergency and long-term care settings.

To the researcher's knowledge, no prior study has specifically examined the clinical characteristics and outcomes of UGIB among adult patients presenting to the Emergency Department of St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. Although a previous study from SPHMMC

assessed UGIB patients admitted to the medical ward, most of whom were initially seen in the emergency department, it was conducted about seven years ago. Since then, there have been important advancements in clinical management and hospital practices, yet no updated evidence exists. This gap limits clinicians and policymakers from fully understanding the current patterns, risk factors, and prognostic indicators in the emergency setting. Therefore, further research is needed to provide recent data, explore the multifaceted contributors to UGIB, and generate evidence that can inform targeted interventions, optimize emergency care, and reduce morbidity and mortality associated with this condition.

1.3. Significance of the Study

The findings of this study will provide valuable information on the burden, presentation patterns, and management outcomes of UGIB in a major referral hospital setting. By identifying common clinical features and outcomes, this study will contribute to enhancing the understanding of emergency care practices related to UGIB in Ethiopia.

The results may support clinicians in making evidence-based decisions, improve triage and intervention strategies, and guide the development of protocols for more effective and timely management of UGIB. Patients will benefit from earlier diagnosis, improved treatment strategies, and potentially better survival outcomes. Hospitals and administrators will gain insights into resource needs such as endoscopy access, blood transfusion services, and emergency preparedness. Policy makers can use the findings to inform guidelines and health system planning for acute gastrointestinal emergencies. Finally, researchers will benefit from updated local evidence that can be used as a baseline for further studies.

Ultimately, the study could help reduce complications, hospital stay durations, and mortality related to UGIB. The findings will be shared with hospital leadership, emergency care teams, policymakers, and other stakeholders to inform evidence-based improvements in patient care.

In addition, studying the clinical characteristics and outcomes of patients with UGIB in low-resource settings is critically important for several reasons both clinical and systemic. Here's why it matters:

1. Tailoring Clinical Management to Local Realities

- Disease patterns differ: In low-resource settings, causes like esophageal varices due to untreated liver disease or infections may be more prevalent than in high-income countries (20,21).
- Delayed presentation: Patients often arrive late due to limited access to care, affecting prognosis and requiring different triage strategies (22).
- Comorbidity profiles: Understanding local comorbidities (e.g., chronic liver disease, non-steroidal anti-inflammatory drugs (NSAID) use, or malnutrition) helps refine risk stratification and treatment plans (22).

2. Improving Resource Allocation and Emergency Response

- Limited diagnostics and interventions: Endoscopy, blood transfusions, and intensive care unit (ICU) beds may be scarce. Knowing which patients are at highest risk helps prioritize care.
- Cost-effective protocols: Data-driven insights can guide simplified, high-impact treatment algorithms suited to constrained environments.

3. Informing Public Health and Policy

- Mortality and re-bleeding rates: Studies show that up to 17% of UGIB patients in low-resource settings may die within six weeks, and 7% may re-bleed (20). These figures highlight urgent needs for system strengthening.
- Health system planning: Evidence supports advocacy for better emergency preparedness, training, and supply chains for essential interventions.

4. Bridging the Global Evidence Gap

- Under-representation in research: Most UGIB studies come from high-income countries. Local data ensures that global guidelines are inclusive and applicable.

- Equity in care: Research from low-resource settings helps reduce disparities in outcomes and supports context-specific innovations.

2. Literature Review

2.1. Clinical characteristics and outcome of patients with upper gastrointestinal bleeding

Global Overview

Gastrointestinal bleeding (GIB) remains a significant cause of morbidity and mortality worldwide. A systematic review and meta-analysis including 41 studies, encompassing approximately 4.1 million patients between 1980 and 2012, evaluated global trends in GIB (2). Of these studies, most focused on UGIB, with fewer addressing lower GIB (LGIB) or both types. The incidence of UGIB ranged widely from 15.0 to 172.0 per 100,000 person-years(23–25). Temporal analyses indicated an overall decline in UGIB incidence, though some studies noted a temporary rise between 2003 and 2005 (23). Mortality associated with UGIB varied from 0.9 to 9.8 per 100,000 person-years (25,26), with case fatality rates ranging from 0.7% to 4.8% for UGIB and 0.5% to 8.0% for LGIB. Rebleeding rates were higher in UGIB (7.3–32.5%) compared to LGIB (6.7–13.5%) (2). Differences in definitions and data handling were noted as sources of variability across studies.

Several prospective and retrospective cohort studies provide more detailed insights into UGIB characteristics and outcomes. Endoscopic findings consistently show peptic ulcers as the most common source of bleeding, followed by varices and erosive lesions (10,14,15,27–29). Clinical severity varies, with ICU admissions reported between 15.5% and 21% and mortality ranging from 1% to 13.5% across studies (6,10,11,14,15,27,29). Rebleeding and complications are influenced by patient factors such as comorbidities, hemodynamic instability, laboratory abnormalities, and older age (14,15,29). Risk stratification scores, including the Glasgow-Blatchford Score and Rockall Score, are widely used and have shown reasonable predictive ability for transfusion, rebleeding, and mortality (6,10,15).

Hospital-based data further illustrate variations in management and outcomes. Early endoscopy (<12 hours) is associated with reduced surgical interventions and improved risk stratification (10). In elderly populations, outcomes such as mortality are primarily influenced by hypoalbuminemia rather than age alone (29). Coronavirus Disease 2019 (COVID-19) has introduced additional challenges, with UGIB in infected patients presenting with higher in-hospital mortality compared to non-COVID UGIB controls, likely reflecting differences in endoscopic intervention rates and overall patient severity (30).

Overall, the literature suggests that while the epidemiology of UGIB shows a declining trend globally, mortality and rebleeding remain significant concerns. Patient characteristics, bleeding etiology, and timely intervention critically influence outcomes. Despite differences in healthcare systems and population demographics, common patterns emerge: peptic ulcers dominate as the primary cause, variceal bleeding carries higher mortality risk, and early risk stratification using validated scoring systems improves clinical management(2,6,10,11,15,23–27,30).

African regional data

Studies from various African countries consistently highlight the high burden of upper gastrointestinal bleeding (UGIB) and the challenges in its management. Across cohorts in Nigeria, Tanzania, Malawi, and Rwanda, hematemesis, often accompanied by melena, emerged as the most common clinical presentation, while NSAID use, alcohol intake, and comorbidities were frequent risk factors (14–17).

Access to endoscopic evaluation was generally limited, with rates of diagnostic or therapeutic endoscopy ranging from 6.8% to 37.4%, and early endoscopy (<12–24 hours) performed in only a minority of cases (15–17). Therapeutic interventions, such as banding for variceal bleeding, were associated with markedly lower 30-day mortality (HR=0.12; 95% CI: 0.02 -- 0.88; p=0.038) (16), underscoring the importance of timely endoscopic treatment.

Mortality across these studies was high, ranging from 13.6% to 19.1%, with a substantial proportion of deaths occurring within the first 24 hours in some cohorts (15,17). Predictors of poor outcomes included advanced age, high-risk endoscopic

scores (e.g., Rockall ≥ 4), hypotension or elevated diastolic blood pressure, severe anemia, esophageal varices, and underlying gastric malignancy (14,15,17). Transfusion practices also influenced outcomes, with patients not receiving blood products exhibiting higher mortality (17).

Rebleeding was a significant concern, particularly among patients with variceal bleeding or esophageal lesions, with rates reported up to 36% at three months (14).

Overall, these studies highlight that UGIB in African settings is frequently complicated by delayed presentation, limited diagnostic and therapeutic resources, and high early mortality. Interventions aimed at improving access to early endoscopy, optimizing transfusion protocols, and early identification of high-risk patients are likely to improve clinical outcomes in these populations (14–17).

Ethiopia

Studies from multiple Ethiopian tertiary hospitals consistently demonstrate that upper gastrointestinal bleeding (UGIB) is a common and clinically significant problem, predominantly affecting young to middle-aged males. Across Tikur Anbessa Hospital (TASH), Yekatit 12 Hospital Medical College (Y12HMC), and Saint Paul's Hospital Millennium Medical College (SPHMMC), hematemesis either alone or combined with melena was the most frequent presenting symptom, reflecting the typical clinical profile of UGIB (18,19,31).

Endoscopic evaluation, however, remains limited, with significant proportions of patients not undergoing the procedure. In the most recent cohort at TASH and Y12HMC, over half of UGIB patients (58.3%) did not receive endoscopy, and when performed, esophageal varices were the predominant finding (43.3%) (20). Historical data from TASH showed duodenal ulcers (45.6%) and esophageal varices (15.6%) as the leading causes, with malignancies, including esophageal (2.8%) and gastric cancer (1.3%), identified less frequently (18). At SPHMMC, variceal bleeding was also the most common etiology (46.1%), followed by peptic ulcer disease (24.2%) and gastritis or esophagitis, highlighting a consistent pattern across institutions (31).

Mortality rates were substantial, ranging from 17.2% in SPHMMC to earlier reports of 15–20% in other tertiary centers, with adverse outcomes associated with variceal

bleeding, malignancy, sepsis, hepatic encephalopathy, and the need for transfusion (18,31). Factors such as alcohol consumption, smoking, drug use, comorbidities, and underlying liver disease were associated with increased severity of UGIB and prolonged hospital stays (19).

These studies collectively illustrate that UGIB in Ethiopian hospital settings is marked by a young male predominance, high prevalence of variceal and peptic ulcer bleeding, limited access to timely endoscopy, and considerable mortality. The findings emphasize the importance of early risk stratification, improved access to endoscopic and therapeutic interventions, and targeted management of high-risk patients to reduce morbidity and mortality (18,19,31).

3. Objectives

3.1. General Objectives

- To assess the clinical profile , outcomes and factors associated with clinical outcomes among patients with upper gastrointestinal bleeding initially presenting to the Adult Emergency Outpatient Department at SPHMMC.

3.2. Specific Objectives

1. To assess the clinical characteristics and outcomes of patients with upper gastrointestinal bleeding who first present to the Adult Emergency Outpatient Department at SPHMMC.
2. To identify factors associated with clinical outcomes among patients with upper gastrointestinal bleeding who initially present to the Adult Emergency Outpatient Department at SPHMMC.

4. Methods

4.1. Study area and study period

The study has been conducted at St. Paul's Hospital Millennium Medical College (SPHMMC), a leading public medical and teaching institution in Addis Ababa, Ethiopia. The hospital's origins date back to 1968, when Emperor Haile Selassie I, in collaboration with the German Evangelical Church, established it as a general and referral hospital serving vulnerable populations. Responding to the nation's acute need for doctors, the medical school began admitting its first cohort of students in 2007, and was formally established through a decree of the Council of Ministers in 2010.

Presently, SPHMMC is one of Ethiopia's largest teaching hospitals, with an inpatient capacity exceeding 700 beds and an average daily outpatient and emergency caseload of over 1,200 clients. The institution employs more than 2,800 staff members, including clinical, academic, administrative, and support personnel, who actively contribute to healthcare delivery, teaching, and research. Its Gastroenterology (GI) Unit is staffed by five gastroenterologists and seven fellows, and performs approximately 4,000 diagnostic and therapeutic endoscopic procedures annually. The study period was from August to September 2025.

4.2. Study design

A hospital-based retrospective cross-sectional study was conducted. Data were extracted from patient records documented in the Adult Emergency Outpatient Department at SPHMMC, covering the period from August 1, 2024, to July 31, 2025. This 12-month timeframe was selected to provide a contemporary assessment of the clinical characteristics and outcomes of UGIB in the current service delivery context, ensuring the findings reflect the most recent diagnostic and therapeutic practices at the institution. Furthermore, the selection of a full one-year period accounts for potential seasonal variations in patient presentations and ensures a sufficient and representative population size for a robust statistical analysis of prognostic factors associated with in-hospital mortality.

4.3.Population

4.3.1. Source population

All adult patients who presented for clinical problems at the Adult Emergency Outpatient Department in SPHMMC during the study period.

4.3.2. Study population

All patient records of adults (age ≥ 18 years) diagnosed with UGIB at the Emergency Outpatient Department within the specified time frame and whose charts contain complete clinical information relevant to the study.

4.4. Eligibility criteria

4.4.1. Inclusion Criteria:

- Records of adult patients (aged 18 years and above) with a confirmed diagnosis of upper gastrointestinal bleeding (UGIB).
- Records with complete documentation of the clinical presentation, laboratory findings, and treatment interventions provided.
- Records with a clearly documented final in-hospital outcome, including patients who were discharged, admitted to wards, transferred to the Intensive Care Unit (ICU), or those who died (in-hospital mortality) during the index visit.
- Patients initially managed in the Adult Emergency Outpatient Department, regardless of their subsequent disposition within the hospital.

4.4.2. Exclusion Criteria:

- Incomplete or missing patient records. (Missing primary outcome variables, Missing essential clinical details (e.g., presenting symptoms, lab values, imaging results), Missing discharge outcome (alive/deceased, recovered/not recovered))
- Patients referred from or to other institutions without proper documentation of diagnosis and outcome and UGIB is not diagnosed at emergency.

4.5. Sampling Technique

A census of all adult patients diagnosed with upper gastrointestinal bleeding (UGIB) who presented to the Adult Emergency Outpatient Department of St. Paul's Hospital Millennium Medical College (SPHMMC) during the 12-month study period (August 1, 2024 — July 31, 2025) was conducted. This approach was chosen because the total number of eligible cases ($N = 369$) identified in the chronologically ordered emergency department registry fell within the range required to satisfy the sample size calculation targets. By including the entire eligible population identified within the study timeframe, the need for a separate sampling procedure was eliminated, thereby ensuring a comprehensive and representative evaluation of all UGIB cases managed at the facility during the specified period. Consequently, the sampling frame for this study consisted of all 369 confirmed UGIB cases documented in the emergency department registry during the study year.

Based on the sample size calculation (Section 4.5), the final desired sample size is 364 patient charts.

4.6. Variables

4.6.1. Dependent Variable:

- Primary outcome (dependent variable):
 - Death due to UGIB (yes/no)

4.6.2. Independent Variables:

1. Socio-demographic factors

- Age
- Sex
- Residence (urban / rural)

2. Clinical risk factors / exposures

- Use of NSAIDs
- Use of aspirin (ASA)
- Use of corticosteroids (glucocorticoids)

- Any level of alcohol use (yes/no)
- Cigarette smoking

3. Clinical presentation

- Hematemesis
- Melena
- Melena and Hematemesis

4. Vital signs on admission

- Blood pressure (systolic, diastolic)
- Heart rate
- Shock index (HR/SBP) if calculable

5. Comorbidities

- Chronic liver disease / cirrhosis
- Coagulopathy (not drug-related)
- Chronic kidney disease
- Hypertension
- Diabetes mellitus
- Malignancy

6. Laboratory values

- Hemoglobin level
- Platelet count
- INR / PT
- BUN and serum creatinine

7. Interventions provided

- Intravenous fluids (type and volume)
- Blood transfusion (units and timing)

- Proton pump inhibitor therapy (IV bolus / infusion)
- Endoscopic findings (etiology, stigmata of recent hemorrhage)
- Endoscopic intervention performed (injection, thermal coagulation, band ligation, hemoclip, etc.)
- Other interventions (surgery, radiologic embolization if any)

8. Etiology of bleeding (if documented)

- Duodenal ulcer
- Esophageal varices
- Malignancy
- Unknown / not documented

4.7. Operational definition

- Death due to UGIB (yes/no): Defined as in-hospital mortality occurring during the index hospitalization that is directly attributable to the upper gastrointestinal bleeding event. This includes deaths resulting from exsanguination (uncontrolled hemorrhage) or immediate complications of the bleeding, such as aspiration pneumonia, hemorrhagic shock, or multi-organ failure secondary to the acute bleed. Deaths clearly resulting from unrelated causes (e.g., trauma, unrelated sepsis, or terminal underlying disease unrelated to the bleeding episode) were excluded from this specific outcome category.
- Upper Gastrointestinal Bleeding (UGIB): Bleeding that originates from the proximal to the ligament of Treitz like esophagus, stomach, or duodenum typically presenting with hematemesis, melena, or both(1).
- Hematemesis: Vomiting of fresh blood or coffee-ground-like material.
- Melena: Passage of black, tarry stool indicating digested blood from the upper GI tract.
- Complete record: A chart with full documentation of symptoms, investigations, management, and outcome.
- Clinical outcome: Defined as the final in-hospital status of the patient during the index hospitalization for upper gastrointestinal bleeding at SPHMMC,

categorized as either Alive (patient stabilized and discharged from the hospital) or Dead (in-hospital mortality directly attributable to the bleeding episode or its immediate complications).

- **Stabilized:** a patient will be considered stabilized if, after emergency management, they meet all of the following clinical criteria prior to discharge from the Adult Emergency Department:
 - **Hemodynamic stability:** systolic blood pressure ≥ 100 mmHg, heart rate < 100 beats/min, and no orthostatic hypotension.
 - No ongoing hematemesis, melena, or hematochezia during the observation period.
 - Stable hemoglobin level on repeat measurement (no ≥ 2 g/dL drop within 24 hours).
 - No immediate need for blood transfusion, ICU admission, or urgent intervention (endoscopic, surgical, or radiologic).
 - Fit for outpatient follow-up (e.g., scheduled for elective endoscopy).
 - Patients discharged for non-clinical reasons (e.g., patient preference, lack of bed availability, or transfer for administrative/logistic reasons) will **not** be classified as “stabilized” under this definition.
- **Comorbidity:** will refer to any chronic medical condition documented in the patient’s chart prior to or at the time of admission with UGIB (e.g., chronic liver disease/cirrhosis, chronic kidney disease, cardiovascular disease, diabetes mellitus, malignancy, coagulopathy). Presence of comorbidities will be determined based on physician diagnosis recorded in the medical record.

4.8. Data collection tool, methods and procedure

Data were collected using a structured data extraction checklist developed based on published literature and clinical relevance (30). The checklist included:

- Sociodemographic information
- Presenting symptoms
- Vital signs on admission
- Laboratory results
- Comorbidities and risk factors

- Diagnosis
- Treatment interventions provided
- Endoscopic findings and interventions
- Patient outcomes (stabilization, ICU admission, rebleeding, mortality, length of stay, readmission)

The primary source of data has been the electronic medical record (EMR) and physical patient charts at the Adult Emergency Outpatient Department of SPHMMC. For information not routinely entered into the EMR—such as detailed endoscopy results records were retrieved directly from the endoscopy unit logbook/reports.

Two trained medical data collectors were reviewing physical and electronic patient charts from the emergency department record room. A supervisor oversaw the data collection process to ensure accuracy and completeness. A pretest was also conducted on 5% of records (excluded from the final analysis) to refine the checklist and ensure data consistency.

4.9. Data quality control methods

To ensure data quality, the accuracy, clarity, and consistency of the information extracted from patient records has been thoroughly checked. This had begun with the preparation and pretesting of the data extraction checklist to ensure it captured all relevant clinical and outcome variables clearly and comprehensively.

During data collection, trained data collectors had carefully reviewed each selected medical record, verifying completeness and consistency of the recorded information. Supervisors regularly monitored the data collection process to identify and correct any discrepancies or missing data.

At the time of data entry, the collected data had been double-entered into EpiData to minimize entry errors. Additionally, data cleaning and validation procedures were conducted in SPSS before analysis to identify and resolve any inconsistencies or outliers.

4.10. Data processing and analysis

Data had been entered using Epi Info and exported to IBM SPSS version 27 for analysis. Descriptive statistics has been used to summarize the data: categorical variables were presented as frequencies and percentages, while continuous variables were summarized using means with standard deviations (if normally distributed) or medians with interquartile ranges (if non-normally distributed).

For inferential analysis, bivariable logistic regression was performed to assess the association between each independent variable and the outcome variable.

4.11. Ethical consideration

The Ethical clearance had been obtained from the Institutional Review Board (IRB) of SPHMMC with protocol number SPHMMC-ERC-455/25. As this is a retrospective chart review, patient consent was not required, but data confidentiality and anonymity was strictly maintained.

4.12. Dissemination of findings

The study's findings will be submitted to Saint Paul's Hospital Millennium Medical College's (SPHMMC) academic and administrative bodies, presented at relevant academic conferences, and an attempt will be made to publish to peer-reviewed journals. The method of dissemination will be through preparing seminars and publishing the research.

5. RESULTS

5.1. Socio-Demographic Profile and Baseline Characteristics

A total of 369 adult patients presenting with confirmed upper gastrointestinal bleeding (UGIB) were systematically evaluated at the Adult Emergency Outpatient Department

of St. Paul's Hospital Millennium Medical College (SPHMMC). The baseline clinical characteristics and socio-demographic details are summarized in Table 1.

The demographic analysis revealed a mean age of 42.28 ± 16.54 years, with a broad range from 18 to 87 years. Notably, over half of the study population (51.5%) was young adults under the age of 40. A pronounced male predominance was observed, with 241 (65.3%) males and 128 (34.7%) females. The majority of patients reported significant risk factor profiles, including a high proportion of non-steroidal anti-inflammatory drug (NSAID) use (50.7%) and any level of alcohol consumption (37.9%). The proportion of cirrhosis (28.7%) among the comorbidities cohort is another critical baseline characteristic."

Table 1: Socio-Demographic and Clinical Characteristics of the Study Participants (N=369)

Characteristic	Category	Frequency (n)	Percentage (%)
Age Group	< 40 years	190	51.5%
	40–59 years	106	28.7%
	≥ 60 years	73	19.8%
Sex	Male	241	65.3%
	Female	128	34.7%
Medication Use	NSAID Use	187	50.7%
	PPI Prior to Presentation	91	24.7%
Lifestyle Factors	Cigarette Smoking	97	26.3%
	Alcohol Use	140	37.9%
Comorbidities	Cirrhosis	106	28.7%
	Diabetes Mellitus	33	8.9%

	Hypertension	21	5.7%
	CKD	15	4.1%
	None	194	52.6%

CKD- Chronic Kidney disease

NSAID - Non steroidal anti inflammatory drugs

PPI- Proton pump inhibitor

5.2. Clinical Presentation and Hemodynamic Status

The clinical manifestations of UGIB at presentation were predominantly overt, with 97.8% (361) of the cohort exhibiting classic symptoms of upper GI hemorrhage. Hematemesis was the hallmark feature, documented in 216 (59.8%) of cases as an isolated symptom and in 111 (30.7%) of cases when combined with melena. Isolated melena was less frequent, seen in only 34 (9.4%) of the population (Figure 1). Hemodynamic status upon admission served as a critical indicator of the severity of the hemorrhage. The mean systolic blood pressure (SBP) was 120.59 ± 16.339 mmHg, and the mean heart rate was 101.94 ± 19.708 bpm. The mean shock index (HR/SBP) was 0.93 ± 0.270 . However, those who ultimately did not survive exhibited marked physiological distress, characterized by significantly lower SBP (106.60 vs 120.84 mmHg, $p=0.004$) and higher pulse rates (113.43 vs 101.72 bpm, $p=0.034$). The average duration of hospital stay was 3.07 ± 1.733 days, during which time patients underwent initial stabilization and triage.

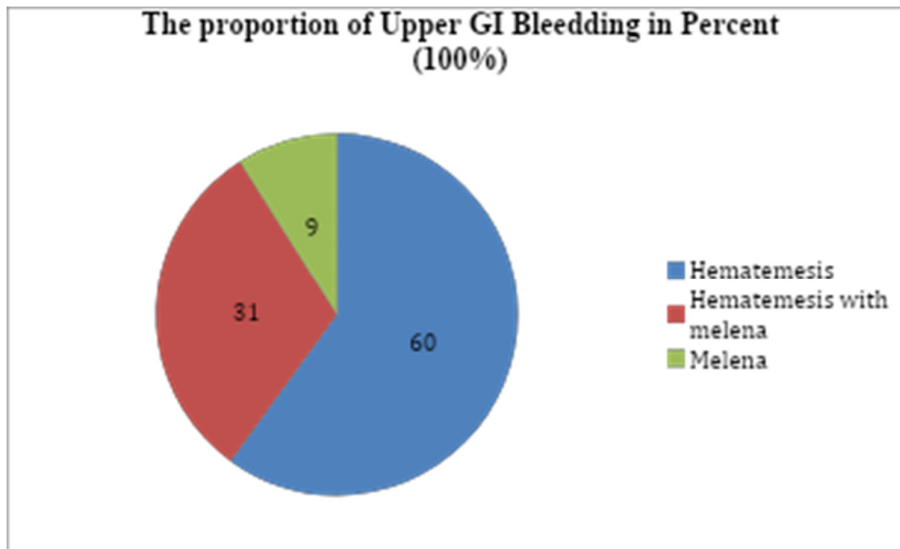


Figure 1. The proportion of Upper GI bleeding among the study participants.

5.3. Laboratory Findings, Etiology, and Management

Laboratory evaluations revealed the systemic impact of the bleeding, with a mean hemoglobin level of 9.396 ± 3.81 g/dL. Coagulopathy was also evident, with a mean INR of 1.62 ± 1.005 . Biochemical markers of renal stress, such as Blood Urea Nitrogen (BUN) (mean 25.00 mg/dL) and serum creatinine (mean 1.10 mg/dL), were frequently elevated. Standardized risk scores, including the Glasgow-Blatchford Score (GBS) (mean 8.50) and the pre-endoscopic Rockall Score (mean 5.80), consistently categorized the majority of the cohort as high-risk.

The etiological landscape of the study participants is summarized in Table 2. Esophageal varices were the most frequently identified cause of bleeding, accounting for 15.4% (n=56) of the cases, followed by duodenal ulcers at 6.9% (n=25) and malignancy at 1.65% (n=6). Notably, a definitive etiology could not be established in 76.05% (n=276) of the patients. This was primarily because these patients did not undergo endoscopic evaluation during their emergency department stay or hospitalization, rather than the endoscopy being reported as normal. Due to the retrospective nature of the chart review and limitations in documentation, the specific timing of endoscopy (hours or days from presentation) and detailed endoscopic

classifications—such as the grade of esophageal varices or the Forrest classification for peptic ulcers—were not consistently available for analysis.

Management was largely pharmacological, with 52.0% of patients receiving proton pump inhibitor (PPI) therapy alone and 28.1% receiving a combination of PPIs and blood transfusions. Blood transfusion only was administered to 10.4% of the patients. Definitive endoscopic intervention (e.g., band ligation or sclerotherapy) was utilized in only 2.7% (n=10) of the cases. The overall in-hospital mortality rate was 1.9% (n=7). While other outcomes such as rebleeding, ICU admission, and readmission rates are critical indicators of clinical severity, these were not consistently documented in the emergency department records reviewed for this study period.

Table 2: Clinical Presentation, Etiology, and Management Profile of UGIB Patients

Category	Sub-Category	Frequency (n)	Percentage (%)
Presenting Symptom	Hematemesis	216	58.9%
	Melena	34	9.2%
	Melena & Hematemesis	111	30.1%
Etiology	Esophageal Varices	56	15.4%
	Duodenal Ulcer	25	6.9%
	Malignancy	6	1.65%
	Not Done/Unknown	276	76.05%
Management	PPI Therapy Alone	191	52.0%
	PPI + Blood Transfusion	103	28.1%

	Blood Transfusion Only	38	10.4%
	Endoscopic Therapy + PPI + Blood Transfusion	10	2.7%
	Other/None	25	6.8%

5.4. Factors Associated with In-Hospital Mortality

Due to the limited number of in-hospital mortality events (n=7, 1.9%) identified in this census, bivariable analysis using Fisher's Exact Test and Chi-square tests was prioritized to identify potential associations with mortality. This approach was chosen to ensure statistical validity and to avoid the instability and invalid estimates (e.g., extremely wide or infinite confidence intervals) associated with performing multivariable logistic regression with a low number of outcomes.

As summarized in Table 3, Age was the only factor significantly associated with in-hospital mortality ($p = 0.0356$). Specifically, patients in the 40–59 age group showed a higher proportion of deaths compared to the younger reference group. Hemodynamic parameters, including Systolic Blood Pressure (SBP) and Pulse Rate, were evaluated as clinical indicators of severity. While SBP showed a trend toward association with mortality ($p = 0.1527$), it did not reach the threshold for statistical significance in this cohort. Similarly, the Shock Index (HR/SBP) was assessed but did not demonstrate a significant bivariable association with mortality ($p = 0.2878$).

Other socio-demographic and lifestyle factors, including Sex ($p = 0.7323$), Smoking ($p = 0.8898$), Alcohol use ($p = 0.7870$), and NSAID use ($p = 0.2827$), were not significantly associated with patient outcomes. Furthermore, the presence of comorbidities such as Chronic Liver Disease ($p = 0.4120$), Diabetes Mellitus ($p =$

0.6208), Hypertension, and Chronic Kidney Disease showed no statistically significant relationship with in-hospital death. To avoid multicollinearity and ensure clinical relevance, overlapping hemodynamic variables were analyzed independently.

Table 3: Bivariable Analysis of Factors Associated with In-Hospital Mortality (N=369)

Variables	Categories	Odds Ratio (95 % CI)	P-value (Fisher's/Chi-sq)
Age (years)	<40	1.00 (Ref)	0.0356*
	40-59	6.46 (1.23–33.85)	
	≥60	N/A†	
Sex	Male	1.00 (Ref)	0.7323
	Female	0.75 (0.14–3.92)	
Systolic BP	>120	1.00 (Ref)	0.1527
	90-120	3.34 (0.64–17.47)	
	<90	N/A†	
Pulse Rate	60-100	1.00 (Ref)	0.7124
	>100	3.40 (0.60–19.10)	

	<60	N/A†	
Shock Index	<1	1.00 (Ref)	0.2878
	≥1	2.27 (0.50–10.30)	
Smoking	No	1.00 (Ref)	0.8898
	Yes	1.12 (0.21–5.89)	
Alcohol Use	No	1.00 (Ref)	0.7870
	Yes	1.23 (0.27–5.59)	
NSAID Use	No	1.00 (Ref)	0.2827
	Yes	2.47 (0.47–12.93)	
PPI Prior Use	No	1.00 (Ref)	0.8088
	Yes	1.23 (0.23–6.43)	
Comorbidity	None	1.00 (Ref)	0.4120
	Cirrhosis	1.88 (0.41–8.57)	
	DM	1.72 (0.20–14.72)	

Notes:

- **Ref (Reference):** Baseline category for comparison.
- † **N/A:** No mortality events occurred in this category, preventing Odds Ratio calculation.
- ***Significant association:** P-value < 0.05.
- P-values calculated using **Fisher's Exact Test** or **Chi-square test** to account for small event counts (n=7).
- Multivariable logistic regression was deferred due to the low number of outcome events (7/369), ensuring statistical robustness.

6. Discussion

This hospital-based retrospective cross-sectional study characterizes the clinical profile, risk factors, and outcomes of patients presenting with upper gastrointestinal bleeding (UGIB) at the Adult Emergency Outpatient Department of St. Paul's Hospital Millennium Medical College (SPHMMC). By analyzing 369 eligible patient records from a 12-month period, our findings provide a contemporary snapshot of UGIB management in a major Ethiopian referral center. The results highlight a demographic shift toward younger populations, a high prevalence of modifiable risk factors such as NSAID and alcohol use, and the identification of age as the sole statistically significant predictor of in-hospital mortality in bivariable analysis.

6.1. Demographic Profile and Risk Factors

Our study revealed a mean age of 42.28 ± 16.54 years, with over half of the cohort (51.5%) being under the age of 40. This demographic profile contrasts sharply with findings from high-income countries, where the median age of patients presenting with UGIB often exceeds 60 or 70 years (4,7). For instance, studies in the United States and Europe typically report a population dominated by the elderly, who often have multiple comorbidities and are on polypharmacy (5). In contrast, our findings align with other sub-Saharan African studies, such as those conducted in Rwanda and Tanzania, where UGIB predominantly affects the economically active young adult population (14,15). This younger age distribution in our setting likely reflects the broader population pyramid of Ethiopia and the high prevalence of risk factors that

manifest earlier in life, such as chronic liver disease and untreated peptic ulcer disease.

A pronounced male predominance (65.3%) was also observed, which is consistent with both regional and historical data from Ethiopia (18,19). This gender disparity is frequently attributed to higher rates of behavioral risk factors among men, particularly alcohol consumption (37.9%) and cigarette smoking (26.3%). These lifestyle factors are known drivers of both variceal and non-variceal bleeding, with alcohol being a primary contributor to chronic liver disease and esophageal varices, and smoking being a significant risk factor for peptic ulcer disease (11,20).

One of the most striking findings in our study was the high prevalence of NSAID use, documented in 50.7% of the patients. This rate is significantly higher than those reported in some regional African studies but mirrors the growing concern over the unregulated, over-the-counter availability of these medications in Ethiopia (19). NSAIDs are well-established causes of erosive gastritis and peptic ulcers, which remain leading causes of non-variceal UGIB globally (8). Interestingly, while NSAID use was a common exposure, it did not emerge as a statistically significant predictor of mortality in our bivariable analysis. This suggests that while NSAIDs are a major driver of the incidence of bleeding, the outcome of the bleeding episode is more closely tied to the patient's physiological response and the severity of the initial hemorrhage.

Cirrhosis was the most common comorbidity, present in 28.7% of the patients. This is a critical baseline characteristic, as cirrhosis is the primary precursor to portal hypertension and esophageal varices—the most frequently identified etiology in our study (15.4%). The high burden of Cirrhosis in our cohort may be linked to the high prevalence of viral hepatitis and alcohol-related liver injury in the region. Patients with CLD often present with more severe bleeding and have higher rates of rebleeding and mortality compared to those with non-variceal causes (16,31).

6.2. Clinical Presentation and Etiology

The clinical manifestations of UGIB at presentation were predominantly overt, with 97.8% of the cohort exhibiting classic symptoms of upper GI hemorrhage. Hematemesis was the hallmark feature, documented in 216 (59.8%) of cases as an isolated symptom and in 111 (30.7%) of cases when combined with melena. This high rate of overt bleeding is consistent with findings from other tertiary centers in Addis Ababa (19,30). Hemodynamic status upon admission served as a critical indicator of the severity of the hemorrhage. The mean systolic blood pressure (SBP) was 120.59 ± 16.339 mmHg, and the mean heart rate was 101.94 ± 19.708 bpm. The mean shock index (HR/SBP) was 0.93 ± 0.270 . However, those who ultimately did not survive exhibited marked physiological distress, characterized by significantly lower SBP (106.60 vs 120.84 mmHg, $p=0.004$) and higher pulse rates (113.43 vs 101.72 bpm, $p=0.034$).

A significant challenge identified in our study was the high proportion of patients (76.05%) who did not receive a definitive etiologic diagnosis via endoscopy. While esophageal varices (15.4%) and duodenal ulcers (6.9%) were the leading identified causes among those evaluated, the vast majority of cases remained unclassified. This diagnostic gap is a common theme in studies from low-resource settings, where access to urgent endoscopy is often restricted by equipment downtime, lack of after-hours services, or patient-related financial constraints (15,16,19). When compared to other studies in Ethiopia and the sub-Saharan region, the etiological patterns identified in this cohort show both similarities and notable differences. This predominance of variceal bleeding is consistent with other Ethiopian studies that have highlighted the significant impact of portal hypertension-related hemorrhage in tertiary care settings (18,19). The relatively low proportion of PUD identified in our study may be partially attributed to the high rate of "unknown" etiology, as many patients may have been stabilized with empiric medical therapy without undergoing endoscopic confirmation (16,20).

6.3. Outcomes and Predictors of Mortality

The overall in-hospital mortality rate in our study was 1.9% (n=7). This is notably lower than the rates reported in several other African cohorts, such as the 19% mortality in Rwanda (14) or 15–20% in some Nigerian and earlier Ethiopian studies (17,31). Several factors may contribute to this relatively favorable outcome. First, SPHMMC is a major referral center with a dedicated GI unit and established emergency protocols, which may lead to more standardized care compared to smaller facilities. Second, our study population was younger, with fewer chronic comorbidities like cardiovascular disease (5.7%) or diabetes (8.9%) compared to Western cohorts. Younger patients generally have better compensatory mechanisms for acute blood loss.

However, the low number of mortality events (n=7) significantly limited our ability to perform complex multivariable modeling. Consequently, multivariable logistic regression was deferred to ensure statistical robustness. In our bivariable analysis, age was the only factor significantly associated with in-hospital mortality ($p = 0.0356$). Specifically, patients in the 40–59 age group showed a higher proportion of deaths compared to the younger reference group (OR = 6.46, 95% CI: 1.23–33.85). While hemodynamic parameters, including SBP ($p = 0.1527$) and Shock Index ($p = 0.2878$), showed trends toward association with mortality, they did not reach the threshold for statistical significance in this bivariable analysis. This contrasts with the global consensus that initial physiological state is a critical prognostic indicator (9,10), and the observed physiological distress in non-survivors (lower SBP, higher pulse rates) reinforces this. The lack of statistical significance for these and other comorbidities (e.g., cirrhosis, DM, HTN, CKD) in our bivariable analysis is likely due to the small number of mortality events, which limited the statistical power to detect such relationships.

6.4. Strengths and Limitations

The methodology of this study provided several strengths. The use of a census of all eligible patients presenting to a high-volume tertiary center ensured that our sample was representative of the UGIB cases managed at SPHMMC during the study period.

The comprehensive data extraction checklist allowed us to capture a wide range of clinical, laboratory, and management variables, facilitating a robust analysis of prognostic factors. Furthermore, the use of a 12-month data window provided a complete seasonal cycle, accounting for potential temporal variations in disease presentation.

Nevertheless, several limitations must be acknowledged. As a retrospective chart review, the study was entirely dependent on the quality and completeness of the existing medical records. The high rate of missing or "unknown" etiologies (76.05%) is a direct consequence of this design and the clinical realities of the study site. Additionally, the study was conducted at a single center, which may limit the generalizability of the findings to other regions of Ethiopia where healthcare infrastructure and patient demographics may differ. Finally, we focused on in-hospital mortality as the primary outcome; however, long-term outcomes such as 30-day mortality or rebleeding rates after discharge were not captured, which may result in an underestimation of the total burden of the disease. The low number of mortality events also restricted the depth of statistical analysis, precluding multivariable modeling.

6.5. Clinical Implications and Recommendations

The findings of this study have direct implications for clinical practice and health policy in Ethiopia. The high prevalence of NSAID use (50.7%) calls for stricter regulatory oversight and public health education regarding the risks of these medications. Pharmacists and primary care providers should be encouraged to co-prescribe PPIs for high-risk patients requiring long-term NSAID therapy. The significant diagnostic gap identified in our results underscores the urgent need for investment in endoscopic infrastructure. Expanding the availability of 24/7 emergency endoscopy would not only improve diagnostic accuracy but also allow for life-saving therapeutic interventions like band ligation or thermal coagulation, potentially further reducing the mortality and morbidity associated with UGIB in Ethiopia. While the Shock Index did not reach statistical significance in our bivariable analysis, its utility as a rapid bedside triage tool for identifying high-risk patients for aggressive resuscitation remains supported by the physiological differences observed between

survivors and non-survivors [22]. Finally, the identification of age as a significant predictor of mortality emphasizes the need for vigilant monitoring and tailored management strategies for older adults presenting with gastrointestinal hemorrhage in the emergency setting.

7. Conclusion

This study found an overall in-hospital mortality rate of 1.9% (7 out of 369 patients) for upper gastrointestinal bleeding (UGIB) at SPHMMC. While UGIB predominantly affected young adult males and was frequently associated with modifiable risk factors such as NSAID use and alcohol consumption, the bivariable analysis identified age (40–59 years: OR = 6.46, 95% CI: 1.23–33.85, $p = 0.0356$) as the sole statistically significant factor associated with in-hospital mortality. Multivariable logistic regression was not performed due to the low number of mortality events, which limited the statistical power to detect more complex relationships.

Hemodynamic parameters at presentation, including lower systolic blood pressure and elevated pulse rate, showed trends towards association with increased mortality in bivariable analysis, indicating that severe hemodynamic compromise at presentation is a primary driver of poor outcomes. These findings underscore the critical importance of initial hemodynamic assessment and stabilization in the management of UGIB patients. The substantial proportion of cases with unknown etiology (76.05%) highlights a critical need for enhanced access to diagnostic and therapeutic endoscopic evaluation. These findings collectively emphasize the necessity for standardized emergency triage protocols, alongside expanded endoscopic services, to improve patient outcomes in resource-limited settings.

8. Recommendations

Based on the findings and the methodological framework of this study, the following recommendations are proposed to improve the management and outcomes of patients with upper gastrointestinal bleeding (UGIB) at SPHMMC and beyond:

1. **Standardization of Emergency Triage Protocols:** The Adult Emergency Outpatient Department should formally integrate the Shock Index (HR/SBP) into its initial triage protocols for all UGIB patients. While the Shock Index did not reach statistical significance in our bivariable analysis, the observed physiological

differences between survivors and non-survivors, coupled with its ease of calculation at the bedside, support its utility as a rapid tool to identify high-risk patients who require aggressive resuscitation and prioritized access to critical care or urgent intervention.

2. Expansion of 24/7 Endoscopic Services: SPHMMC should prioritize the establishment of a round-the-clock emergency endoscopy service. Our results revealed that 76.1% of patients did not receive a definitive etiologic diagnosis, and only 3.2% underwent definitive endoscopic intervention. Expanding access to 24/7 diagnostic and therapeutic endoscopy is essential to bridge this diagnostic gap, particularly for managing esophageal varices, which were the most common identified cause of bleeding (15.4%).

3. Public Health and Regulatory Interventions on NSAID Use: The high prevalence of NSAID use (50.7%) among our cohort suggests a critical need for public health awareness campaigns regarding the risks of unregulated over-the-counter NSAID consumption. Furthermore, regulatory bodies and hospital leadership should collaborate to develop guidelines for pharmacists and primary care providers to emphasize the co-prescription of gastroprotective agents, such as PPIs, for patients requiring long-term NSAID therapy.

4. Strengthening Community-Based Alcohol and Liver Health Programs: Given that alcohol use (37.9%) and chronic liver disease (28.7%) were major risk factors and comorbidities, SPHMMC should lead or support community-based screening and education programs focused on liver health. Early detection and management of chronic liver disease could significantly reduce the incidence of high-mortality variceal bleeding episodes.

5. Methodological Enhancements in Data Documentation: To address the limitations of retrospective data collection, the hospital should transition toward a more standardized electronic medical record (EMR) system specifically designed for GI emergencies. This should include mandatory fields for bleeding etiology, Rockall or Glasgow-Blatchford scores, and detailed endoscopic findings to facilitate more robust future research and quality improvement audits.

6. Promotion of Prospective and Multicenter Research: Future research efforts should move beyond single-center retrospective studies toward prospective, multicenter designs. This would allow for the validation of clinical risk scores in larger, more diverse Ethiopian cohorts and enable the tracking of long-term outcomes,

such as 30-day rebleeding and mortality rates, which were outside the scope of the current methodology. Additionally, such studies would provide sufficient power to conduct multivariable analyses, which were not feasible in the current study due to the low number of outcome events.

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10. Annexes

Annex I: Information sheet

Title of the Research Project: Clinical characteristics and outcome of patients with upper gastrointestinal bleeding at Adult Emergency Outpatient Department at SPHMMC: A retrospective study (2024)

Name of Principal Investigator: Robel Bekele Abdi

Name of the Organization: Saint Paul's Hospital Millennium Medical College (SPHMMC)

Introduction

This information sheet is prepared to inform study team members and relevant stakeholders about the purpose and procedures of this retrospective study. The study aims to review clinical characteristics and treatment outcomes of patients who presented with upper gastrointestinal bleeding (UGIB) at the Adult Emergency Outpatient Department of SPHMMC in 2025.

Purpose of the Research Project

To assess the clinical features, management, and outcomes of patients presenting with upper gastrointestinal bleeding at SPHMMC, providing data that could improve patient care and hospital management strategies.

Procedure

This study involves reviewing medical records of patients diagnosed with upper gastrointestinal bleeding at SPHMMC during the year 2025. No direct patient contact or interviews will be conducted as it is a retrospective chart review.

Risk and /or discomfort

Since the study is based on retrospective record review, there are no direct risks or discomforts to patients.

Benefits of being in the study

The findings will contribute to a better understanding of UGIB characteristics and outcomes in this setting, which may inform clinical practice and resource allocation to improve patient care.

Confidentiality and privacy

All data will be handled confidentially, and patient identifiers will be removed during data collection to ensure privacy. Data will be securely stored and used only for research purposes.

Incentives/payments

There are no incentives or payments involved as this is a record review study.

Right to refusal or withdrawal.

Since the study uses existing medical records, individual patient consent is not required, but confidentiality will be strictly maintained.

Contacts

For any questions about the study, please contact:

Robel Bekele Abdi

Email: Robel.bekele@sphmmc.edu.et

Phone: 0940695636

Annex II: Data Extraction Form

Title: *Clinical characteristics and outcome of patients with upper gastrointestinal bleeding at Adult Emergency Outpatient Department at SPHMMC: A retrospective study (2025)*

Data Source: Patient medical records (Jan 1 – Dec 31, 2024)

Use this checklist to collect data from each chart anonymously (no patient names or MRNs).

Variable	Response / Value
Chart ID / Code	_____
Age (in years)	_____
Sex	☐ Male ☐ Female
Date of Admission	_____
Presenting Symptom(s)	☐ Hematemesis ☐ Melena ☐ Both ☐ Other: _____
Vital Signs on Admission	BP: _____ mmHg, Pulse: _____ bpm
Shock Index (HR/SBP)	_____
Comorbidities	☐ Liver Disease ☐ CKD ☐ HTN ☐ DM ☐ None
Laboratory Values on Admission	Hb: _____ g/dL, Platelets: _____ $\times 10^3/\mu\text{L}$, INR: _____
Nasogastric Tube Aspiration Result	☐ Positive for blood ☐ Negative ☐ Not done
Endoscopy Performed	☐ Yes ☐ No
Endoscopic Finding (if done)	☐ Gastric ulcer ☐ Duodenal ulcer ☐ Varices ☐ Mallory-Weiss ☐ Malignancy ☐ Not done
Source of Bleeding	☐ Upper GI ☐ Indeterminate
Interventions Done	☐ Endoscopic therapy ☐ Blood transfusion ☐ PPI ☐ Octreotide ☐ Surgery
Number of Units Transfused (if any)	_____ Units
Hospital Stay Duration	_____ Days

Variable	Response / Value
Clinical Outcome	☐ Improved & discharged ☐ Referred ☐ Died

Annex III: Dummy Tables

Table 1. Sociodemographic Characteristics of UGIB Patients

Variable	Frequency (%)
Age group	
Sex	
Residence	

Table 2. Presenting Symptoms

Symptom	Frequency (%)
Hematemesis	
Melena	
Syncope	

Table 3. UGIB Outcomes

Outcome	Frequency (%)
Discharged	
Admitted	
Referred	
Died	

Annex IV: Ethical clearance sheets

St. Paul's Hospital Millennium Medical College Research Directorate

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IRERC approval letter

Protocol number: - SPHMMC-ERC-455/25

Ref.No PM25/139
Date: 23/10/2025

Protocol Title: Clinical characteristics and outcome of patients with upper gastrointestinal bleeding at Adult Emergency outpatient department at SPHMMC: a retrospective study

Investigators: Dr. Robel Bekele

Study Site: - St Paul's Hospital Millennium Medical College.

Application Type: Initial ☒ Amendment ☐ Renewal ☐

Review Procedure: Full Board ☐ Expedited ☐ Secretariat ☒

Decision of the meeting: ☒ Approved

I. Elements approved-

1. Protocol Version No V-1
2. Protocol Version Date 21/10/2025
3. Informed consent Version No. V-1
4. Informed Consent Version Date 21/10/2025
5. CRF Version No
6. CRF version Date

II. Obligations of the PI-

1. Should comply with the standard international & national scientific and ethical guidelines
2. All amendments and changes made in protocol and consent form needs IRERC approval
3. The PI should report SAE within 10 days of the event
4. End of the study, including manuscripts and thesis works should be reported to the IRERC

IRERC Approval date: 21/10/2025

Approval period from 21/10/2025 to 20/10/2026

☐ NRER (if the protocol should go to National ERC)

Follow up report expected in
3 Months 1 year ☒

Signature Dr. Yordanos Shiferaw
IRERC Secretary

Dr. Robel Bekele
IRERC Chair 21/10/2025

Cc:

- Research and Community Service Corporate Director
- IRERC
- Dr. Robel Bekele

Tel: +251112732639 P.O.Box: 1271 Fax: +251112774787 E-mail: irb@sphmmc.edu.et

Declaration

I the undersigned agreed to accept all responsibilities for the scientific and ethical conduct of the research project. I provided a timely progress report to my advisors and sought the necessary advice and approval from my advisors in the course of the research. I communicated timely to my advisors and all stakeholders involved in the study including any source of funding for this research.

Name of the student: Robel Bekele Abdi (Medical Intern)

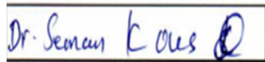
Signature: robel

Date: March 27, 2026

Approval of the Primary Advisor

Name of the primary advisor: Seman Kedir Ousman (PhD)

Signature:



Date: March 27, 2026

Approval of the Co-Advisor

Name of the co- advisor: ___Henok Fisseha___

Signature: _____



Date: March 27, 2026