



ST. PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE

PATTERN AND OUTCOME OF UPPER GASTROINTESTINAL
BLEEDING IN THE EMERGENCY DEPARTMENT OF ST. PAUL'S
HOSPITAL MILLENNIUM MEDICAL COLLEGE, ADDIS ABABA,
ETHIOPIA: FIVE MONTH CROSS-SECTIONAL STUDY.

BY

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PATTERN AND OUTCOME OF UPPER GASTROINTESTINAL BLEEDING IN THE ADULT EMERGENCY DEPARTMENT OF ST. PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE, ADDIS ABABA, ETHIOPIA: FIVE MONTH CROSS-SECTIONAL STUDY.

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ACRONYMS AND ABBREVIATIONS

ABET	Addis Ababa Burn Emergency and Trauma Hospital
ARDS	Acute Respiratory Distress Syndrome
AE	Angio embolization
DM	Diabetes Mellitus
ED	Emergency Department
FFP	Fresh Frozen Plasma
GBS	Glasgow Blatchford Score
HTN	Hypertension
IQR	Inter-quartile Range
ICU	Intensive Care Unit
IQR	Inter-quartile Range
LOS	Length of Stay
LDA	Low Dose Aspirin
MOF	Multiple Organ Failure
PRBC	Packed Red Blood Cells
PPI	Proton Pump Inhibitor
SPHMMC	St. Paul's Hospital Millennium Medical College
SPSS	Statistical Package for Social sciences
WHO	World Health Organization
UGIB	Upper Gastrointestinal Bleeding

ABSTRACT

Background: Upper gastrointestinal bleeding (UGIB) is a common emergency gastrointestinal problem that has substantial mortality and healthcare resources use. Acute gastrointestinal bleeding is a potentially life-threatening abdominal emergency that remains a common cause of hospitalization. There is no local data on the clinical presentation, the magnitude, causes, and outcomes of UGIB, emergency department in Ethiopia

Objective: Therefore, this study aims to determine the patterns and outcomes of upper gastrointestinal bleeding in the emergency department of St. Paul's hospital millennium medical college (SPHMMC), Addis Ababa, Ethiopia.

Methodology: A cross-sectional study was conducted at the SPHMMC emergency department. All patients admitted to SPHMMC ED from April 01, 2022, to August 31, 2022, who qualify or are already qualified and on chronic follow-up are the study population. The minimum sample size was 184 and data was collected from medical records by using a structured questionnaire checklist and was analyzed by SPSS version 26.0.

Result: From the total of 184 patients with a median (IQ) age of 35 (± 14.37). The majority (63.6%) of them were males. Varices are the most common cause of UGIB seen in 42.9%, followed by duodenal ulcer disease at 24.2%. The pattern of presentation to ED, 49.5% had hematemesis, 1.1% with Melena and concomitant hematemesis with melena were the presenting manifestations in 49.5% of patients. The proportion of death in this study was 2.7%, Multivariable analysis showed that AIMS-65 scores of more than 2 were high risk and more likely to die [AOR (95%CI) = 0.067(0.007,0.652)], having comorbidity, patients had higher odds of death [AOR (95%CI) = 1.409(1.038,1.914)]. Having grade 3 and 4 varices at initial endoscopy has higher odds ratio as compared to those whose grade 1 and 2 varices [AOR (95%CI) = 0.253 (0.073,0.88)].

Conclusion: In this study most patients with UGIB presented with Hematemesis 49.5% or both Hematemesis and Melena 67.4% had co-morbidity; Liver disease is the most common co-morbidity found in 46.7%. In this study also varices were the common cause of UGIB which was seen in 79 patients (43%) followed by duodenal ulcers seen in 27(14.7%) of patients with UGIB. Varices & ulcers accounted for 24(13%) patients and overall mortality was 2.7%, this mortality is associated with comorbidity, the highest risk score of AIMS-65, and grade of varices.

Keywords: Pattern, Outcome, Risk factor.

1. INTRODUCTION

1.1 Background

Acute upper GI bleeding refers to gross GI blood loss originating proximal to the ligament of Treitz that usually manifests as fresh blood hematemesis, “coffee ground” emesis, and/or melena with or without hemodynamic compromise. Acute UGIB is divided into non-variceal and variceal causes. The most common type of acute UGIB is ‘non-variceal’ and includes diagnoses such as peptic ulcer (gastric and duodenal), gastroduodenal erosions, Mallory–Weiss tears, erosive oesophagitis, arteriovenous malformations, Dieulafoy’s lesion, and upper GI tract tumors and malignancies(1). The incidence of upper GI bleeding varies from 48 to 160 cases per 100,000 individuals. Causes of upper GI bleeding include peptic ulcer bleeding, gastritis, esophagitis,

variceal bleeding, Mallory-Weiss syndrome, and cancer. The overall incidence of peptic ulcer disease is decreasing, likely because of an increase in the treatment of *Helicobacter pylori* and an increase in the use of proton pump inhibitors (2, 3).

The incidence sharply rose with age, being almost 6-times higher among those over 75 years of age. Peptic ulcer bleeding is the most common cause of upper gastrointestinal bleeding, responsible for about 50% of all cases, followed by oesophagitis and erosive disease. Variceal bleeding is the cause of bleeding in cirrhotic patients in 50–60%. Mortality ranges between 3 and 14% and did not change in the past 10 years. Mortality increases with increasing age and is significantly higher in patients who are already admitted to the hospital for co-morbidity. (4, 5).

Overt upper gastrointestinal bleeding usually presents as melena or hematemesis but can also present as hematochezia in cases of brisk bleeding. The severity of UGIB is defined by the patient’s hemodynamic status and packed red blood cell transfusion requirements (6).

Patients with hemodynamic instability and signs of upper GI bleeding should be offered urgent endoscopy (within 24 hours of presentation or onset of bleeding) after fluid resuscitation and stabilization. The majority of efficacy data on endoscopic therapy is from trials including individuals who have peptic ulcer bleeding (2).

The mortality rate for UGIB ranges from 8-10% in de novo hospitalizations for bleeding, to 26% in patients who are already hospitalized for another reason. Mortality rates for NVUGIB tend to be lower than that of VUGIB.(7).

AIMS65 scores to predict short-term mortality and the need for blood transfusion. AIMS-65 score accurately predicted 30- and 90-day all-cause mortality among patients with upper GIB(8).

1.2 Statement of The Problem

Acute upper gastrointestinal bleeding is a common medical condition that results in substantial morbidity, mortality, and medical care cost. The mortality rate for patients with acute upper gastrointestinal (GI) bleeding is 5-10% (9).

In developing countries such as Ethiopia, Often infected with H. pylori only a small percentage of individuals with dyspepsia ever seek clinical treatment, the condition still results in significant morbidity and 17.2% mortality (10, 11).

Non-variceal causes contributed to the morbidity predominantly. Major causes of Non-variceal upper GI bleeding were peptic ulcer (34%), gastric erosions (32%), malignancy (8%), and reflux esophagitis (8%)(12).

Since there is the absence of standard ED protocol for the management, of UGIB, this research will help investigate the overall magnitude and burden of UGIB and associated risk factors, the general emphasis we as an emergency and critical care practitioners need to give in the ED management of UGIB and complications associated with its natural course and related to its emergency treatment.

1.3 Significance of The Study

Mortality in patients suffering from upper gastrointestinal bleeding remains higher at about 1 in 5 in those exposed to NSAID, risk of mortality is probably higher in older people CUSE Of use of NSAIDs increasing which contribute to gastrointestinal bleeding and death (13).

The rationale for the selection of this problem area is that there is a global increase in the prevalence of UGIB and its identified risk factors and issues regarding complications associated with its natural course and complications that might bring patients to the ED. Many parts of the

world are also experiencing an increasingly aging population which were an independent predictor of high mortality.

Therefore, findings from this research could potentially be used to forward feedback to SPHMMC to give focus on standardized management of risk reduction and complications in the emergency department.

This study is intended to assess the magnitude, causes, and outcomes of UGIB in the Emergency Department in Ethiopia at Saint Paul's Hospital Millennium Medical College (SPHMMC).

2. Literature Review

Upper gastrointestinal bleeding (UGIB) develops in the esophagus, stomach, or duodenum and has an incidence of 47 per 100,000. Where the incidence of UGIB has fallen, driven by helicobacter pylori eradication and the use of proton pump inhibitors, Interventions such as early endoscopy, risk assessment, and national guidelines have improved clinical outcomes.

A retrospective study period from 1 January 2012 to 31 December 2013 was conducted on Consecutive patients who were diagnosed with continuous UGIB in the endoscopy center of the first affiliated Hospital of Sun-Yat University. Their gender, age, etiology, ulcer classification, endoscopic treatment, and hospitalization mortality were compared and the result shows the detection rate of UGIB was the percentage of male patients was 73.28 %. Etiology of UGIB was peptic ulcer bleeding, accounting for 65.2%, duodenal ulcer 47.8%, gastric ulcer 8.3%, stomal ulcer 2.3%, compound ulcer 6.8%, cancer bleeding (7.0%), and esophageal and gastric variceal bleeding (6.4%)(14).

A tertiary, university-affiliated medical center prospective study on Patients with upper-GI bleeding seen from December 1999 until April 2001 was done and they correlate Clinical Outcome Research Initiative (CORI) database with single institution data with nationwide data. A total of 126 patients of this Peptic ulcer (31.8%), varices (19.8%), and mucosal erosive disease (10.3%) were the most common causes of UGIB. Gastric ulcer was more common than duodenal ulcer (19.8% vs. 11.9%). Mallory-Weiss tear (11 patients), esophageal ulcer (5), neoplasm (4), arteriovenous malformations (4), Dieulafoy's lesion (2), gastric antral vascular ectasia(15).

Another retrospective observational study done on a total of 90 patients with a diagnosis Of of upper gastrointestinal bleeding was studied and analyzed in terms of the etiology of the bleeding and demographic profile. Out of 90 patients, 47(52.2%) cases were less than 45 years of age, 30(33.3%) of 46 to 65 age, and 13(14.4 %) were more than 65 years of age. Gastric ulcer 23(25.6%) was the most common endoscopic finding, followed by esophageal varices 14 (15.6%), acute erosive gastro path 11 (12.2%), duodenal ulcer 9(10%), growth 7(7.8%), vascular lesions 3(3.3%), Mallory-Weiss tear 1(1.1%), fundal varices 1(1.1%) and no cause was identified in 21(23.3%) cases(16).

A retrospective chart review of 421 patient's hospitalized patients compared epidemiological characteristics, risk factors, and the rates of endoscopic hemostatic procedures with result shows UGIB significant increases in patients' mean age, in the percentage of patients with comorbid conditions, and in the percentage of patients who received direct-acting oral anticoagulants before bleeding. The use of emergency surgical hemostasis decreased among cases of peptic ulcer bleeding (17).

Medical records of GIB patients admitted at Alzahra referral hospital during 2010-2015 were retrospectively reviewed for demographic data, comorbidities, history of smoking and taking non-steroidal anti-inflammatory drugs (NSAIDs), presenting symptoms, endoscopic findings, therapeutic endoscopy, blood products' infusion, surgical intervention, rebleeding, and mortality. From 4747 patients enrolled in the study. Hematemesis was the most frequent presenting symptom (63.5%). Peptic ulcer (duodenal ulcer in most cases) was seen as the main reason for UGIB (42.4%). Rebleeding was found to be more frequent in patients with older age, presenting signs of hematochezia and hypotension, history of taking NSAIDs and smoking, presence of comorbidities, history of bleeding because of UGI tract neoplasm and esophageal varices, history of needing blood products' infusion, and history of therapeutic endoscopy or surgical intervention (18).

Prospective observational analysis of adults presenting with UGIB to a tertiary center in Lilongwe, Malawi, classified patients as having no endoscopy, diagnostic endoscopy, or endoscopy with variceal banding. Bivariate, survival analysis and logistic regression analyses were used to compare intervention cohorts. Among 293 patients 49 patients (16.7%) received endoscopy with banding, 65 (22.2%) patients received diagnostic endoscopy only, and 179 (61.1%) received no endoscopy. Upon survival analysis compared to the no-endoscopy group, cox hazard modeling showed an adjusted hazard ratio over 30 days of 0.12 (95% CI 0.02, 0.88, $p=0.038$) for the endoscopic banding group and a hazard ratio of 0.39 (95% CI 0.13, 1.16, $p=0.090$) for the diagnostic endoscopy only group. Physical exam findings consistent with cirrhosis and decreasing age were independent predictors of an endoscopic diagnosis of variceal bleeding(19).

Retrospectively reviewed data on 401 patients aged ≥ 60 years presenting with upper gastrointestinal bleeding done and collect Information including history, physical examination findings, laboratory data, endoscopic findings, and length of hospital stay. Patients were divided into two groups: group A (65-79 years) and group B (>79 years) Results show **Group** an included 315 patients and group B 86 patients. Co-morbidity and use of non-steroidal anti-inflammatory drugs (NSAIDs) or anti-platelet drugs were more common. Esophagitis was the cause of bleeding in 38.37% of group B, as compared with 19% in group A. The main cause of bleeding in group A was a peptic ulcer. Rebleeding and emergency surgery were rare in group B and not different from those in group A. However, the bleeding-related mortality in the very elderly group was higher (13.9%). In multivariate analysis, only shock on admission was independently related to mortality (20).

A prospective cohort study of consecutive adult patients presenting to the EDs of Muhimbili National Hospital (ED-MNH) and MUHAS Academic Medical Centre (ED-MAMC), in Tanzania with non-traumatic upper gastrointestinal bleeding (UGIB) from July 2018 to December 2018. Patient demographic data, clinical presentation, and ED and hospital management provided were recorded. They use the clinical Rockall score to assess disease severity. The primary outcome of 7- day mortality was summarized using descriptive statistics. Regression analysis was performed to identify predictors of mortality and results show Age > 40 years was a significant independent predictor of mortality (OR = 7.00). Having a high clinical Rockall score of ≥ 4 was a significant independent predictor of mortality (OR = 6.4)(21).

A cross-sectional retrospective study was done on 208 patients who presented to Saint Paul Hospital Millennium Medical College (SPHMMC) with gastrointestinal bleeding (GIB) in one year by Mengistie, Y. C. Their result revealed that the majority were males (83.6%) with a male to female ratio of 5:1. Varices is the most common cause of UGIB seen in 46.1% (59), followed by peptic ulcer disease 24.2% (31), esophagitis 3.9% (5), gastritis 6.3% (8), Duodenitis 3.1% (4) and malignancy 4.7% (6). Ten patients (7.8%) had both varices and ulcers. The mortality rate in this study was 17.2%. Variceal causes of bleeding, malignancy, sepsis, hepatic encephalopathy, and transfusion requirement are predictors of mortality. Variceal bleeding was the most common cause of UGIB, followed by peptic ulcer bleed. Overall mortality was 17.2% of cases; there was a significant association between the cause of bleeding and mortality (10).

A cohort of 109 patients admitted with CLD to three tertiary teaching hospitals in Ethiopia, were prospectively followed from the time of admission to 30-days of hospital discharge. The study was conducted from April 1, 2018, to October 5, 2018. Kaplan-Maier curve was used to estimate survival and cox-regression analysis to identify predictors of mortality. Of the total, 39(35.8%) patients were HBsAg positive, and 12(11%) patients were anti-HCV positive. The 30-day mortality was 38(34.9%), and most of the deaths, 31(81.6%) occurred before hospital discharge. Hepatic encephalopathy at admission; being with unidentified risk factors/etiologies of CLD and total bilirubin level were independent predictors of in-hospital mortality. Patients with hepatic encephalopathy at admission had approximately 11 times increased risk of death as compared to patients without hepatic encephalopathy at admission. Similarly, the hazard of mortality was 5.8 times higher in those patients with unidentified risk factors/etiology as compared to others. The risk of dying also increased with an increase in bilirubin level(22).

Data were prospectively collected from the records of all patients who died within 72 h of ED presentation and analyzed using Pearson's Chi-square and Fisher's exact tests and higher mortality was more likely to be triaged as higher acuity. (23).

In summary *Helicobacter pylori* infection and non-steroidal anti-inflammatory drugs (NSAID) have been accepted as major causes of upper gastrointestinal (GI) ulcers and bleeding. Among patients taking low-dose aspirin, the prevalence of upper GI ulcers is 10-40% and aspirin increases the risk of upper GI bleeding up to 2-fold.

3. OBJECTIVES

3.1 General Objective

The general objective of this study is to assess the Pattern and Outcome of UGIB at the emergency department of St. Paul's hospital millennium medical college (SPHMMC), Addis Ababa, Ethiopia from April 01, 2022, to August 31, 2022.

3.2 Specific Objectives

- To identify the Pattern of UGIB presentation in the emergency department of St. Paul's hospital millennium medical college (SPHMMC), Addis Ababa, Ethiopia.
- To determine the outcome of a patient with UGIB presented to the emergency department of St. Paul's hospital millennium medical college (SPHMMC), Addis Ababa, Ethiopia.

4. METHODOLOGY

4.1 Study Area and Period

The study was conducted in the emergency department of St. Paul's hospital millennium medical college (SPHMMC), Addis Ababa, Ethiopia from April 01, 2022, to August 31, 2022.

St. Paul's millennium medical college was established through a decree of the Council of Ministers in 2010; although the medical school opened in 2007 the hospital was established in 1968 by the late Emperor Haile Selassie. It is governed by a board under the Federal Ministry of Health. The college-initiated Ethiopia's first integrated modular and hybrid problem-based curriculum for its undergraduate medical education and diversifying postgraduate programs. The college has more than 2800 clinical, academic and administrative, and supporting staff that provides medical specialty services to patients who are referred from all over the country. The inpatient capacity is more than 700 beds and an average of 1200 emergency and outpatient clients are seen daily in the hospital.

4.2 Study Design

An institutional-based cross-sectional study over 05 months was conducted by reviewing the charts of admissions made to St. Paul's hospital millennium medical college (SPHMMC), Emergency Department from April 01, 2022, through August 31, 2022.

4.3 Population

4.3.1 Source Population

All patients were admitted to St. Paul's hospital millennium medical college (SPHMMC), emergency department from April 01, 2022, through August 30, 2022.

4.3.2 Study Population

All patients present with Melena, Hematemesis, or both who are admitted to St. Paul's hospital millennium medical college (SPHMMC), emergency department and fulfill eligibility criteria.

4.4 Sample Size and Sampling Technique

4.4.1 Sample Size

All those medical records of patients admitted to St. Paul's hospital millennium medical college (SPHMMC), throughout five months from April 01, 2022, through August 31, 2022, that fulfill the inclusion criteria was the sample size. Since the prevalence of the problem in the study is not well known in our setting, the proportional allocation is taken as 50%(0.5) and a 95% confidence interval was used, with a 5% margin of error tolerated, the sample size was determined by using single population proportion formula. By adding 10% of the calculated sample size for a contingency that might happen due to lost charts or incomplete reports, the final sample size became 184, among these 169 were analyzed and 15 were excluded based exclusion criteria.

The minimal sample size will be calculated as follows;

$$n = \frac{(Z_{\alpha/2})^2 p (1-p)}{d^2}$$
$$n = \frac{(1.96)^2 0.5(1-0.5)}{(0.05)^2} = 384$$

Since the source population is < 10,000, a population correction formula was used to determine the adjusted min

$$n f = \frac{n}{1 + n/N}$$

Where n= initial sample size was 184

N= total number of patients admitted during the study period = 290

n f – minimum sample size

Thus n f = $\frac{n}{1 + n/N}$ = 184 = 184

$\frac{n}{1 + n/N}$ = $\frac{184}{1 + 184/290}$ = 202, by adding 10% drop out, the final sample size was = 202

4.5 Eligibility Criteria

4.5.1 Inclusion Criteria

- All patients were admitted to St. Paul's hospital millennium medical college (SPHMMC), an emergency department with the diagnosis of UGIB during the study period.

4.5.2 Exclusion Criteria

- Patient with the diagnosis of UGIB but has incomplete documentation.
- Those under 18 years of age.
- Lost medical charts

4.6 Study Variables

4.6.1 Dependent Variables

- ✓ The outcome of patients after UGIB and pattern of UGIB

4.6.2 Independent Variables

Age	MOF	Triage category	Child-Pugh score
Sex	GCS	GBS score	Recurrent UGIB
Comorbidity	Rockall Score	AIMS-65 scoring	
Drugs (NSAID, Warfarin....)			

4.7 Operational Definitions of Variables

- ❖ **Variceal Bleeding:** Bleeding originated from avarice secondary to liver diseases.
- ❖ **Non-Variceal Bleeding:** Bleeding that is not originated from the avarice.
- ❖ **Hematemesis:** vomiting of coffee ground substances (coffee ground vomits).
- ❖ **Melena:** black stools with a rotten odor.
- ❖ **Hematochezia:** red or maroon stools.
- ❖ **Jaundice:** yellowish discoloration of the eyes, nails, and tongues.
- ❖ **Clinical Rockall score:** a pre-endoscopic score used for assessment of severity and adverse effects in patients with UGIB (mild < 3, moderate 3-4, and severe >=5)
- ❖ **Re-bleeding;** is defined as a new episode of hematemesis or melena with a drop of Hemoglobin by 2g/dl during hospitalization.

- ❖ **Glasgow Blatchford score (GBS):** a screening tool to assess the likelihood that a person with acute upper gastrointestinal bleeding (UGIB) will need to have medical intervention such as a blood transfusion or endoscopic intervention (>3 need endoscopy)

4.8 Data Collection Tools and Procedures

4.8.1 Data Collection Process

Structured and standardized questionnaires were developed in the English language which is adopted from similar research and some modifications done during literature reviews. The questionnaire was tested for its validity. The data collectors were collected by emergency medicine and critical care residents and were collected during working time. The training was given to the residents for one day. Then necessary data were obtained by reviewing patients' charts during their stay in the ED.

4.8.2 Data Quality Control

Data were collected by residents who received training for a day and supervision was conducted by the principal investigator on daily basis throughout the data collection period. After the completion of data collection, each questionnaire was checked for completeness.

4.4.3 Data Analysis

After collection, data was cleared, coded, and entered into a computer by using Epi Info Version 3.5.3 and SPSS version 26.0 for analysis. Data analysis included descriptive statistics, including frequency, percentage, and mean. The crude and adjusted odds ratio was analyzed with a 95% confidence interval (CI). P-value <0.05 will be declared a statistically significant association.

4.9 Ethical Considerations

Ethical clearance and approval to conduct this research were obtained from St. Paul's hospital millennium medical college institutional research review board, Addis Ababa. To ensure confidentiality names and other personal identities were not used.

4.10 Dissemination of Results

The results of the study were reported to SPHMMC, Emergency medicine, and the critical care department and were also presented to the medical and/or scientific community at different national and international meetings.

5. RESULT

5.1 Socio-Demographic Profile of Study Participants

A total of 184 eligible UGIB patients' medical records were reviewed in this study, selection for this investigation by using a simple random sampling procedure among St. Paul's Hospital Millennium Medical College in the emergency department kept the case, with a response rate of 90%. Analysis was made based on the 184 complete questionnaires.

Of the total of 184 patients, 117 (63.6%) were males and 67 (36.4%) were females. The mean age of patients with GIB was 42 ± 12 . Most patients aged with UGIB are less than 45 years 152(82.6%). (Table 1)

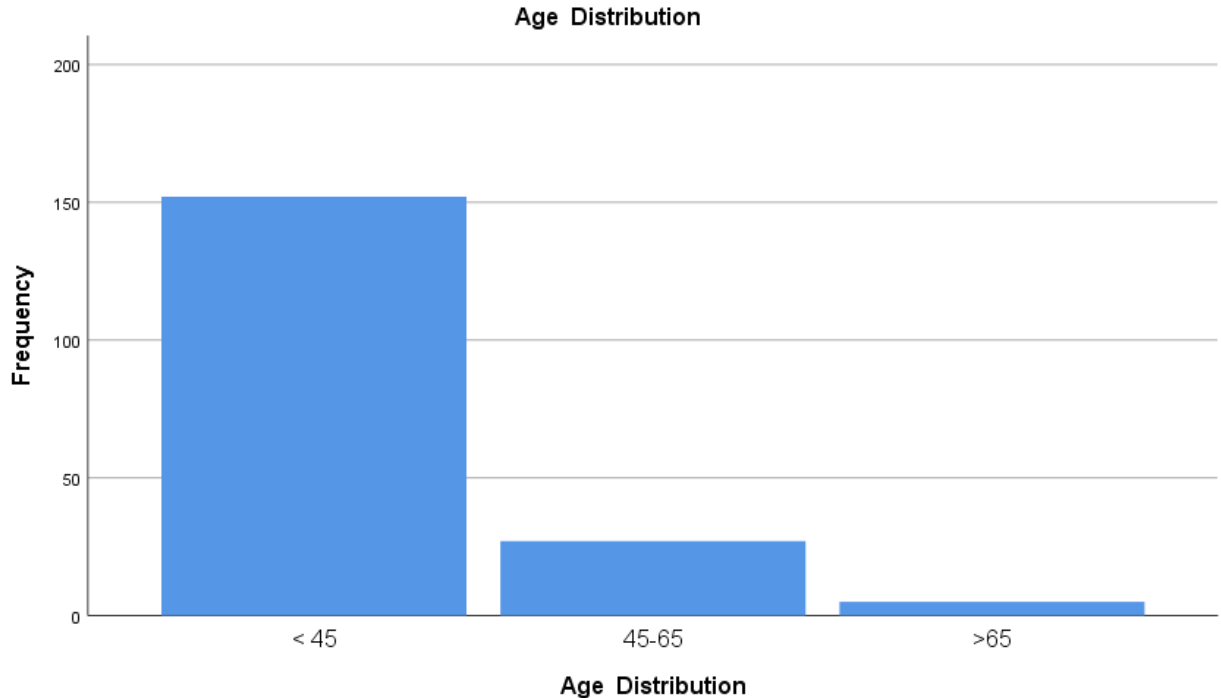


Figure 1: Age distribution of UGIB patients admitted to ED of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, from April 01, 2022, to August 31, 2022 (n=184)

Table 1:Socio-demographic characteristics and Clinical profile of Upper gastrointestinal bleeding (UGIB) in St. Paul's hospital emergency departments, Addis Ababa Ethiopia, from April 01, 2022, to August 31, 2022 (n=184)

No	Baseline characteristics		Frequency	Percentage
1	Gender	Male	117	63.6%
		Female	67	36.4%
2	Age	<45	152	82.6%
		45-65	27	14.7%
		>65	5	2.75
3	Presentation pattern	Hematemesis	91	49.5%
		Melena	2	1.1%
		Both	91	49.5%
4	Platelet count	1. >150,000	79	57.1%
		2. <150,000	105	42.9%
5	Hemoglobin	1. >7	139	75.5%
		2. <7	45	24.5

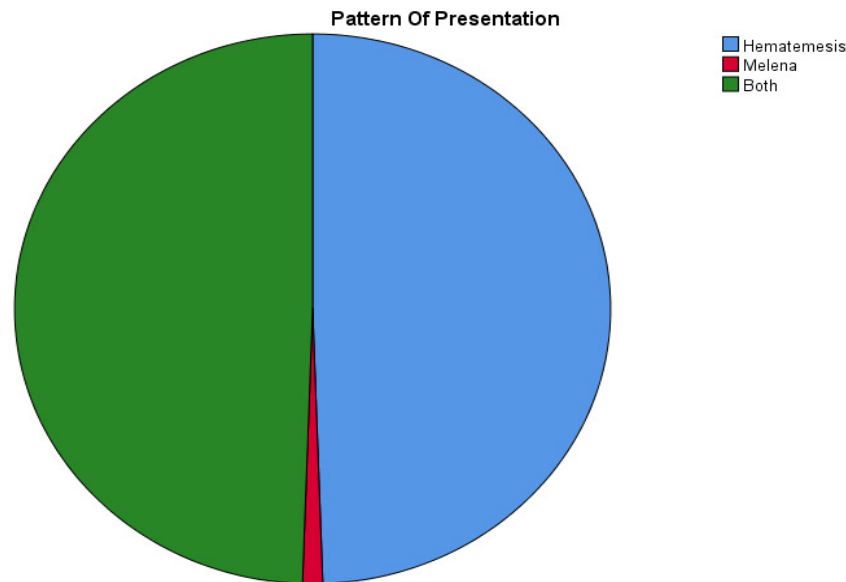


Figure 2:Shows the pattern of UGIB patients admitted to the ED of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, from April 01, 2022, to August 31, 2022 (n=184)

5.2. Clinical Profile of Study Participants

Regarding the clinical profile of the studied patients, most patients with UGIB presented with Hematemesis 91(49.5%), both Hematemesis and Melena also 91(49.5%), Melena only 2(1.1%). 124 (67.4%) had co-morbidity; Liver disease is the most common co-morbidity found in 86 patients (46.7%).

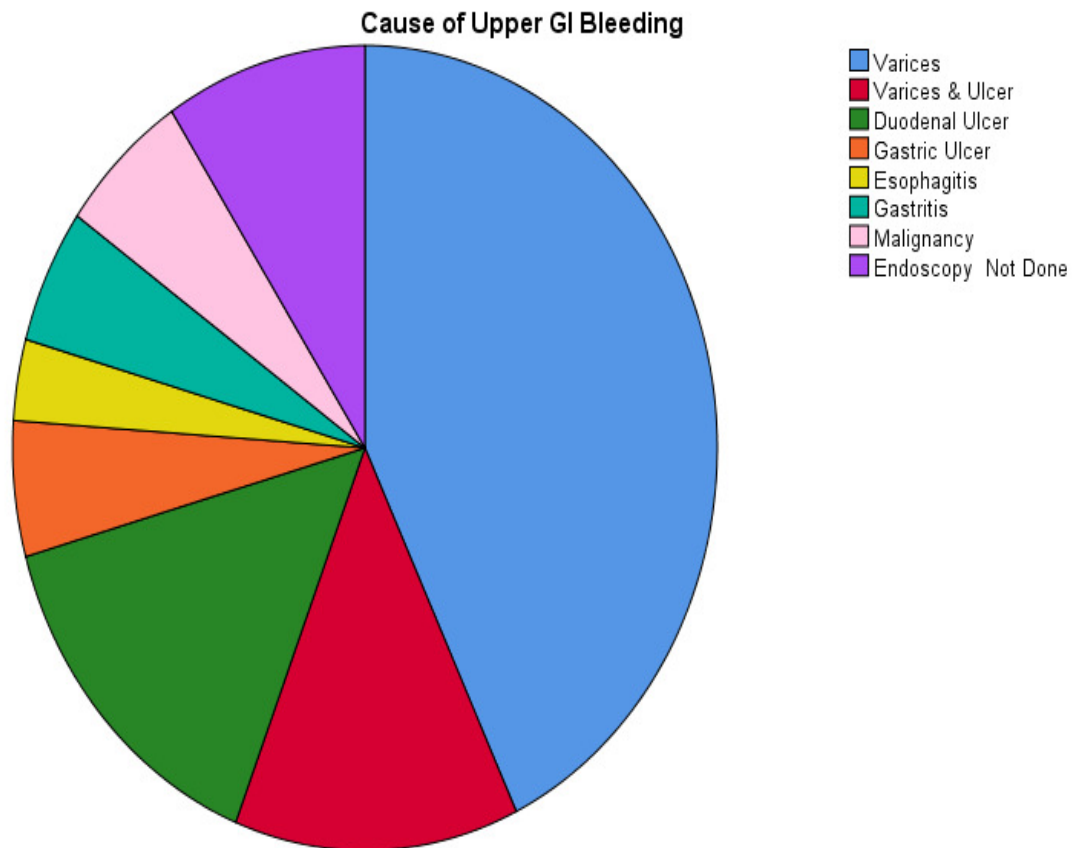


Figure 3:Shows the cause of UGIB patients admitted to the ED of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, from April 01, 2022, to August 31, 2022 (n=184).

5.3 Patient Management and Outcome

Among all patients with upper GI bleeding seen in the emergency department, 72(39.1%) of the patients were managed with fluid resuscitation, omeprazole, and plasil. 41 (22.3%) blood transfusion and antibiotics. 12 (63%) were discharged without organ failure, and 5(2.7%) died

and had complications during their hospital stay (renal failure, electrolyte abnormality, infection, and hepatic encephalopathy). The mortality rate was higher in patients with variceal causes of bleeding, Having comorbidity and higher AIMS-65 score.

In our study of upper gastrointestinal bleeding patients, liver disease/CLD/ was the most common co-morbidity identified, thus 134(72.8%) have comorbidity of patients. Co-morbidity is one of the important criteria for risk assessment after acute upper GI hemorrhage in the Rockall score. The majority of respondents' Rockall scores were >2 around 108 (58.7%) patients. 148(80.4%) The AIMS-65 score was less than 2 which means a low risk of further bleeding and death and 36(19.6%) greater than 2 this group is a high risk of bleeding and death. 149 patients (81%) with Glasgow Blatchford scores were < 3 so they are at very low risk of rebleeding or mortality and can be considered outpatient management, 35 patients (19%) were GBS > 3 predicting high-risk patients. In this study, varices were the common cause of UGIB which was seen in 79 patients (43%) followed by duodenal ulcers seen in 27(14.7%) of patients with UGIB Varices & ulcers accounted for 24(13%) patients.

In this study, endoscopy was done initially for 113(61.3%) and 100(54.3%) of the patient who had endoscopy finding the presence of varices, the larger size of varices, and red wale sign, 12(6.5%) were finding the presence of varices and size of varices. 71 (38.6%) of the patient's initial endoscopy was not done.. Initially grade of endoscopy finding 97(52.7%) are grade 3 EV, 8(4.3%) grade 1 EV and 5 (2.7%) grade 2 EV. repeated endoscopy findings show that 14(7.6%) patient risk bleeding and decreased sizes of varices after management.

INR trend of the patient ,109(59.2%) of patient INR values was <1.5 which has a GBS score of <3 , 86(46.7) and 56(30.4%) were >1.5 which has GBS >3 47(25.5%) and 19(10.3%) were not done because unknown reason.

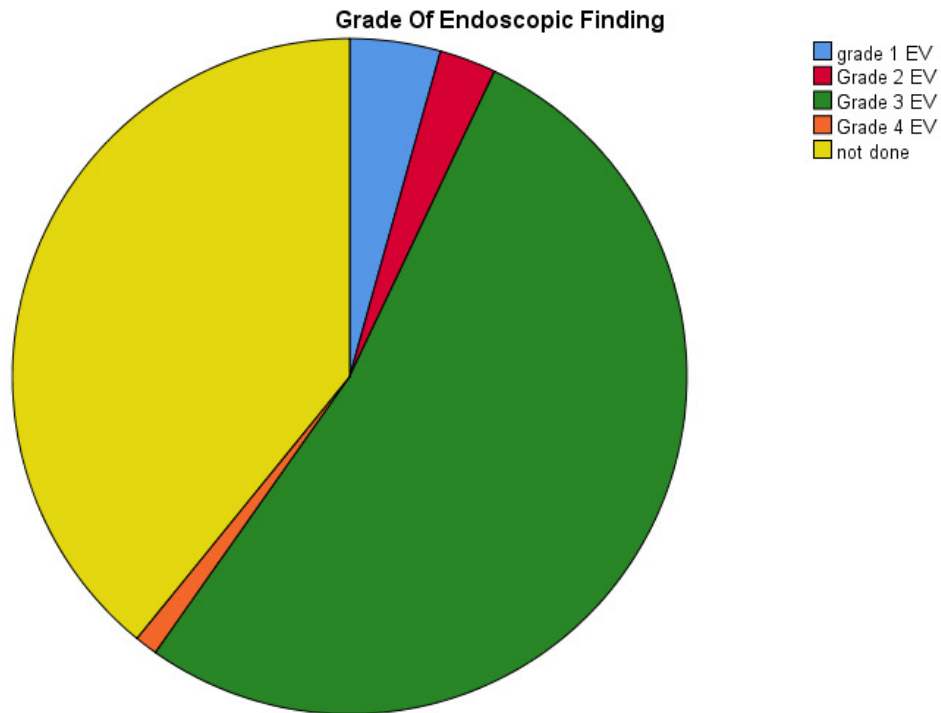


Figure-4: Shows the Grade of Varices of CLD patients admitted to ED of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, from April 01, 2022, to August 31, 2022 (n=184)

The final outcome of the patient 34(18.5%) was to the ward, 135 (73.4%) were discharged with good prognosis, 5(2.7%) to ICU, 1(0.5%) OR, 5(2.7%) Died in the Emergency department and 3(0.3%) left against medical service.

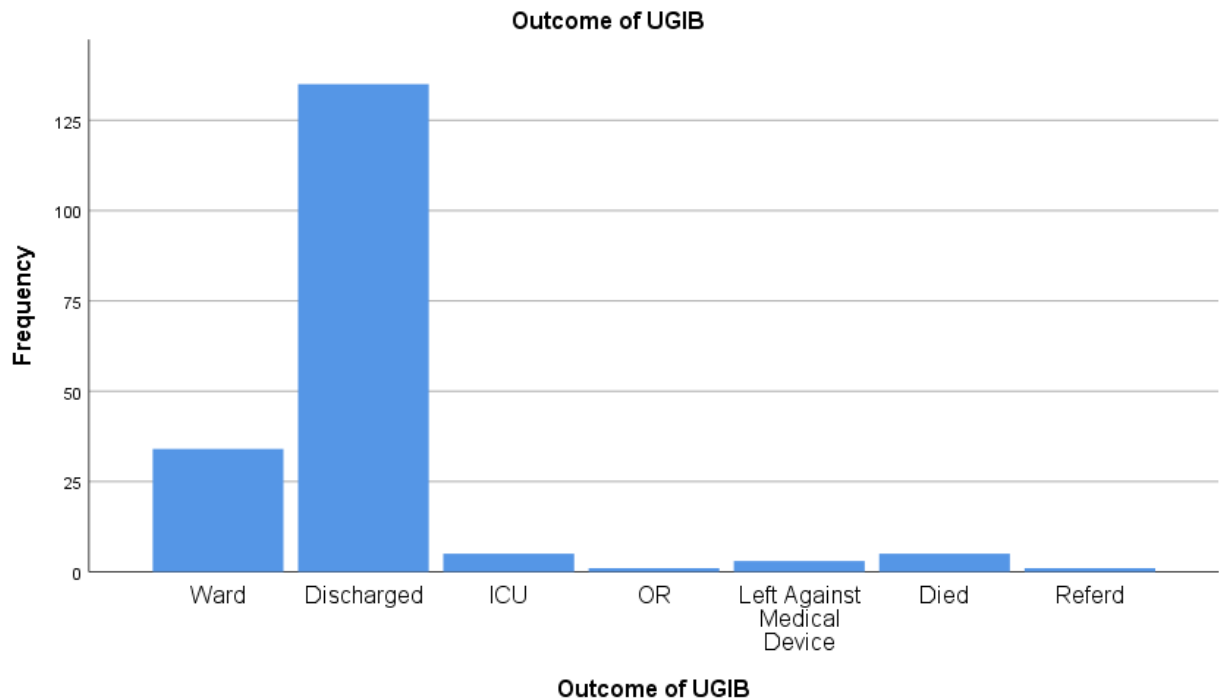


Figure 5:Shows the Outcome of UGIB patients admitted to the ED of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, from April 01, 2022, to August 31, 2022 (n=184)

5.4 Factors Associated with Mortality

In this study, twenty-one variables, namely sex, age category, presence of comorbidity, severity based on score (GBS score, Rockall score, AIMS65 score), grade of varices, triage category, baseline hemoglobin, platelet counting result, transfusion given, Complication develop in hospital stay, were included in the regression model. To determine the factors associated with mortality while controlling possible confounders, independent variables that yielded a p-value of ≤ 0.05 in binary logistic regression were exported to a multiple regression model to compute an adjusted odds ratio to quantify the strength of association with the dependent variable. Hence, sixteen variables variables, that is: age category, grade of varices, presence of comorbidity, severity based on score (GBS score, Rockall score, AIMS65 score), triage category, baseline hemoglobin, platelet counting result, transfusion is given, Complication development in hospital

stay was observed in the bivariable regression analysis to be associated with death. After running a multivariable logistic analysis, the only variables that showed statistically significant association with mortality were the presence of comorbidity, disease severity, grade of varices, and AIMS-65 score (Table 3).

In particular, this study showed that when compared to those who had a disease classification of severity with an AIMS-65 score of more than 2 were high risk and more likely to die [AOR(95%CI) = 0.067(0.007,0.652)] Similarly, about those with no documented comorbidity, patients who were diagnosed to have a certain comorbid medical condition had higher odds of death [AOR(95%CI) = 1.409(1.038,1.914)]. Furthermore, the odds of mortality were 0.253 times as much among patients with grade 3 and 4 varices at initial endoscopy as compared to those whose grade 1 and 2 varices [AOR(95%CI) = 0.253 (0.073,0.88)].

Table 2: Factors associated with mortality UGIB patients admitted to ED of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, from April 01, 2022, to August 31, 2022 (n=184)

Variable	Death		COR(95%CI)	AOR(95%CI)
	Yes	Percent		
AIMS-65 score				
2	148	80.4	1	1
>2	36	19.6	0.151 (0.024, .938)	0.067(0.007,0.652)***
Comorbidity				
No	50	27.2	1	1
Yes	134	72.8	1.438 (1.069, 1.935)	1.409(1.038,1.914))**
Grade of varices				
1&2	13	11.6	0.842 (0.63, 1.125)	0.253 (0.073,0.88))**
3&4	99	88.4	1	1

Only variables with p-value <0.25 in Multivariate logistic regression are shown here

*P value < 0.05; **P value < 0.01; *** P value < 0.001

6. DISCUSSION

There is a paucity of literature on pattern, cause and outcome of upper gastrointestinal bleeding (UGIB) at the emergency department of St.Paul's hospital millennium medical college (SPHMMC). Findings from this study may therefore be regarded as a window that provides a preview into the current situation of upper gastrointestinal bleeding (UGIB) and its outcome in the study area. In our study, 63.6% of upper GI bleeding patients were male. A similar male predominance of UGIB patients was also reported in UK, India and Gabon (74%) (7,25,37). This is well explained by the higher prevalence of viral hepatitis and schistosomiasis in males because gender-specific behavioral patterns and occupational activities may expose males more often to viral hepatitis and schistosomiasis (10,11,34).

The majority of the patients with upper GI bleeding in our study were in the age of less than 45 years. This is consistent with other studies in Aleppo University Hospital and Pakistan, Tanzania with a median age of 39 years (9, 12,36). Another study intended to analyze the disease burden in young adults of Ternate and its implication as an input in hepatitis B management, especially in communities that experience difficulties in accessing health facilities—both because of their relative isolation and lower socioeconomic condition. Adolescents and young adults who were born before the would remain susceptible to HBV infection (35), however, it is lower than the age reported in the developed world, although UGIB has declined in incidence worldwide, it continues to be a major public health concern. Major risk factors for UGIB, such as NSAIDs and H pylori, from a worldwide perspective, continue to be major contributors to this persisting problem and could just reflect generally higher life expectancy in the west, demographic variations and difference in etiology of UGIB, (5,26)

The most common presenting clinical feature in this study was Hematemesis (49.1%) followed by both hematemesis and melena 49.1%, this clinical manifestation is consistent with prospective study done on clinical Presentation of cases with upper Gastro - Intestinal Bleeding in India (37,38)

A study done to describe the current epidemiology of acute upper gastrointestinal hemorrhage in 74 hospitals receiving emergency admissions in four health regions in the United Kingdom showed that a majority incidence rises from 23 in those aged under 30 to 485 in those aged over 75. At all ages incidence in men was more than double that in women(30) In comparison to the above study majority of the acute upper gastrointestinal hemorrhage patient in this study were male predominance with twice that of females(37,42)

In another study in a San Diego health maintenance United state rate of acute upper gastrointestinal hemorrhage increased with age in males and females more than 30-fold between the 3rd and 9th decades of life and increased markedly with age, and was twice as high in males as in females 63.6% of the patient in this study were males most of the patient's ages with UGIB less than 45 years 82.6% this discrepancy explained by elderly in the US were more often nonsteroidal anti-inflammatory drug (NSAID)-users (31,38)

In this study, varices were the common cause of UGIB which was seen in 79 patients (43%) followed by duodenal ulcers seen in 27(14.7%) of patients with UGIB Varices & ulcers accounted for 24(13%) patients (7, 10,38). Similarly, article in Chinese, the first etiology of UGIB was peptic ulcer bleeding, accounting for 65.2%, duodenal ulcer at 47.8%, gastric ulcer at 8.3%, stomal ulcer at 2.3%, compound ulcer 6.8 at %, the second was cancer bleeding 7.0%, and the third was esophageal and gastric variceal bleeding 6.4%, and possible explanations can be enumerated as hepatitis B virus (HBV) infection has shown an intermediate or high endemicity level in low-income countries over the last five decades. (14,33).

In a prospective study, peptic ulcer disease is considered the cause of upper-GI bleeding in 50% of cases (15). This discrepancy may be because of the high prevalence of chronic liver disease as a result of the endemic nature of hepatitis B infection and Schistosomiasis in Ethiopia and other African countries, and lower coverage of national endoscopic service (15).

In a study done in Hong to prospective validation study to asses Comparing the Blatchford and pre-endoscopic Rockall scores in predicting the need for endoscopic therapy in patients with upper GI hemorrhage was conducted at a large tertiary hospital 27.3% needed initial therapeutic endoscopy (27) which is higher than our study which is 5.9% despite earlier endoscopy recommended within 24 hours. French prospective multicenter study also shows the endoscopy performance were 96 % of patients this discrepancy well explained by limited endoscopy availability requires that providers in low-resource environments make informed patient triage decisions for intervention, (28,41).

Aretrospective study which included all endoscopy records of the department of Gastroenterology shows esophageal varices were found in 65% cases, and this were comparable with this study 52.7% had grade 3 EV dominance(39,40)

In another study done in Latin America patients with upper gi bleeding with cirrhosis of the liver had hospital mortality increases significantly, ranging from 44 to 74%, in comparison to this study overall mortality had an association with co-morbidity most common found was Liver disease 46.7%(32)

In another study done in the United States regarding the in-hospital mortality rate for upper GI hemorrhage decreased over 2 decades in the United States: a nationwide analysis of studies conducted in non-variceal UGIH mortality rate decreased from 4.5% in 1989 to 2.1% in 2009. The non-variceal UGIH incidence declined from 108 to 78 cases/100,000 persons in 1994 and 2009, respectively, In-hospital upper endoscopy and endoscopy therapy rates increased from 70% and 10% in 1989 to 85% and 27% in 2009, respectively where early endoscopy can be done for every bleeding patient and advanced endoscopic interventions are available and it is known that early intensive resuscitation, whereas in this study the proportion upper GI bleeding patients who died within one month in our study was 2.7% and we found on multivariate analysis mortality associated with comorbidity, the highest risk score of AIMS-65 and grade of varices (29).

7. CONCLUSIONS

In this study most patients with UGIB presented with Hematemesis 49.5% or both Hematemesis and Melena 67.4% had co-morbidity; Liver disease is the most common co-morbidity found in 46.7%. In this study also varices were the common cause of UGIB which was seen in 79 patients (43%) followed by duodenal ulcers seen in 27(14.7%) of patients with UGIB. Varices & ulcers accounted for 24(13%) patients and overall mortality was 2.7%, this mortality is associated with comorbidity, the highest risk score of AIMS-65, and grade of varices.

8. RECOMMENDATIONS

Upper gastrointestinal bleeding should be suspected in patients presenting with Melena or hematemesis and in hemodynamically unstable patients presenting with hematochezia. Based on the finding the following recommendation will be forwarded to the concerned bodies.

- We recommend this study be continued to a multicenter prospective study with a large sample size including survival analysis to know the exact epidemiology and outcome analysis.
- We also recommend practitioners calculate the scoring of UGIB which predict mortality in routine practice which might help for future research
- More number of diagnostic and interventional endoscopies need to be done seeing how variceal bleeding is the commonest cause of UGIB

9. STRENGTHS AND LIMITATIONS OF THE STUDY

9.1 Strength

The sample size procedure and methods of analysis used were suitable for the study and considered one of the study's strengths.

9.2 Limitation

- As this study was retrospective, outcome of patients who were transferred out and who left against medical advice is unknown.
- being single center hospital-based study, the findings are not generalizable to the general population

REFERENCES

- 1.Khamaysi I, Gralnek IM. Acute upper gastrointestinal bleeding (UGIB) - initial evaluation and management. Best practice & research Clinical gastroenterology. 2013;27(5):633-8.
- 2.Wilkins T, Wheeler B, Carpenter M. Upper gastrointestinal bleeding in adults: evaluation and management. American family physician. 2020;101(5):294-300.
- 3.Yamagata M, Hiraishi H. [Prevalence and incidence of NSAID-induced gastrointestinal ulcers and bleeding]. Nihon rinsho Japanese journal of clinical medicine. 2007;65(10):1749-53.
- 4.van Leerdam ME. Epidemiology of acute upper gastrointestinal bleeding. Best practice & research Clinical gastroenterology. 2008;22(2):209-24.
- 5.Blatchford O, Murray WR, Blatchford M. A risk score to predict need for treatment for upper-gastrointestinal haemorrhage. Lancet. 2000;356(9238):1318-21.
- 6.Kamboj AK, Hoversten P, Leggett CL. Upper Gastrointestinal Bleeding: Etiologies and Management. Mayo Clinic proceedings. 2019;94(4):697-703.
- 7.Oakland K. Changing epidemiology and etiology of upper and lower gastrointestinal bleeding. Best practice & research Clinical gastroenterology. 2019;42-43:101610.
- 8.Chandra S. AIMS65 score predicts short-term mortality but not the need for intervention in acute upper GI bleeding. Gastrointestinal endoscopy. 2013;78(2):381-2.
- 9.Aljarad Z, Mobayed BB. The mortality rate among patients with acute upper GI bleeding (with/without EGD) at Aleppo University Hospital: A retrospective study. Annals of medicine and surgery. 2021;71:102958.
- 10.Mengistie YC. Dr. The pattern and outcome of upper gastrointestinal bleeding at St. Paul's Millenium Medical College, Addis Ababa, Ethiopia. Ethiopian Medical Journal. 2020;58(04).
- 11.Asrat D, Nilsson I, Mengistu Y, Ashenafi S, Ayenew K, Al-Soud WA, et al. Prevalence of Helicobacter pylori infection among adult dyspeptic patients in Ethiopia. Annals of tropical medicine and parasitology. 2004;98(2):181-9.
- 12.Hussain MA, Durrani MA, Chaudry JZ, Iqbal S. ETIOLOGICAL PATTERN AND OUTCOME OF NON-VARICEAL UPPER GI BLEEDING. Gomal Journal of Medical Sciences. 2016;14(1).
- 13.Straube S, Tramèr MR, Moore RA, Derry S, McQuay HJ. Mortality with upper gastrointestinal bleeding and perforation: effects of time and NSAID use. BMC gastroenterology. 2009;9(1):1-7.

14. Wang J, Cui Y, Wang J, Chen B, He Y, Chen M. [Clinical epidemiological characteristics and change trend of upper gastrointestinal bleeding over the past 15 years]. *Zhonghua wei chang wai ke za zhi* = Chinese journal of gastrointestinal surgery. 2017;20(4):425-31.
15. Boonpongmanee S, Fleischer DE, Pezzullo JC, Collier K, Mayoral W, Al-Kawas F, et al. The frequency of peptic ulcer as a cause of upper-GI bleeding is exaggerated. *Gastrointestinal endoscopy*. 2004;59(7):788-94.
16. Gurung R, Joshi G, Gautam N, Pant P, Pokhrel B, Kaju R, et al. Upper gastro-intestinal bleeding: aetiology and demographic profile based on endoscopic examination at Dhulikhel Hospital, Kathmandu University Hospital. *Kathmandu University medical journal*. 2010;8(2):208-11.
17. Daniş N, Tekin F, Akarca US, Ünal NG, Işık Erdoğan E, Akat K, et al. Changing patterns of upper gastrointestinal bleeding over 23 years in Turkey. *The Turkish journal of gastroenterology : the official journal of Turkish Society of Gastroenterology*. 2019;30(10):877-82.
18. Minakari M, Badihian S, Jalalpour P, Sebghatollahi V. Etiology and outcome in patients with upper gastrointestinal bleeding: Study on 4747 patients in the central region of Iran. *Journal of gastroenterology and hepatology*. 2017;32(4):789-96.
19. Gallaher J. The role of endoscopy after upper gastrointestinal bleeding in sub-Saharan Africa: A prospective observational cohort study. *Malawi Medical Journal*. 2020;32(3):139-45.
20. Chaabane NB, Youssef HB, Loghmeri H, Helara O, Melki W, Bdioui F, et al. Upper gastrointestinal bleeding in elderly patients in a Tunisian hospital: a retrospective study. *Arab Journal of Gastroenterology*. 2011;12(3):158-61.
21. Rajan SS, Sawe HR, Iyullu AJ, Kaale DA, Olambo NA, Mfinanga JA, et al. Profile and outcome of patients with upper gastrointestinal bleeding presenting to urban emergency departments of tertiary hospitals in Tanzania. *BMC gastroenterology*. 2019;19(1):1-9.
22. Terefe Tesfaye B, Gudina EK, Bosho DD, Mega TA. Short-term clinical outcomes of patients admitted with chronic liver disease to selected teaching hospitals in Ethiopia. *PloS one*. 2019;14(8):e0221806.
23. Hunchak C, Teklu S, Meshkat N, Meaney C, Ritchie LP. Patterns and predictors of early mortality among emergency department patients in Addis Ababa, Ethiopia. *BMC research notes*. 2015;8(1):1-9.

24. Rockall TA, Logan RF, Devlin HB, Northfield TC. Risk assessment after acute upper gastrointestinal haemorrhage. *Gut* 38: 316-321, 1996. [[PMC free article](#)] [[PubMed](#)] [[Google Scholar](#)]
25. Gaudong Mbethe GL, Mounguengui D, Ondounda M, Magne C, Bignoumbra R, Ntsoumou S, et al. [Epidemiology of upper gastrointestinal bleeding in Gabon]. *Medecine et sante tropicales*. 2014;24(4):441-3.
26. Tielleman T, Bujanda D, Cryer B. Epidemiology and Risk Factors for Upper Gastrointestinal Bleeding. *Gastrointestinal endoscopy clinics of North America*. 2015;25(3):415-28.
27. Pang SH, Ching JY, Lau JY, Sung JJ, Graham DY, Chan FK. Comparing the Blatchford and pre-endoscopic Rockall score in predicting the need for endoscopic therapy in patients with upper GI hemorrhage. *Gastrointestinal endoscopy*. 2010 Jun 1;71(7):1134-40.
28. Gallaher JR, Mulima G, Qureshi J, Shores CG, Charles AG. The role of endoscopy after upper gastrointestinal bleeding in sub-Saharan Africa: A prospective observational cohort study. *Malawi medical journal : the journal of Medical Association of Malawi*. 2020;32(3):139-45.
29. Abougergi MS, Travis AC, Saltzman JR. The in-hospital mortality rate for upper GI hemorrhage has decreased over 2 decades in the United States: a nationwide analysis. *Gastrointestinal endoscopy*. 2015 Apr 1;81(4):882-8.

- 30 Rockall TA, Logan RF, Devlin HB, et al. Incidence of and mortality from acute upper gastrointestinal haemorrhage in the United Kingdom. Steering committee and members of the National Audit of Acute Upper Gastrointestinal Haemorrhage. *BMJ* 1995;311(6999):222–6.
31. Longstreth GF. Epidemiology of hospitalization for acute upper gastrointestinal hemorrhage: a population-based study. *Am J Gastroenterol*. 1995 Feb;90(2):206-10. PMID: 7847286.
32. Buganza-Torio E, Montano-Loza AJ. Hospital mortality in cirrhotic patients at a tertiary care center in Latin America. *Revista de Gastroenterología de México (English Edition)*. 2017;82(3):201-2.
33. Zampino R, Boemio A, Sagnelli C, Alessio L, Adinolfi LE, Sagnelli E, Coppola N. Hepatitis B virus burden in developing countries. *World J Gastroenterol*. 2015 Nov 14;21(42):11941-53. doi: 10.3748/wjg.v21.i42.11941. PMID: 26576083; PMCID: PMC4641116
34. Averhoff FM, Moyer LA, Woodruff BA, Deladisma AM, Nunnery J, Alter MJ, Margolis HS. Occupational exposures and risk of hepatitis B virus infection among public safety workers. *J Occup Environ Med*. 2002 Jun;44(6):591-6. doi: 10.1097/00043764-200206000-00024. PMID: 12085488.
35. Ie SI, Turyadi, Sidarta E, Sadhewa A, Purnomo GA, Soedarmono YS, Pattihha MZ, Thedja MD, Harahap AR, Muljono DH. High Prevalence of Hepatitis B Virus Infection in Young Adults in Ternate, Eastern Indonesia. *Am J Trop Med Hyg*. 2015 Dec;93(6):1349-55. doi: 10.4269/ajtmh.15-0331. Epub 2015 Sep 21. PMID: 26392157; PMCID: PMC4674257.

36. Suba, M., Ayana, S. M., Mtabho, C. M., & Kibiki, G. S. (2010). The aetiology, management and clinical outcome of upper gastrointestinal bleeding among patients admitted at the kilimanjaro christian medical centre in Moshi, Tanzania. *Tanzania J Health Research*, 12(4). <https://doi.org/10.4314/thrb.v12i4.51073>.
37. Nukala K, Srinivasan VR, Sagar RV. Clinical Presentation of Cases with Upper Gastro - Intestinal Bleeding. *J Assoc Physicians India*. 2022 Apr;70(4):11-12. PMID: 35443490
38. Silva, P. De, & Kanagasingam, A. (2010). Aetiology and other features of a cohort of adult Sri Lankans presenting with upper gastrointestinal bleeding (UGIB) Aetiology and other features of a cohort of adult Sri Lankans presenting with upper gastrointestinal bleeding (UGIB). *J Ceylon Colle Phy*, 41, 57–60. <https://doi.org/10.4038/jccp.v41i2.3766>
39. Nahon, S., Latrive, J. P., Rosa, I., Nalet, B., Bour, B., Faroux, R., ... Raincy-, I. Le. (2012). Epidemiological and prognostic factors involved in upper gastrointestinal bleeding : results of a French prospective multicenter study. *Endoscopy*, 44(March 2005), 998–1006.
40. Mohammad S, Chandio B, Shaikh A, et al. (March 19, 2019) Endoscopic Findings in Patients Presenting with Upper Gastrointestinal Bleeding. *Cureus* 11(3): e4280. doi:10.7759/cureus.4280.
41. Stanley AJ, Laine L. Management of acute upper gastrointestinal bleeding. *BMJ*. 2019 Mar 25;364:l536. doi: 10.1136/bmj.l536. PMID: 30910853.

42 Rukewe A., Otegbayo J.A., Fatiregun A.; Clinical characteristics and outcome of patients with upper gastrointestinal bleeding at the emergency department of a tertiary hospital in Nigeria. *Annals of Ibadan Postgraduate Medicine*, Ibadan, Nigeria. ResearchGate, December 2015; 13:2:24-28.

ANNEX-I: QUESTIONNAIRE

Data collection checklist for pattern and outcome upper gastrointestinal bleeding in the emergency department of St. Paul's hospital millennium medical college (SPHMMC), Addis Ababa, Ethiopia: cross-sectional study MRN: _____

Part one: - Sociodemographic Characteristics

- 1 Age A. <45 B. 46 to 65 C. > 65
- 2 Sex A. Male B. Female

Part two: - Clinical presentation, a Risk factor of UGIB

4. Pattern of presentation A. Hematemesis B. Melena C. Both

5. Comorbidity Illness

- | | |
|---------------------------------|-------------------|
| A. DM. | G. RVI |
| B. CKD. | F. Other(specify) |
| C. Cardiac illness | |
| D. Hematologic Malignancy | |
| E. Two or more comorbidities | |
| F. Malignancy | |

6. Initial endoscopy finding

- A. Presence of varices
- B. Size of varices
- C. Red wale sign

7. Repeat endoscopy findings

- A. Size difference from initial scope
- B. Risk of bleeding from initial scope

8. Does the pt. have a risk factor?

- A. Pylori infection B. NSAID C. Older age (age>40) D. Alcohol E Liver Disease F. Renal disease G. Other (specify.)

9. If the answer to question number 6 is liver disease, what is the cause?

A. Viral disease B. Alcohol C. Schistosomiasis D. Other

10. Patient Hgb? A. <7 B. >7

11. Patient platelet count? A. <150,000 B. >150,000

12. Does the patient Smoke? A. Yes B. No

13. Triage category A. Red B. Orange C. Yellow D. Green

14. Treatments are given in ED; more than one option is possible;

A. Transfusion C. Antibiotics E. Vasoactive agent F Intubation Variceal ligation

B. Fluid resuscitation D. Omeprazole F Others, specify_____

15. Glasgow Blatchford score (Higher BUN, Hgb<12, SBP<100, comorbidity, syncope, HR>100)

A. <3 B. >3

16. How much was the INR trend for patients on warfarin?

A.<1.5 B.>1.5

Part three: - Complications related to UGIB

17. Complications during hospital Stay;

A. Infection

C. Electrolyte abnormality

B. Renal Failure

D. Seizure

E. Other, specify_____

18. Where was the disposition?

A. Ward

B. Discharged

C. ICU

D. OR

E. Left against medical advice

F. Died

19. Rockall score (age>60,Bp<100,Comorbidity,Upper GI malignancy,Visible vessel)

A.≤2

B.>2

20. AIMS- 65 score (Low Albumin, INR>1.5, Mentation changes<90, Age>65)

A.≤2

B.>2

ANNEX II: PATIENT'S/CAREGIVERS' CONSENT FORM

DATE: -----

I have been well informed that the department of emergency medicine and critical care at St. Paul's hospital millennium medical college(SPHMMC), research on------. If I agree on participating in the study, I am aware that no harm shall come to me/ my patient. I have been also well informed about the voluntariness of participation and that I can withdraw from the study at any time. I was informed that my decision won't affect the care I am/my patient is entitled to receive.

I have been given enough time to think over the benefit of the study before I signed this informed consent. It is therefore with a full understanding of the situation that I give my written informed consent for my participation in the study.

Participant's name: ----- Signature-----

Consent taker's Name: ----- Signature-----

Witness: ----- signature: -----