

**ADDIS ABABA UNIVERSITY SCHOOL OF MEDICINE  
DEPARTMENT OF EMERGENCY MEDICINE**



**CLINICAL CHARACTERISTICS, RISK FACTORS AND  
OUTCOME OF PATIENTS WITH UPPER GASTROINTESTINAL  
BLEEDING IN THE ADULT EMERGENCY DEPARTMENT OF  
TIKUR ANBESSA SPECIALIZED HOSPITAL**

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# TABLE OF CONTENTS

Acknowledgement .....	i
Lists of Tables and Figures.....	iv
Acronyms and Abbreviations.....	v
Abstracts.....	vii
1. Introduction.....	1
1.1. Background.....	1
1.2. Statement of the Problem.....	2
1.3. Significance of the Study.....	3
2. Literature Review.....	4
2.1. Globally.....	4
2.2. African Setting.....	7
2.3. Ethiopian Situation.....	8
3. Objectives.....	10
3.1. General Objective.....	10
3.2. Specific Objectives.....	10
4. Methodology.....	11
4.1. Study Area.....	11
4.2. Study Design and Period.....	11
4.3. Population and Sampling.....	12
4.3.1. Source Population.....	12
4.3.2. Study Unit.....	13
4.4. Eligibility Criteria.....	13
4.4.1. Inclusion Criteria.....	13
4.4.2. Exclusion criteria.....	13
4.5. Sample Size Determination.....	13
4.6. Sampling Technique and Procedure.....	13
4.7. Variable of the Study.....	13
4.7.1. Dependent Variable.....	13
4.7.2. Independent Variables.....	13
4.8. Operational Terms and Definitions.....	13
4.9. Data Collection Technique and Procedure.....	14

4.9.1. Data Collection Tools .....	14
4.9.2. Data Collection Procedure .....	14
4.9.3. Data Quality Management.....	14
4.9.4. Data Analysis .....	14
4.10. Result Dissemination Plan .....	15
4.11. Ethical Consideration.....	15
5. Results.....	16
5.1.Socio-Demographic characterstics.....	16
5.2. Clinical presentations and Characteristics.....	16
5.3. Predisposing Factors.....	18
5.4. Causes of UGIB.....	19
5.5. Diagnostic Modalities.....	19
5.5.1. Laboratory and Sonographic Findings.....	19
5.5.2. Endoscopic Findings and Procedures Performed.....	21
5.5.2.1. Diagnostic Endoscopic Findings.....	21
5.5.2.2. Therapeutic Endoscopic Procedures.....	21
5.5.3. Emergency Room management and Disposition.....	22
5.5.4. Outcomes of the UGIB Patients.....	23
5.6. Statistical Analysis.....	24
7. Discussion.....	27
8. Limitations.....	34
9. Conclusions.....	35
10. Recomendations.....	36
11. References.....	37
12. Annex A: Check List .....	40

## LIST OF TABLES AND FIGURES

### List of Tables

Table-1: The presenting clinical symptoms of the participants at TASH-ED, Addis Ababa, Ethiopia, January-December, 2019.....	18
Table-2: Participants who re-bled with their outcomes TASH-ED, Addis Ababa, Ethiopia, January-December, 2019.....	19
Table-3: Investigations done with their frequency, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January-December, 2019.....	20
Table-4: Diagnostic Endoscopic findings with their proportions, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January-December, 2019.....	22
Table-5: The Crude Odds Ratios (CORs) and P-values of the independent variables, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January-December 2019.....	25
Table-6: The Adjusted Odds Ratios (AORs) and P-values, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January-December 2019.....	27

### Lists of Figures

Figure 1: The Conceptual Framework for the Adult UGIB patients at TASH emergency, 2020...	10
Figure-2: Causes of UGIB in our study, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January-December, 2019.....	17
Figure-3: Total causes of death in our study participants, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January-December, 2019.....	19

## ACRONYMS AND ABBREVIATIONS

AAU	Addis Ababa University
Anti-HCV	Antibody against Hepatitis C Virus
AUC	Area Under the Curve
CBC	Complete Blood Count
CI	Confidence Interval
ED	Emergency Department
ESR	Erythrocyte Sedimentation Rate
GBS	Glasgow-Blatchford Bleeding Score
GI	Gastrointestinal
gm/dl	gram / deciliter
HBsAg	Hepatitis B Virus Surface Antigen
Hgb	Hemoglobin
IV	Intravenous
JAG	the Joint Advisory Group for Gastrointestinal Endoscopy
LFTs	Liver function Tests
LGIB	Lower Gastrointestinal Bleeding
M:F	Male to Female ratio
MICU	Medical Intensive Care Unit
NPO	Nil per Os
NSAID	Nonsteroidal Anti-inflammatory Drug
NVUGIB	Non-Variceal Upper Gastrointestinal Bleeding
OGD	Oesophagogastroduodenoscopy
OR	Operation Room
PO	Per Os
PPI	Proton Pump Inhibitor
PR	Pulse Rate
PUD	Peptic Ulcer Disease
RR	Relative Risk
RS	Rockall Score
TASH	Tikur Anbessa Specialized Hospital
TIPSS	Transjugular Intrahepatic Portosystemic Shunt
UGI	Upper Gastrointestinal
UGIB	Upper Gastrointestinal Bleeding
WHO	World Health Organization

## ABSTRACT

**Background:** Upper Gastrointestinal Bleeding (UGIB) is a common and life-threatening medical emergency requiring careful evaluation from the very first episode and arrival as an attempt to predict and reduce the risk of re-bleeding or death. It has an annual incidence of approximately 67 to 150 per 100,000 with an estimated mortality rates ranging between 6% and 15%, with higher rates of death for those in an unstable hemodynamic state.

**Objective:** The aim of our study was to determine the clinical characteristics and outcome of UGIB patients in TASH adult emergency rooms from January 1-December 31, 2019, Addis Ababa, Ethiopia.

**Methods:** We performed descriptive retrospective cross-sectional study on 132 adult UGIB patients in TASH from January 1-December 31, 2019. All the UGIB patients seen in the emergency department during the study period were included. A prepared questionnaire was used to collect data on sociodemographic and medical history of the participants. We analyzed the collected data and displayed our results using SPSS and Microsoft Excel. Frequency distribution, 95% confidence Interval, regression and cross tabulation were used for statistical analysis.

**Results** From 132 patients, 97 (73.5%) of them were male (the M:F ratio was 2.8:1). The mean age was  $35.99 \pm 1.324$  years. The most common presenting complaints were hematemesis (92.4%) and fatigue (68.2%) followed by melena (67.4%) and loss of appetite (45.5%). Unlike the elderly, participants (>60 years) of our study, the younger participants ( $\leq 60$  years) were more likely to present with hematemesis (92.6% vs 7.4%) and melena (93.3% vs 6.7%). Comorbidities were present in 31.8% of patients. Being a male UGIB patient (p-value= 0.017) was the only significant factor causing the UGIB patients to die in our study participants. A patient transfused with PLT (0.008) and patients given antibiotics (p-value = 0.021) were the protective factors in our study.

**Conclusions:** The most common causes of UGIB were esophageal varices and PUD. Even though endoscopic interventions were mostly successful, diagnostic endoscopy was done for 69 patients and only 30(22.7%) of the patients had therapeutic endoscopy. Efforts are still needed to increase the number of patients receiving endoscopic evaluation and treatment. Mortality was higher in patients <60 years old, with the leading cause of death being hemorrhagic shock. Hence further, studies are needed to see the effects of early scoring, diagnosis and management of patients with

hemorrhagic shock and use of appropriate transfusions and prophylaxis antibiotics on outcome of patients with UGIB in the emergency department.

**Key words:** UGIB, Variceal, Non-Variceal, TASH, Emergency, Ethiopia

## 1. INTRODUCTION

### 1.1. Background

Acute gastrointestinal (GI) bleeding is a common presentation to the emergency department (ED). GI bleeding is categorized into Upper Gastrointestinal Bleeding (UGIB) and Lower Gastrointestinal Bleeding (LGIB) according to the bleeding source area which is separated anatomically above and below the ligament of Treitz (also called suspensory ligament of the duodenum, respectively [1]. Accounting for 75% of all acute GI bleeding cases, UGIB is considered as a major complication of most digestive diseases of the upper GI tract [1,2]. UGIB can be categorized as variceal and non-variceal causes, as there are important differences in the management strategies [3-5]. The non-variceal UGIB is responsible for the majority of the cases (50-70%) [6,7].

UGIB is a common and life-threatening medical emergency requiring careful evaluation from the very first episode and arrival as an attempt to predict and reduce the risk of re-bleeding or death [8]. It is also one of the commonest causes of hospital admission and a leading cause of death in the ED. It has an annual incidence of approximately 67 to 150 per 100,000 with an estimated mortality rates ranging between 6% and 15%, with higher rates of death for those in an unstable hemodynamic state [1,7,8]. The incidence has been decreasing in recent years but without that much significant change in its mortality and re-bleeding rates after treatment [9].

UGIB is caused by different possible etiologies: including Peptic Ulcer Disease (PUD), gastroduodenal erosions, esophagitis, esophageal and gastric varices, Mallory-Weiss tears, foreign body ingestion, Dieulafoy's lesion, angiodysplasia and malignancies [1,3,4]. PUD remains the most common cause of UGIB accounting for 40-55% of all cases. It is associated with Nonsteroidal Anti-Inflammatory Drug (NSAID) use, Helicobacter pylori infection, and stress-related mucosal disease [1,5,10]. The most significant risk factor for variceal bleeding is the presence of cirrhosis and in a such setting, it is important to assume the presence of hepatitis [1].

The burden UGIB presents can be compounded in resource poor settings, where patients often pay out-of-pocket for care, thereby hampering appropriate early intervention to determine the location and severity of bleeding [11]. It occurs more commonly in men and older subjects. It is estimated that 35-45% of all patients presenting with upper GI bleed are over the age of 60 [12]. As pain sensitivity decreases with increasing age, delay in its diagnosis and development of complications such as perforation and hemorrhage occur in elderly patients [12]. The increasing use of low dose aspirin and NSAIDs may affect the incidence, age of presentation, site of bleeding and outcome of UGIB [11]. Age and comorbidities are the most important factors for high mortality in patients with UGIB. GI bleeding in elderly is associated with increased mortality and morbidity than in young, which is in part attributable to increased comorbid illness and greater use of medication such as aspirin, NSAIDs, warfarin [12]. The profile of UGIB varies in different age groups. While

duodenal ulcer bleeding is more common in younger age group, bleeding from gastric ulcer or esophageal varices are commonly seen in middle age group and from gastro-esophageal malignancy in elderly [12-14].

Patients with UGIB may present with wide spectrums of clinical features. Even such patients may present asymptotically or in a more subacute phase, with history of *dyspepsia* and occult intestinal bleeding manifest as a *positive fecal occult blood test* result or as *iron deficiency anemia*. At the end, they may present with weakness, dizziness, syncope associated with *hematemesis* (coffee ground vomitus) and *melena* (black stools with a rotten odor) [15]. A meta-analysis documented the incidence of symptoms and signs of acute UGIB and based on their findings, 40-50% of patients present with *hematemesis*, 70-80% with *melena*, 15-20% with *hematochezia* (red or maroon stools) and with either *hematochezia* or *melena* in 90-98% of cases. They may also present in the form of acute gastritis and esophagitis symptoms, such as 41% of these patients present with epigastric pain, 21% with heartburn, 18% with *dyspepsia*, 10% with diffuse abdominal pain and 5% with *dysphagia* [15]. Moreover, patients may also present with other nonspecific symptoms like *presyncope* and *syncope* in 43.2% and 14.4% of cases, respectively [15]. In those who have *variceal* bleeding may typically present with *jaundice* in 5.2% of cases with history of chronic alcohol use or history diagnosis with *chronic viral hepatitis* as well [15].

Upper Gastrointestinal (UGI) endoscopy was the method of choice in the diagnostic approach of UGIB during the past few decades. However, despite the development of new therapeutic weapons such as the *proton pump inhibitors*, *endoscopic* interventions and *surgical* approaches, the overall clinical outcome of the patients has not changed significantly [2]. In developing countries like Ethiopia, where other forms of investigation modalities are limited, UGI endoscopy remains the investigation of choice in making diagnosis of UGI pathologies like UGIB. Hence, there is a dearth of health data depicting the clinical characteristics of the condition in African countries [11,16].

The aim of our study is to determine the clinical characteristics, risk factors and outcome of UGIB in Tikur Anbessa Specialized Hospital (TASH) adult emergency ,thereby to be used by the responsible stakeholders for addressing the problems and for their future plan in decreasing the burden.

## **1.2. Statement of the Problem**

UGIB represents a substantial clinical and economic burden, with reported incidence ranging from 67 to 150 cases per 100 000 adults per year, and mortality generally ranging from 6% to 15 %. The incidence has been decreasing in recent years, but without significant change in mortality or re-bleeding after treatment [1,3,8,9].

According to the World Health Organization (WHO) Report highlighted the accelerated aging of the global population, as the number of elderly people will double in the next few decades [17]. UGIB affects a substantial number of elderly people and is a potentially life-threatening clinical event. Age has been considered as a significant prognostic factor for adverse outcomes, including re-bleeding and mortality, from acute UGIB in numerous clinical risk models [12,18]. However, it is unclear if the role of age in UGIB is due to a more severe disease or differences in the treatment received. Generally, the elderly has often been treated less aggressively than younger patients

because of an assumption of increased risk of any therapeutic procedures, secondary to comorbid conditions [18]. Mortality is linked to age and the presence of comorbidity. In those under 60-year mortality was 8%, whereas in those over 60 years is around 13% [3,19].

In Ethiopia, there are very limited previous studies done on patients with UGIB be it at emergency or inpatient levels. A study was done in the North-West part of the country which was an eight-year analysis on UGI endoscopy findings at Gondar University Hospital. The study reported that from a total of 1,310 patients who had endoscopic examination, from April 30, 2005 to May 1, 2013; 8.5% (111) of the patients presented with prior UGIB as a main indication for the procedure [16].

### **1.3. Significance of the Study**

The epidemiological spectrum of patients with UGIB in terms of magnitude, etiology, gender distribution and severity may vary in different age distributions and geographical regions. There is very limited study done on UGIB patients in our country despite UGIB being one of the most common emergency room presentations. There is a paucity of data on the profile and outcome of patients who present with UGIB to EDs, especially within limited resource settings where emergency medicine is a new specialty. Since TASH is the main referral hospital of the country which receives patients from different regions, the findings of this study will give insight on patients from different backgrounds. This study will try to identify the clinical characters and outcome related to our patients so that we can have a better understanding of our clinical practice and possibly highlight areas of improvement in our management of UGIB.

Furthermore, the findings of this study might raise further research questions and possibly be used by responsible stakeholders.

## 2. LITERATURE REVIEW

### 2.1. Globally

A retrospective study of endoscopic records review was done by Zaltman C., et al., in Rio de Janeiro city of Brazil and published on *Arq Gastroenterol* on June month of 2002. On their study, most patients were male 68.7%, with a mean age of  $54.5 \pm 17.5$  years. The study revealed that a bleeding site could be detected in 75.6% of the patients. The researchers have also tried to show that diagnostic accuracy was greater within the first 24 hours of the bleeding onset, and in the presence of *hematemesis*. Upon their investigation, PUD was the main cause of UGIB (35%) while the prevalence of *variceal* bleeding (20.45%) indicates a high rate of underlying liver disease. They have also tried to reveal the following findings on their study. Endoscopic treatment was performed in 23.86% of the patients. Permanent *hemostasis* was achieved in 86% of the patients at the first endoscopic intervention, and in 62.5% of the patients after re-bleeding. Emergency surgery was seldom necessary. The average number of blood units was  $1.44 \pm 1.99$  per patient. The average length of hospital stay was  $7.71 \pm 12.2$  days. Re-bleeding was reported in 9.1% of the patients. The overall mortality rate of 15.34% was significantly correlated with previous liver disease [2].

A similar study was done in Bangkok city of Thailand by the researchers called Charatcharoenwittaya P. et al.; and published on *World J Gastroenterol*, on 28<sup>th</sup> of August 2011. They tried to review the medical records and an endoscopy database of 526 consecutive patients with overt UGIB admitted during 2007-2009. From the total, 235 patients aged  $\geq 65$  years constituted the elderly population (mean age of  $74.2 \pm 6.7$  years, 63% male). The study result showed that, as compared to young patients; the elderly patients were more likely to present with *melena* (53% vs 30%, respectively), have *comorbidities* (69% vs 54%, respectively), and receive *antiplatelet* agents (39% vs 10%, respectively). Interestingly, the result of their study revealed that *hemodynamic instability* was observed less in this group (49% vs 68%, respectively). Upon their investigation, PUD was the leading cause of UGIB in the elderly patients, followed by *varices* and *gastropathy*. They also identified the following findings upon their investigation. The elderly and young patients had a similar clinical course with regard to the utilization of *endoscopic therapy*, requirement for transfusion, duration of hospital stay, need for surgery [relative risk (RR), 0.31; 95% confidence interval (CI), 0.03-2.75; P = 0.26], re-bleeding (RR, 1.44; 95% CI, 0.92-2.25; P

= 0.11), and mortality (RR, 1.10; 95% CI, 0.57-2.11; P = 0.77). In Cox's regression analysis, hemodynamic instability at presentation, background of liver cirrhosis or disseminated malignancy, transfusion requirement, and development of re-bleeding were significantly associated with 30-d mortality [18].

A study which was done in Cluj-Napoca city of Romania by Dicu D., et al.; and was published on the American Journal of Emergency Medicine in 2013. In their study, they tried to show the scoring systems to determine the outcome of UGIB. The study revealed that the re-bleeding and mortality rate were 40.2% (92 patients) and 18.7% (43 patients), respectively. On their analysis, for the purpose of prediction of mortality, full Rockall Score (RS) was superior to Glasgow-Blatchford Bleeding Score (GBS) (area under the curve [AUC], 0.825 vs 0.723; P =0.05) and similar to admission RS (AUC, 0.792). from their results, GBS had the highest accuracy in detecting patients who needed transfusion (AUC, 0.888) and was superior to both the admission RS and full RS (AUC, 0.693 and 0.750, respectively) (P b .0001). In predicting the need for intervention, the GBS was superior to both the admission RS and full RS (AUC, 0.868, 0.674, and 0.785, respectively) (P b .0001 and P = .04, respectively) [6].

Another study was done in Prishtina, Kosova by Telaku et al.; and published on the journal of Turk J Gastroenterol in 2014. Upon their investigation, there were 460 eligible cases with mean age 56.85+16.18 years, while male /female ratio was 2.71/1. From their results, the greatest occurrence of UGIB was at the age group of 60-69 years (27.1 %). They also identified that the most common clinical symptom was *melena* (62.6%) and comorbid diseases were present in 57 (6%) of the patients. The study results showed that the percentage of patients using *acetylsalicylic acid* and /or other NSAIDs was 43.7%, while 5.2% were using anticoagulants. PUDr was the main cause of bleeding (82.2%) and most of them were Forrest III (41.6%). Endoscopic treatment was performed in 90 patients; primary hemostasis was achieved in 96.7% while re-bleeding developed in 10% of these patients. The average length of hospital stay was 9.29+5.58 (1-35) days. Re-bleeding was reported in 4.1% of all patients while the overall mortality rate was 5.7% [3].

In Chandigarh of India, a similar study was done by Singh S.P., et al.; and published on Digestive Endoscopy for Gastroenterologist and Endoscopic Surgeon, DEN, on February 2017. For the sake of analysis, Data on 2,698 patients (median age 42 years) were collected from 254 GI centers. Majority of were male (82%), and male: female ratio was 4.6:1. From the study, the most common

presentation was *hematemesis* followed by *melena*. They also tried to reveal that 44% had underlying chronic liver disease and 23% had other associated co-morbidities. The predominant etiology was *variceal* (44%) followed by PUD (30% but predominantly in the east). They identified also as 39% of patients underwent endoscopy within 24 hours of presentation, only 1.4% with combination *endotherapy*, 5% had rebelled, 2% and 1% of all UGI bleeds required *radiological* and *surgical* interventions, respectively. On 30 days follow up, the overall mortality was 2.7%, 40% were from non-bleed related causes [20].

Another study which was done in Birmingham city of UK and published on the JOURNAL OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH on September 2017 revealed the following as etiologies of UGIB, to mention them; 26% PUD, 9% *Erosive duodenitis*, 3% *Malignancy*, 3% *Mallory-Weiss Tear*, 8% *Varices*, 4% *Portal hypertensive gastropathy*, 2% *Vascular ectasia*, 17% *Oesophagitis* and 16% *Gastritis/Erosions*; but in 12% of the cases no cause was found. The researchers called Siau k., et al. were also tried to show as 23% of patients suffered a re-bleed but 42% who had an endoscopy for *non-variceal* UGIB (NVUGIB) and 32% for *variceal* bleed had not rebelled. From all, 24% died overall whilst 38% died who developed a GI bleed whilst already in hospital. GI bleeding was the cause of death in 36% and due to complications in 49%, but 8% should have had escalation to critical care but did not. From the total patients, 64% of patients with Acute UGIB did not have any risk assessment score calculated. On the other hand, they stated that 6% of the cases should have had an *interventional radiology* procedure but did not. They also reported as 32% of hospitals to which Acute UGIB patients are admitted do not have a 24/7 endoscopy service. 73% of hospitals could not provide 24/7 *embolization* of GI bleeding on-site but 45% had a formal network to combat this. Luckily, 51% of hospitals had formal network arrangements for *Transjugular Intrahepatic Portosystemic Shunt* (TIPSS). 35% of patients waited longer than 24 hours for an *Oesophagogastroduodenoscopy* (OGD). In 16% of cases the reviewers felt that the first consultant review was not sufficiently prompt for the patient's condition. Important basic investigations were omitted in 20% admitted with Acute UGIB and 33% of inpatients. Of the 18% of patients who had complications, these could have been avoided with improved care. At last they reported that 25% of hospitals to which patients with a GI bleed were admitted were not the Joint Advisory Group for Gastrointestinal Endoscopy (JAG) accredited [5].

A Similar study was also done in Shanghai city of China, by Tang Y., et al.; and published on the American Journal of Emergency Medicine in 2018. Among the 395 patients included during their study period, the total 30-day mortality rate was 10.4% (41/ 395). The Albumin, international normalized ratio, altered mental status, systolic blood pressure, aged above 65 years (AIMS65 score) and GBS performed better with an AUC of 0.907 (95% CI, 0.852–0.963) and 0.870 (95% CI, 0.833–0.902) compared with other scoring systems (pre-endoscopic RS: AUC, 0.709; 95% CI, 0.635–0.784; pre-endoscopic Baylor score: AUC, 0.523; 95% CI, 0.472–0.573) [7].

A Prospective Observational Study was done, by Sourabh S., et al.; in India and published on the Journal of The Association of Physicians of India on September of 2019. Out of the total 380 patients of their study participants, 254(66.84%) patients were non-elderly and 126(33.15%) patients were elderly. On their results, the proportion of patients with co-morbidity and consumption of NSAIDs was higher among elderly patients. The study revealed that the commonest mode of presentation was *hematemesis* and *melena* in the both groups, while isolated *hematochezia* (29% vs. 1.9%) was more common in elderly group. The *variceal* bleeding was significantly higher among non-elderly group (38.1% vs. 18.2%) and bleeding from gastric or duodenal ulcer (PUD) was the predominant cause of bleeding among elderly group (65% vs. 43%). The proportion of patients with *tachycardia* (68.2% vs. 20%), *postural hypotension* (29.3% vs. 14.9%) and blood transfusion requirement of 4 units or more (20.2% vs. 10.1%) was significantly higher among elderly group than in non-elderly group. Despite similar re-bleeding rates, mortality rate was significantly higher in elderly patients compared to the non-elderly patients (10.32% vs. 1.94%) [12].

## **2.2. African Setting**

In Nigeria, a study was done by Rukewe A. et al.; and published on the journals of Annals of Ibadan Postgraduate Medicine and ResearchGate on December of 2015. During their study, there were 169 patients with median age of 44.0 years (range 13-89); 25 (15.0%) of them were known PUD patients and most (69.2%) of the patients were males. The most common presenting symptom was *haematemesis* (34.9%) followed by *melaena* (16.6%). The researchers reported as there was a history of NSAIDs use in 16.8% and alcohol ingestion in 12%. From the study participants, UGI Endoscopy was performed in only 6.8% of cases and also 23 (13.6%) patients died. They identified as there was association between mortality and diastolic blood pressure; more deaths (1/7; 14.3%)

occurred in those with *diastolic* blood pressure > 90mmHg compared with  $\leq$ 90mmHg (5/70; 7.1%) (P = 0.002). There were more deaths among patients who did not receive blood transfusion (4/40; 10.0%) compared with those who had blood transfusion (2/37; 5.4%) (P=0.008) [11].

### **2.3. Ethiopian Situation**

A study done by Taye M., et al., from a total of 10,000 patients who underwent upper gastrointestinal endoscopy examination between August 1979 and October 1994 at Tikur Anbessa Hospital, Addis Ababa and published on Ethiopian Medical Journal on May 2004. The major indications were dyspepsia (59.4%), upper gastrointestinal bleeding (18%) and liver disease (10.8%). The other indications include dysphagia (2.2%), gastric outlet obstruction (2.1%), postoperative dyspeptic symptoms (1.9%), weight loss and/or anemia (1.4%), epigastric mass (0.6%) and odynophagia 0.2%. The mean age of the patients and their sex ratio was 36 years and 2:1, respectively. Twenty eight percent of the patients had normal findings. The commonest abnormal findings include duodenal ulcer (41%), esophageal varices (9%), acute gastritis (6%), duodenitis (3.4%), and reflux esophagitis (2.3%). Benign gastric ulcer was rare. The ratio of duodenal ulcer to gastric ulcer was 19.1%. Duodenal ulcer (45.6%), esophageal varices (15.6) and acute gastritis (5.7%) were found to be the commonest causes of upper gastrointestinal bleeding. The endoscopy or histology diagnosis of cancer in both the esophagus and stomach was 2.8% and 1.3%, respectively. The agreement between endoscopy and histology in the diagnosis of esophageal and gastric cancer was 80%. There was no major complication related to endoscopy or premeditation. Endoscopy is a fairly accurate and safe procedure and therefore should be available and applied widely for the diagnosis of upper gastrointestinal diseases in Ethiopia [21].

An eight-years UGI endoscopy findings analysis study was done, by Solomon A. Woreta, et al.; on patients referred to Gondar University Hospital, North-Western Ethiopia. It was published on the International Journal of Pharmaceuticals and Health care Research in 2015. The findings showed that from the total of 1,310 patients who had endoscopic examination, from April 30, 2005 to May 1, 2013; 8.5% (111) of the patients presented with prior UGIB as a main indication for the procedure. As a causes of UGIB, Esophageal varices (34.2%), tumors (33.3%), duodenal ulcer (24.3%) and gastric ulcers (8.1%) were detected in decreasing order in this group of patients. From the study results, Dyspepsia, which accounted for 704 (53.8%) cases, was found to be the most common indication for undergoing UGI endoscopy. This was followed by epigastric pain 276

(21%) and vomiting 242 (18.5%). UGIB, suspicion for esophageal varices and dysphagia were the other indications in decreasing frequency. Duodenal ulcer was the most frequently recovered pathology documented in 333 (25.4%) patients. Males 208 (62.4%) were more affected than females 125 (37.6%) with ratio of 1.7:1 [16].

### **3. OBJECTIVES**

#### **3.1. General Objective**

- ✓ To determine the clinical characteristics, risk factors and outcomes of UGIB patients in TASH adult emergency room of Addis Ababa, Ethiopia, from January 1 to December 31, 2019.

#### **3.2. Specific Objectives**

- ✓ To assess the clinical characteristics of UGIB patients in TASH adult emergency room
- ✓ To identify the risk factors of UGIB patients in TASH adult emergency room
- ✓ To assess the outcomes of UGIB patients in TASH adult emergency room

## **4. METHODOLOGY**

### **4.1. Study Area**

The study setting is Addis Ababa (also known as "finfinne"), the capital and largest city of Ethiopia. It is located on a well-watered plateau surrounded by hills and mountains in the geographic center of the country. It was founded in 1887 and was named Addis Ababa ("new flower") by the Empress Taitu (reigned 1889-1913), the wife of Emperor Menelik II. The city is the educational and administrative center of Ethiopia. It is the site of a number of universities/colleges [including Addis Ababa University (AAU) and St.Paul's Hospital Millennium Medical College (SPHMMC)], a number of International Organizations (the most important are African Union and the United Nations Economic commission for Africa [22]. Tikur Anbessa Specialized Hospital (TASH), which is one of the long serving hospitals for the nations, and located in Addis Ababa. It was opened in 1972 and then became the only site for training medical doctors. In 1998, TASH, the largest referral hospital in the country, with 700 beds was transferred to the Federal Ministry of Health, and it has since become a University teaching Hospital for both clinical and preclinical training of most disciplines. It is also an institution where specialized clinical services that are not available in other public or private institutions are rendered to the whole nation. The TASH has 200 doctors, 379 nurses and 115 other health professionals dedicated to providing health care services. The various departments, faculties and residents under specialty training in the School of Medicine provide patient care in the hospital [23]. The emergency department of TASH is one of the major entry points of patients to the hospital. It is divided into red, orange, yellow green, waiting and triage area. 20,000 to 22,000 patients are seen each year. It has a capacity of 41 beds along with the space in the waiting area which also has a lot of the patients.

### **4.2. Study Design and Period**

A one-year retrospective descriptive cross sectional study was conducted from January 1 – December 2019.

### **4.3. Population and Sampling**

#### **4.3.1. Source Population**

All patients who attended and evaluated at TASH adult emergency rooms from January 1 – December 31, 2019.

#### **4.3.2. Study Unit**

All patients who were diagnosed to have UGIB at TASH adult emergency room from January 1 – December 31, 2019.

### **4.4. Eligibility Criteria**

#### **4.4.1. Inclusion Criteria**

- ❖ UGIB patients age 13 and above seen at adult TASH emergency room from January 1 – December 31, 2019.

#### **4.4.2 Exclusion criteria**

- ❖ UGIB patient charts with significant missing data
- ❖ UGIB patients whose charts were not found

### **4.5. Sample Size Determination**

No sampling method was used as all the UGIB patients seen in the emergency department during the one-year study period were included in the study.

### **4.6. Sampling Techniques and Procedure**

Clinical charts during the study period were reviewed and UGIB patients who were seen at adult emergency room were selected. The charts were checked for duplication and completeness. After we assured there were no duplications, cards with complete data were pooled for sampling. A total number of 132 UGIB patients' cards were collected.

### **4.7. Variables of the Study**

#### **4.7.1. Dependent Variable**

- ✓ Upper Gastrointestinal Bleeding
- ✓ Primary Outcome: Death

- ✓ Treatments Given: NPO, IV fluids, blood product transfusion, Proton Pump Inhibitor (PPI), prophylactic antibiotics, vitamin K, antiemetics
- ✓ Definitive Managements; band ligation, balloon tamponade, adrenaline injection
- ✓ Rebleeds
- ✓ Disposition, Discharged, wards, ICU

#### 4.7.2 Independent Variable

- ✓ Socio demographic characteristics: Age (Elderly (>60 years old) Patients, Young ( $\leq$  60 years old) Patients), Sex and Residence.
- ✓ Causes of UGIB: PUD, Esophageal and *Gastroduodenal Erosions*, *Mallory-Weiss tears*, *Malignancy*, *Cirrhosis*, *Malignancy*
- ✓ Associated Risk Factors: *Helicobacter pylori* infection, chronic alcohol use, smoking, medications, comorbidities
- ✓ Scoring systems Clinical Rockal score ,AIMS 65 score
- ✓ Diagnostic modalities; hemoglobin, platelet, liver enzymes, viral markers, abdominal ultrasound, stool H pylori test, endoscopy

#### 4.8 Operational Terms and Definitions

- ❖ **Variceal Bleeding:** Bleeding originated from the varices secondary to liver diseases.
- ❖ **Non-Variceal Bleeding:** Bleeding that is not originated from the varices. Meaning, it has originated from other UGI parts.
- ❖ **Hematemesis:** vomiting of coffee ground substances (coffee ground vomitus).
- ❖ **Melena:** black stools with a rotten odor.
- ❖ **Hematochezia:** red or maroon stools.
- ❖ **Jaundice:** yellowish discoloration of the eyes, nails, tongue.
- ❖ **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  $\geq$ 5)
- ❖ **Rebleeding:** was defined as any UGIB after either medical management or endoscopic intervention during stay in the ED

## **4.9 Data Collection Technique and Procedure**

### **4.9.1 Data Collection Tools**

Abstract sheets were used. A structured questioner, which was taken from the previous literature with few amendments, was used. The questioner was prepared by English language.

### **4.9.2 Data Collection Procedure**

The principal investigator identified the patient card numbers from the emergency department medical records registry of the hospital and collected the patients' cards seen during the study period. 323 cards were registered as UGIB at the triage during the study period. But only 242 cards were available, of those, 80 were miscategorized as UGIB cases in the triage registry. From the remaining 152 UGIB cards, 20 had significant missing data and were not included in this study. Finally, the clinical nurses and the principal investigator, using the prepared data abstract sheet, collected the data from 132 cards.

### **4.9.3 Data Quality Management**

A half day training followed by a pretest was given for data collector and supervised by the principal investigator to make them familiar with the data collection tool. The data collectors were frequently over seen by the principal investigator. The principal investigator also checked the recorded questioner for completeness. Problems faced were solved with discussion. The principal investigator was checking for errors and completeness before, during and after the process of entering data to Epi info and SPSS 26 on daily basis. The checklist was pretested on 15 cards and amended before starting the data collection.

### **4.9.4 Data Analysis**

After data collection, the collected data was cleaned, coded, and entered on epi info and SPSS version 26 and was displayed using tables, charts, graphs, figures and texts. Frequency distributions, percentages, tables and charts were used for showing univariate analysis. Cross tabulations, Chi-square tests, p-values, odds ratios and 95% confidence intervals were used to present results of bivariate analysis. Multivariate analysis using logistic regression models was performed to control for potential cofounders.

#### **4.10 Result Dissemination Plan**

The study result will be submitted to Emergency Medicine Department of Addis Ababa University (AAU) and head of TASH in hard and soft copy. It might also be presented on meetings and conferences and be submitted to journals for possible publication.

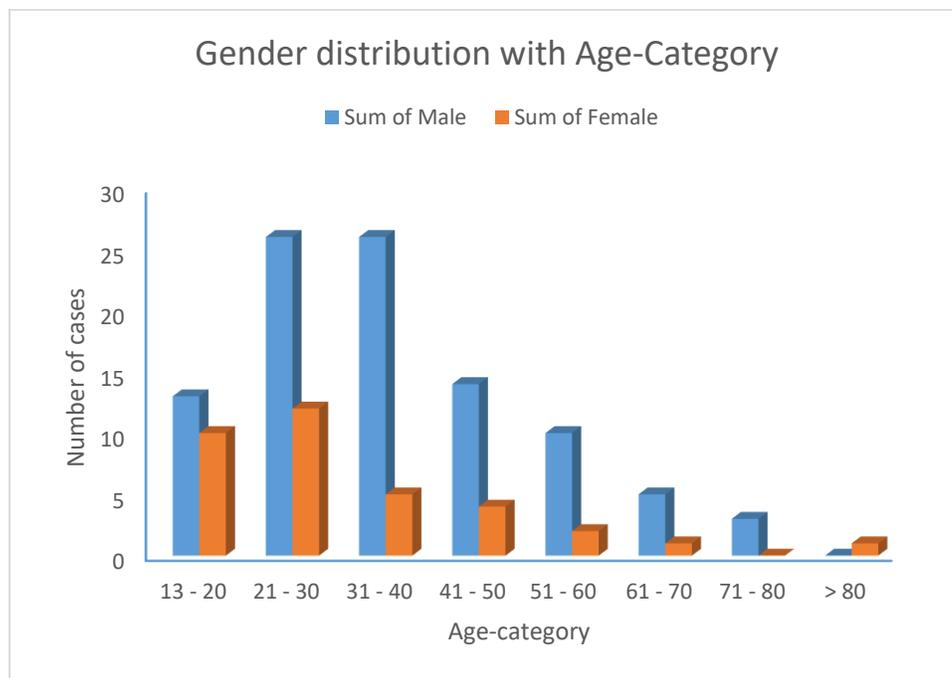
#### **4.11 Ethical Consideration**

After submission of the approved proposal, a formal letter was taken from the department of emergency medicine and critical care department of AAU School of Medicine and outpatient department office. After permission was granted, data collection process was started. Confidentiality was maintained by excluding any identification found in the card. Privacy was maintained by recording for data alone and returning the cards as soon as data collection was done. The data collected will be used for this study alone.

## 5. RESULTS

### 5.1. Socio-Demographic Characteristics

One hundred and thirty-two patients who presented with UGIB to ED were included in our study. From these, 97 (73.5%) of them were male and 35 (26.5%) of them were female (the male: female ratio was 2.8:1). More than half (59.1% of the total) of our study participants came from outside of Addis Ababa. The mean age was  $35.99 \pm 1.324$  years (ranging between 15 and 90 years). Only 10 (7.6%) of our participants were above 60 years (elderly patients).



**Figure-2: Gender and Age distribution of UGIB patients seen at Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January 1-December 31, 2019.**

### 5.2. Clinical Presentations and Characteristics

The most common presenting complaints were hematemesis (92.4%) and fatigue (68.2%) followed by melena (67.4%) and loss of appetite (45.5%) (Table-2). Most of these presenting symptoms occurred in those participants aged  $\leq 60$  years (hematemesis 113 out of 122 cases, melena 83 out of 89 cases). As Compared to the elderly participants ( $>60$  years) of our study, the young participants ( $\leq 60$  years) were more likely to present with hematemesis (92.6% vs 7.4%) and

melena (93.3% vs 6.7%). From the 122 participants who had hematemesis upon presentation, 67 (54.9% of 122) and 53 (43.4% of 122) of them were complaining for frank blood and coffee-ground vomitus, respectively; while only two of them complained for mixed type of these vomitus.

**Table-1: The presenting clinical symptoms of the participants at TASH-ED, Addis Ababa, Ethiopia, January 1- December 31, 2019.**

Presenting Symptoms	No	%	Presenting Symptom	No	%
Hematemesis	122	92.4%	Hematemesis + Melena	81	61.4%
Melena	89	67.4%	Hematemesis + Jaundice	24	18.2%
Hematochezia	15	11.4%	Hematemesis + Hematochezia	11	18.3%
Jaundice	24	18.2%	Melena + jaundice	20	15.2%
Headache	27	20.5%	Melena + hematochezia	10	7.6%
Dizziness and Tinnitus	42	31.8%			
Fatigue	90	68.2%			
Loss of appetite	60	45.5%			

Upon physical examination, 27 (20.5%) of them were hypotensive ( $BP \leq 90/60$ mmHg) during evaluation at ED. Diastolic Blood Pressure (DBP) was  $\leq 60$ mmHg in 37 participants while Systolic Blood Pressure (SBP) was  $\leq 90$ mmHg in 28 patients. Sixty-five (93.8%) of the hemodynamic instability was observed in those participants whose age was  $\leq 60$  years of age while the elderly age groups ( $>60$  years) accounting only the remainder 6.2% of it. From 81 (61.4%) of the study participants who had a pulse rate (PR) of above 100beats/minute, 46 (56.8%) and 35 (43.2%) of them had a pulse rate of 101-120 and above 120 beats/minute, respectively. 6 out of the 8 deaths (75%) had a pulse rate of  $>100$ , which implies the significance of pulse rate in critical patients. Fifty-three (40.2%) patients had a pulse pressure of  $<40$  while three (2.3%) patients had a record of  $>60$  pulse pressure. 6 out of the 8 patients who died had a pulse pressure of less than 40. And all of the 8 patients who died had a clinical rockall score of three or more which emphasizes the importance of using the score in the ED to identify patients at moderate to high risk for

deterioration. The relationship of the presence of comorbidities, deranged PR and Pulse Pressure with re-bleeding proportions and outcomes summarized under Table 2.

**Table-2: Participants who re-bleed with their outcomes at TASH-ED, Addis Ababa, Ethiopia, January 1-December 31, 2019.**

Study participants with		Re-bleeds		Outcomes	
		Yes	No	Died	Alive
Clinical Rockall score of $\geq 3$		24 (82.8%)	73 (70.9%)	8 (100%)	---
AIMS65 scores of $\geq 2$		4(13.8%)	17(16.5%)	1(12.5%)	20(16.1%)
Comorbidities		8 (27.6%)	34(33%)	3(37.5%)	39(31.5%)
Pulse Rate	101-120	11(37.9%)	35(34%)	3(37.5%)	43(34.7%)
	>120	9 (31%)	26(25.2%)	3(37.5%)	32(25.8%)
Pulse Pressure	<40	12(41.4%)	41(39.8%)	6(75%)	47(37.9%)
	> 60	----	3(2.9%)	1(12.5%)	2(1.6s%)
<b>Total</b>		<b>29</b>	<b>103</b>	<b>8</b>	<b>124</b>

### 5.3. Predisposing Factors

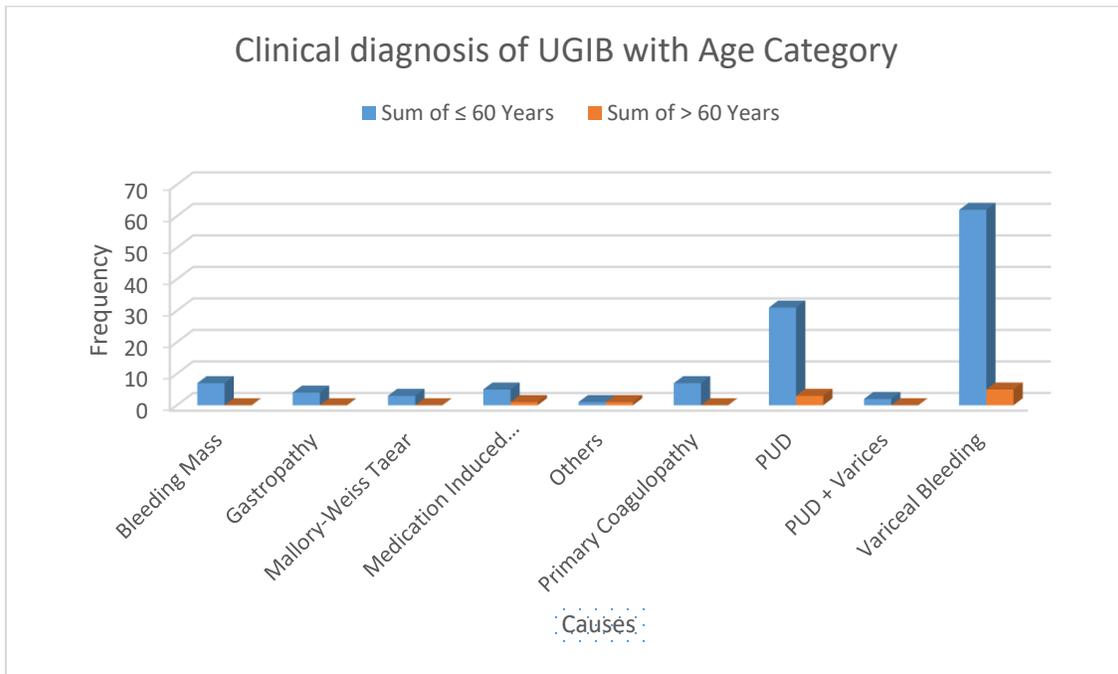
Forty-two (31.8%) of the participants reported to have associated comorbidities, of which 34 (81%) of them were  $\leq 60$  years. From the 42 of them, 10 (23.8%) and 3 (7.1%) of them had solid organ and hematologic malignancy, respectively. The others showed as chronic kidney disease in 5 (11.9%), heart diseases in 5 (11.9%), diabetes mellitus in 3 (7.1%) and HIV in 2 (4.8%) of the 42 participants. Ten (23.8%) of the participants reported associated two or more comorbidities. Eight (19%) out of the 42 patients with comorbidities have re-bleed while 3 (7.1%) of them have died. (Table-2).

Ten (7.6%) of them were taking prescribed medications (doses unclear) that can result in gastrointestinal bleeding. From these 10 participants, 5 (50%) of them had taken anticoagulants while 3 (30%) and one (10%) of them reported taking NSAIDs and ASA, respectively. One of the participants had taken both anticoagulants and NSAID. Twenty-two participants (16.7% of the total) had history of alcohol consumption for long period and 5 (3.8%) of them were cigarette

smokers. On the other hand, 40 (30.3%) of the study participants had history of repeated treatment for dyspeptic symptoms.

#### 5.4. Clinical diagnosis of UGIB

The most common pre endoscopic clinically diagnosed cause of UGIB at presentation is variceal bleeding in 67 cases (50.8%) followed by PUD in 34 cases (25.8%). As majority of our study participants are < 60 years old, sixty-two (92.5%) out of the 67 variceal bleeding and 31 (91.2%) out of the 34 PUD cases occurred in this age category ( $\leq 60$  years).



**Figure-3: Pre-endoscopic clinical diagnosis of UGIB in emergency department of TASH, Addis Ababa, Ethiopia, January 1-December 31, 2019.**

#### 5.5. Diagnostic Modalities

##### 5.5.1. Laboratory and Sonographic Findings

**Table-3: Investigations done with their frequency, TASH, Addis Ababa, Ethiopia, January 1-December 31, 2019.**

Laboratory Tests	F	%	Laboratory Tests	F	%
<b>Hemoglobin (gm/dl)</b>	<b>130</b>	<b>98.5</b>	<b>Serum Albumin (gm/dl)</b>	<b>31</b>	<b>23.5</b>
< 8	61	46.9	Normal Range	3	9.7
8-12	61	46.9	< 2.5	10	32.3
13-15	8	6.2	2.5-3	5	16.1
<b>Platelets (cells/μl)</b>	<b>129</b>	<b>97.7</b>	3.1-3.5	13	41.9

	<= 20,000	4	3.1	<b>Serum HBsAg</b>	<b>88</b>	<b>66.7</b>
	20,000-50,000	11	8.5	Positive	19	21.6
	50,001-100,000	31	24	Negative	69	78.4
	100,001-150,000	11	8.5	<b>Serum Anti-HCV</b>	<b>85</b>	<b>64.4</b>
	150,001-450,000	70	54.3	Positive	4	4.7
	>=450,000	2	1.6	Negative	81	95.3
<b>INR</b>		<b>70</b>	<b>53</b>	<b>Liver Enzymes (both)</b>	<b>119</b>	<b>90.2</b>
	< 1.5	25	35.7	Normal Range	78	65.5
	1.5-4.5	42	60	< 5 times elevated	31	26.1
	4.6-10	1	1.4	5-10 times elevated	6	5
	≥ 10	2	2.9	>10 times elevated	4	3.4
<b>Bilirubin Level</b>		<b>18</b>	<b>13.6</b>	<b>H. pylori (Ag) Test</b>	<b>33</b>	<b>25%</b>
	Normal Range	10	55.6	Positive	8	24.2%
	Elevated	8	44.4	Negative	25	75.8%

Abdominal ultrasound was performed for 90 (68.2%) study participants, of which 48 and 13 of them were told to have portal hypertension and abdominal mass, respectively. Twenty (22.2%) of them were accidental (unrelated to UGIB) findings while 9 (10%) of them were normal. 20 (22.2%) of the findings were included in the others category which included mainly of ascites and hepatosplenomegaly (7 out of 20). The rest were unrelated findings like cholelithiasis, pancreatic pseudocyst, CKD, benign renal cysts and pyelonephritis.

A more recently proposed scoring system, AIMS65, was used to our study participants in predicting for blood transfusion requirement, therapeutic endoscopy requirement, risk of re-bleeding and ED mortality. The AIMS65 consists of the following components: albumin level <3.0 g/dL (A), international normalized ratio (INR) >1.5 (I), altered mental status (M), systolic blood pressure ≤90 mm Hg (S), and age >65 years (65). It is calculated by allotting 1 point for each component. When ≥2 components of the AIMS65 are present, the mortality risk is considered to be high (Table-2) [25-27].

In this study, 111 (84.1%) and 21 (15.9%) of the patients have AIMS65 scores of <2 and ≥2, respectively. The proportion of blood transfusion with PRBC in those with AIMS65 score <2 and ≥2, were 39.6% (44 out of 111) and 66.6% (14 out of 21), respectively. Re-bleeding occurred in 22.5% (25 out of 111) of those with scores of <2 while it was 19% (4 out of 21) in those with scores of ≥2. Therapeutic endoscopy was performed for 17.1% (19 out of 111) and 52.4% (11 out

of 21) of participants with AIMS65 scores of  $<2$  and  $\geq 2$ , respectively. UGIB related mortality was found to be 6.3% (7 out of 111) in those with scores of  $<2$  and it was 4.8% (1 out of 21) in those with scores of  $\geq 2$ .

## 5.5.2. Endoscopic Findings and Procedures Performed

### 5.5.2.1. Diagnostic Endoscopic Findings

Diagnostic endoscopy was performed for 69 (52.3%) of our UGIB patients. From these, variceal lesion was the most common pathology detected with 44 (63.8%) endoscopies, which indicates the higher rate of underlying liver problems. 95.5% of the variceal lesion was esophageal in origin. Based on the specific disease entities (as sole findings), esophageal varices (56.5%), duodenal ulcer (10.15%) and bleeding mass (5.8%) were the commonest causes of UGIB in our participants with decreasing order (Table-3).

**Table-4: Diagnostic Endoscopic findings with their proportions, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January 1-December 31, 2019.**

Endoscopic Findings	Fi	%	Endoscopic Findings	fi	%
Esophageal Varices (solely)	39	56.5%	Erosive Esophagitis (solely)	1	1.45%
Duodenal Ulcer (solely)	7	10.15%	Erosive Gastritis (Sole)	1	1.45%
Bleeding Mass	4	5.8%	Mallory-Weiss Tear	1	1.45%
Gastric Ulcer	2	2.9%	Erosive Duodenitis + Esophageal Varices	1	1.45%
Gastric Varices	2	2.9%	Mallory-Weiss Tear + Erosive Lesions	1	1.45%
Erosive Duodenitis (solely)	2	2.9%	Gastropathy	1	1.45%
Duodenitis + Duodenal Ulcer + Esophageal Varices	2	2.9%	Normal	3	4.35%
Duodenal Ulcer + Erosive Gastritis	2	2.9%			

### 5.5.2.2. Therapeutic Endoscopic Procedures

Therapeutic endoscopy was done for 30 patients (22.7% of our participants) and the most common procedure performed was band ligation which was for 28 (93.3%) of the UGIB patients. The other

therapeutic endoscopic procedures performed were Balloon Tamponade (for one patient) and Epinephrine Injection (for a single patient).

Twenty percent (6 out of 30) of the therapeutic endoscopies were performed within 24 hours of presentation to the ED while 56.7% (17) therapeutic endoscopies were done within 48 hours of patients' presentation to ED. Five (16.7%) of them were done within 3-5 days of their stay at ED. One had undergone the procedure within 5-7 days of stay at ED while one stayed at ED for more than a week before undergoing the endoscopic intervention.

### **5.5.3. Emergency Room Management and Disposition**

The majority (72%) of the patients were kept Nil Per Os (NPO) on admission to the ED. Intravenous (IV) fluid was given for 112 (84.8%) of the patients. A hundred and twenty-two participants (92.4%) received Proton Pump Inhibitor (PPI) of which 115 (94.3%) of them received IV PPI while 7 (5.7%) of them received PPI PO. From these patients treated with PPI, 37 (32.2%) of them had prior history of repeated dyspepsia treatment. Ninety out of 97 of the patients (92.8%) whose clinical Rockall score was  $\geq 3$  were given PPI. From these, 86 (88.7%) were given PPI IV. GI Promotility was given for 67 (50.6%) study participants.

Fifty-eight patients (43.9%) received blood transfusion with Packed Red Blood Cells (PRBC). From these, 48 (82.6%) of them had severe anemia while one patient (1.7%) had only moderate anemia with no active bleeding (8-9gm/dl) and 9 patients (15.5%) had active bleeding. From 61 patients who had severe anemia only 48 (78.6%) patients received PRBC or whole blood transfusion. Three patients received platelet transfusion, from which one had severe *thrombocytopenia*  $\leq 20,000$  and two patients had *Plt of 20,000-50,000*. Fresh Frozen Plasma was given for 3 patients. One patient for the indication of high INR level of 1.5 -4.5 and 2 patients for active bleeding.

Antibiotics were administered for 79 (59.8%) UGIB patients. All the patients pre endoscopically suspected or known as having variceal ( 67) were given antibiotics. From these, 67 (84.8%) of them were given as prophylaxis for variceal bleeding, 4 (5%) were given for sepsis, 4 (5%) were given for spontaneous bacterial peritonitis, 3(3.8%) were given for encephalopathy plus prophylaxis, and 1 patient was given for hospital acquired infection. The most used antibiotic was ceftriaxone for 74 (56.1%) patients. From the 74 patients, 63(85.1%) were given ceftriaxone for

prophylaxis only. And 33 of the 63 (52.3%) received 1 gram IV per day while 30(47.6%) received 1 gram IV BID. Vitamin K was given for three patients (2.3%) indication being raised INR >1.5 in one patient and active bleeding in two of the patients. All the medications that can cause GI bleeding were discontinued for all 11 patients who were taking them.

Six (4.5%) of the participants were intubated indications being for airway protection during endoscopy (4 patients), for massive aspiration in one patient and respiratory failure for another one patient. Two of the patients were intubated at the time of admission to ED while another two were intubated immediately before endoscopy (after being admitted to ED). One was intubated after underwent endoscopic procedure and another one was after the patient deteriorated clinically. Ten percent (3 out of 30) of patients who had therapeutic endoscopy were intubated. Three (50%) of the intubated patients had re-bleed while two (33.3%) of them had died in our study.

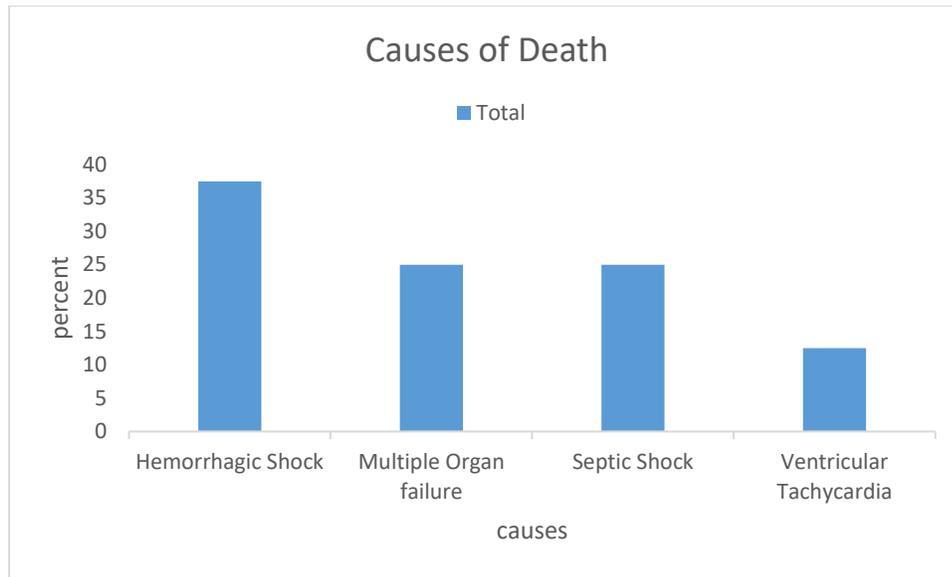
#### **5.5.4. Outcomes of the UGIB Patients**

The majority of our UGIB patients (69.7%) were discharged after improved. The clinical conditions of 32 (24.2%) patients had deteriorated. For this, re-bleeding was the most common reasons for their deterioration accounting for 90.6% (29 out of 32) of patients' deterioration. One patient had developed hepatic encephalopathy and clinically deteriorated. One patient developed hospital acquired infection while another patient developed sepsis and both clinically deteriorated.

Totally, 29 (21.8%) patients re-bleed after admission of which 24 developed re-bleeding while they were on medical management only. Five patients re-bleed after both medical management and endoscopic intervention. This made the re-bleeding rate after endoscopic intervention 16.7%. From the five re-bleeds, three developed re-bleeding immediately after endoscopy while one of them developed re-bleeding within 48 hours and another one within one week after endoscopy. Four (3% of the total) patients developed hepatic encephalopathy from which three had hepatic encephalopathy at admission while one developed it after clinical deterioration in the ED.

Eight of the UGIB patients died. This makes the mortality rate in our study to be 6.1%. Seven (87.5%) of them were from the  $\leq 60$  years old participants while one (12.5%) of the deaths was an elderly participant. Hemorrhagic shock was the commonest cause of the deaths resulting in three deaths (37.5%) (Figure:-3). From these, 50% of the deaths occurred within 24 hours of patients' presentations and admissions to the ED. Three of the deaths (37.5%) occurred within 48 hours of

admission while one of them died after staying more than a week at ED. One patient was admitted to Medical Intensive Care Unit (MICU), 30 patients were admitted to medical wards (30 of them) and 87 were discharged to home after improved. Six patients have left the ED against medical advices.



**Figure-4: Total causes of death in our study participants, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January1-December 31, 2019.**

### 5.6. Statistical Analysis of the Risk Factors

On simple binary logistic regression, we found that the presence of recent medication intake history, the patient being transfused with PLT, the patient being transfused with FFP, the patient being given an antibiotic and Vitamin K were the significant risk factors for the UGIB patients to die in our study. We found also that the patient being a male patient was a protective factor against the UGIB patients to die (Table-4). On multinomial logistic regression, pulse rate and pulse pressure findings at presentation were not significant factors except having a normal pulse pressure which was a significant protective factor against the unfavorable outcome.

**Table-5: The Crude Odds Ratios (CORs) and P-values of the independent variables, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January 1-December 31, 2019.**

Variable	Bivariate Logistic Regression		Multivariate Logistic Regression	
	COR (95% CI)	P-Value	AOR (95% CI)	P-Value
Sex				
Male	0.333 (0.079,1.413)	0.136	11.557 (1.543,86.534)	0.017

<b>Female</b>	1		1	
Place of residence				
<b>Addis Ababa</b>	1.480 (0.354,6.194)	0.591		
<b>Out Of Addis Ababa</b>	1			
Is the patient SBP $\leq$ 60mmHg				
<b>Yes</b>	1.256 (0.239,6.593)	0.787		
<b>No</b>	1			
Is the patient DBP $\leq$ 90mmHg?				
<b>Yes</b>	1.588 (0.360,7.010)	0.541		
<b>No</b>	1			
Presence of Comorbidities				
<b>Yes</b>	1.308 (0.297,5.749)	0.723		
<b>No</b>	1			
AIMS65				
<b>&lt;2</b>	0.743 (0.087,6.373)	0.786		
<b><u>&gt;2</u></b>	1			
Clinical Rockall score				
<b><math>\geq</math>3</b>	0.000	0.998		
<b>&lt;3</b>	1			
History of long time alcohol consumption				
<b>Yes</b>	1.733 (0.326,9.211)	0.519		
<b>No</b>	1			
History of cigarette smoking				
<b>Yes</b>	0.000	0.999		
<b>No</b>	1			
History of repeated treatment for dyspepsia				
<b>Yes</b>	0.000	0.998		
<b>No</b>	1			
PLT transfusion given				
<b>Yes</b>	41.000(3.245,518.033)	0.004	0.003 (0.000, 0.228)	0.008
<b>No</b>	1		1	
FFP transfusion given				
<b>Yes</b>	8.714 (0.702,108.136)	0.092	4.434(0.005,3745.989)	0.665
<b>No</b>	1		1	
Antibiotics given				
<b>Yes</b>	5.056 (0.604,42.348)	0.135	0.036 (0.002, 0.613)	0.021
<b>No</b>	1		1	
Vitamin K given				
<b>Yes</b>	8.714 (0.702,108.136)	0.092	0.093 (0.001, 6.552)	0.274
<b>No</b>	1		1	

Footnote: CI= confidence interval, A.A= Addis Ababa

Multiple binary logistic regression was conducted after checking the model fitness test with Hosmer and Lemeshow. The significance (p-value) of the Hosmer-Lemeshow test of model goodness of fit was 0.94 and thus, the assumption is fulfilled as the p-value was greater than 0.05.

In our multivariate binary logistic regression, we found that being a male UGIB patient was the only significant factor causing the UGIB patients to die in our study. On the other hand, receiving antibiotics and being transfused with PLT were found to be the protective factors against death from UGIB in the ED after controlling for confounding variables at a p value of < 0.05.

**Table-6: The Adjusted Odds Ratios (AORs) and P-values, Tikur Anbessa Hospital, Addis Ababa, Ethiopia, January-December 2019.**

Independent Variables	AOR (95% CI)	P-Value
Gender	11.557 (1.543,86.534)	0.017
Platelets Transfusion Given?	0.003 (0.000, 0.228)	0.008
FFP Transfusion Given?	4.434 (0.005,3745.989)	0.665
Antibiotics Given?	0.036 (0.002, 0.613)	0.021
Vitamin K Given?	0.093 (0.001, 6.552)	0.274

## 6. DISCUSSION

From the 132 participants of this study, the majority (73.5%) of them was male patients and it was similar to the findings in studies done in Ibadan city of Nigeria and Dar es Salaam city of Tanzania where it was 69.2% and 70.7%, respectively [11,28]. Our study's M:F ratio (2.8:1) was similar to the M:F ratio (2.71:1) of a study done in Prishtina of Kosova [3]. In our results, the most affected age group was 21-30 (28.8%). Nevertheless, unlike ours, the greatest occurrence of UGIB was documented in age group of 60-69 (27.1%) in the Kosova study [3]. Only 10 (7.6%) of our participants were above 60 years (elderlies). Our study mostly constituting of the younger population with mean age of  $35.99 \pm 1.324$  was also similar to the Nigerian and Tanzanian studies with median age of 44.0 years [11] and 42 years [28], respectively. But, unlike ours, studies done in Bangkok city of Thailand and Giza city of Egypt with mean ages of  $74.2 \pm 6.7$  years [18] and  $52 \pm 17$  years [29], respectively. However, these variations can be explained by the different geographical location of the studies and by the different settings and methodological approaches used in the studies. It also partly explained by the higher general ratio of young population in Africa (nations of young population) where our participants belong.

The most common presenting complaints in our study were hematemesis (92.4%) and fatigue (68.2%) followed by melena (67.4%) and loss of appetite (45.5%). Though the exact figures might differ, these were similar to studies done in Shiraz city of Iran, which reported hematemesis (68%) as common presenting symptom. These findings also similar to the study findings of Nigerian [11] and Tanzanian as hematemesis was the common presenting symptoms with 34.9% and 31.7%, respectively. The Nigerian findings of melena (16.6%) as second common presenting complaints also goes with our findings of melena as the third common complaints [11]. The young participants ( $\leq 60$  years) in our study were more likely to present with hematemesis (92.6% vs 7.4%) and melena (93.3% vs 6.7%) as compared to the elderly ones. Our findings totally differ from a study done in Thailand that reported, melena was common in the elderly than the young patients (i.e. 53% vs 30%) of their study [18]. These differences can be explained by the demographic variations and living area's set up, like the availability of appropriate toilets for patients to appreciate the color of their stool, and the clinical settings of the patients.

Upon physical examination, 27 (20.5%) of them were hypotensive (BP < 90/60mmHg) during evaluation at ED. Diastolic Blood Pressure (DBP) was  $\leq 60$ mmHg in 37 participants while Systolic

Blood Pressure (SBP) was  $\leq 90$ mmHg in 28 patients. Sixty-five (93.8%) of the hemodynamic instability was observed in those participants whose age was  $\leq 60$  years of age while the elderly age groups ( $>60$  years) accounting only the remainder 6.2% of it. Though there is difference in figures, this finding was similar to a study done in Thailand that reported as hemodynamic instability was observed less in the elderly group (49% vs 68%, respectively;  $P < 0.001$ ) [18]. The calculated clinical rockall score is  $\geq 3$  for all the 8 patients who died in this study which might show the relevance of this scoring method in predicting outcome. Although further studies are required to see the actual benefit of this scoring system over the more commonly used pre endoscopic Glasgow Blatchford system.

Forty-two of the participants (31.8%) reported to have associated comorbidities, of which 34 of them were  $\leq 60$  years (81% vs 19%). Unlike ours, comorbidities (69% vs 5%) were reported more in elderly group in the study done Thailand [18]. Most of the studies reported the presence of comorbidities in their participants. Studies done in Kosova reported comorbidities in 57 (6%) participants [3] while in Egypt's and in Chandigarh city of India comorbidities were reported in 68% [29] and 23% [20] of their participants, respectively. These variations can be explained by the variations in demographic characteristics of the study participants and the study areas and the higher number of young populations in Africa.

Only 11 (8.3%) of them reported history of recent intake of medication that tend to cause gastrointestinal bleeding. From these 11 participants, 5 (45.5%) of them had taken anticoagulants while 3 (27.3%) and 2 (18.2%) of them reported taking NSAIDs and ASA, respectively. One of the participants had taken both anticoagulants and NSAID. The use of NSAIDs is a well-established risk factor for UGIB due to cyclo-oxygenase enzyme inhibition of endogenous prostaglandin synthesis making GI mucosa vulnerable to damage and ulceration, any amount can cause bleeding but risk increases with increasing dose [30,31]. Twenty-two (16.7% of the total) had history of alcohol consumption for long period while only five (3.8%) of them were cigarette smokers. On the other hand, 40 (30.3%) of the study participants had history of repeated treatment for dyspeptic symptoms. Similarly, the study in Nigeria reported near similar figures of NSAIDs consumption of 16.8% but a higher percentage of alcohol consumption (12%) as compared to our participants [11]. However, the Iranian study gave a higher percentage of a low dose ASA and NSAIDs (75%) as compared to our findings [32]. The type of medications in our study can be

explained by the fact that our ED is visited by many cardiac patients who are on anticoagulants or antiplatelet agents. These variations can be due to the different ethical and religious cultures of the study places. The findings in our study can also be from poor willingness and ability to disclose bad habits in depth by our patients as well as inadequate history taking and documentation in our emergency department.

The most common clinical diagnosis of UGIB in our study participants were variceal bleeding in 67 cases (50.8%) and PUD in 34 cases (25.8%). the prevalence of variceal bleeding (50.8%) can indicate that there is a high rate of underlying liver disease in our participants. This was similar to the Indian study findings of variceal (44%) and PUD (30% but predominantly in the east) as the predominant etiologies [20]. Likewise, the study done in Brazil also reported these two as major causes, though the frequencies were not similar (PUD (35%) and variceal bleeding (20.45%) as the main cause of UGIB). These similarities can be due to the scientific background of the high prevalence of liver diseases in the world. In this study we found that 62 (92.5%) of the variceal bleeding and 31 (91.2%) of the PUD occurred in those participants whose age was  $\leq 60$  years. In other words, 8.8% of PUD and 7.5% of variceal bleeding occurred in elderly participants. This was similar to the Thai researchers' findings of PUD as the leading cause of UGIB in the elderly patients, followed by varices and gastropathy [18]. There was no clinical suspicion of erosive lesions in our study while 14.5% of the endoscopic diagnosis were erosive lesions. This might be a sign that we need to widen our differential diagnosis while thinking of causes for UGIB. The results of variceal bleeding in young population could also be explained by the fact that the majority of our patients are coming from rural areas where viral hepatitis and schistosomiasis are more prevalent.

Hemoglobin (Hb) level was determined for 130 (98.5%) out of 132 participants and from these 122 of them had Hb level below 12 gram / deciliter (gm/dl). In other words, 93.9% of them were anemic at presentation. Sixty-one (46.9% of the 130) of them had Hb levels of  $\leq 8$ gm/dl and labeled as severely anemic according to the WHO anemia classification [24]. This was lower than the findings of Tanzanian study in which 69 (65.1%) out of the 106 patients had a Hb  $<8$ g/dl [28]. The fact that nonspecific symptoms of anemia, like fatigue, and poor habit of noticing melena in the elderly population may contribute to these findings in our study.

Stool H. Pylori detection test was done for 33 (25%) UGIB patients and 8 (24.2%) of them turned

to be positive. Only three of the test results were for elderly participants. The prevalence was increasing as the age increases from 23.3%  $\leq 60$  years to 33.3% in  $>60$  years participants, respectively. This was the opposite of the Thailand study findings which reported as the prevalence of *H. pylori* infection was found to decrease with age from 43.8% at  $<40$  years to 21.7% at  $>79$  years old [33]. This can be due to the higher sample size and the different age distribution as compared to our study. And *H. pylori* tests are usually less ordered in elderly patients as compared to the younger patients in our study because PUD is less frequently considered as a cause of UGIB in the elderly.

For 69 (52.3%) participants, diagnostic endoscopy was done in this study. This performance finding was lower than Egyptian [29] study finding where it was done for 724 (72%) out of 1000 participants but much higher than the finding on the Thai study in which endoscopy was performed for 111 (21.1%) out of 526 participants. In this study, variceal lesion was the most common pathology detected (63.8%) which indicates the higher rate of underlying liver problems. Esophageal varices was the most prevalent pathology being detected on 42 endoscopies. PUD (18.8%) was the second common cause detected. From the PUD findings, duodenal ulcer was the most prevalent (84.6%) PUD. Erosive GI lesions (15.9%) and bleeding mass (5.8%) are the third and fourth common pathology detected. In 3 (4.3%) of the UGIB patients, no underlying pathology was found. These findings were similar to the findings in Egypt where from the 232 endoscopically diagnosed bleeding, bleeding varices and PUD accounted for 31% and 28% of the acute UGIB, respectively [29]. On specific disease identified endoscopically, esophageal varices (56.5%), duodenal ulcer (10.15%) and bleeding mass (5.8%) were the commonest causes of UGIB in our participants with decreasing order. This finding was similar to two previously done studies in our country. On the study done at Tikur Anbessa Specialized Hospital (Addis Ababa) in 2004 with review of 10000 cases, duodenal ulcer (45.6%), esophageal varices (15.6%) and acute gastritis (5.7%) were the commonest causes of UGIB [21]. The second study was done at Gondar University Hospital (North-Western Ethiopia) in 2015 and reported esophageal varices (34.2%), tumors (33.3%), duodenal ulcer (24.3%) and gastric ulcers (8.1%) as commonest causes of UGIB [16]. The results show a trend in increasing diagnosis of variceal bleeding as a major cause for UGIB over time which might point to increasing diagnosis of chronic liver disease in the country.

Therapeutic endoscopy was done only for 30 (22.7%) patients despite a total of 69 diagnostic endoscopies done. This decreases the benefit the UGIB patients could get from the endoscopic

interventions. However, the number of therapeutic endoscopies in our study are still better than our those of the Egyptian [29] and Nigerian [11] study findings. In the Egyptian study, only 13 (6%) had therapy at a subsequent endoscopy for further bleeding while in Nigerian study it was performed only for 12 (6.8%) cases [11,29]. But our performance of endoscopic intervention findings was lower than the findings reported in Tanzanian study [28] where Upper GI endoscopy was performed on 46 out of 123 (37.4%) patients. interventions. As the most common cause was varices in this study and it is reported that hemostasis for variceal bleeding can be achieved in up to 90% with endoscopic intervention [18,34], we need to strengthen the availability of our therapeutic endoscopy services for those who need it. This will also help in decreasing longer patient stay at emergency department and the bed occupancy rate by managing and discharging patients earlier as opposed to overcrowding the ED with patients waiting for referral to other hospitals.

The most common procedure performed was band ligation which was for 28 (93.3%) of the UGIB patients and this was higher than the Egyptian reports of rubber band ligation in 94 (13%) [29]. The other therapeutic endoscopies performed were Balloon Tamponade (for one patient) and Epinephrine Injection (for a single patient). Epinephrine injection can result in hemostasis in up to 100% of patients with bleeding peptic ulcers (which is the second common cause ), but 15%–36% of patients re-bleed [35]. In a similar study in Egypt epinephrine injection only was done for 8 (0.8%) patients [29]. However inadequate maintenance and supply of the endoscopic materials needs to be given due attention as this study has observed that these issues have seldom led to the inconsistent service.

In current study, 6 (20%) of the therapeutic endoscopies were performed within 24 hours of presentations to the ED while 56.7% (17) were done within 48 hours of patients' presentation to ED. Five (16.7%) of them were done within 3-5 days of stay at ED. One had undergone the procedure within 5-7 days of stay at ED while one stayed at ED for more than a week before undergoing the endoscopic intervention. The timing of performing the endoscopic intervention was comparable to the performance in Tanzania of only 8 (17.4%) patients received endoscopy within 24hours [28]. Nevertheless, the accomplishment of endoscopy within 24 hours of presentation in our study was much lower than the findings reported from the studies in Egypt (75%) and England (50%) [29,34].This shows that while most of our patients are getting

endoscopy within 48hrs, we need to strengthen our resuscitation so that more patients could get early endoscopy, as it is the cornerstone for UGIB diagnosis and management .

Medical management to the UGIB patients was given based on the hospital standard with initial aim of stabilizing the patients' hemodynamic states and hemoglobin levels. Accordingly, the majority (72%) of our participants were kept Nil per Os (NPO) on admission to the ED. IV fluid was given for 112 (84.8%) of the patients which was more than the Tanzanian study's reports [28]. They reported as 71.5% of their participants received IV fluids whilst at the ED [28]. A hundred and twenty-two participants (92.4%) received PPI. From these, 94.3% of them received IV PPI. From these patients treated with PPI, 37 (32.2%) of them had prior history of repeated dyspepsia treatment. Ninety out of 97 of the patients (92.8%) whose clinical Rockall score was  $\geq 3$  were given PPI. From these, 86 (88.7%) were given PPI IV. This was much higher than the Tanzanian study reports of 59.4% of their participants with a high clinical Rockall score received IV PPI loading and maintenance [28]. Fifty-eight patients (43.9%) received blood transfusion with Packed Red Blood Cells (PRBC). Only 49 (80.3%) out of 61 severely anemic patients received blood transfusion. It was by far more than the reports from the Tanzanian (48.8%) and Iranian (34.4%) studies [28,32]. These variations could be due to the different clinical severity at presentation and management protocols as well as availability of blood products of the two studies. Three patients received platelet transfusion, from which one had severe thrombocytopenia  $\leq 20,000$  and two patients had Plt of 20,000-50,000 . Fresh Frozen Plasma was given for 3 patients. One patient for the indication of high INR level of 1.5 -4.5 and 2 patients for active bleeding. Therefore, appropriate guideline-based blood transfusion protocols should be practiced so that all patients who need transfusion have access to it while saving the scarce blood products we have by not transfusing those who don't need it.

The majority of our UGIB patients (69.7%) were discharged improved from the ED, which was similar to the findings of the study in Egypt which showed 68% of their participants were discharged improved [29]. Twenty-nine (21.8%) of our patients re-bleed after admission to ED, of which 24 (82.8%) of them developed re-bleeding while they were on medical management only and 5 patients (17.2%) after both medical and endoscopic interventions. This made the re-bleeding rate after endoscopic intervention to be 16.7% and this was higher than the reports of the study in Prishtina city of Kosova and Bangkok city of Thailand, where it was 4.1% and 12.7% respectively

[3,18]. However, it was lower than the 40.2% re-bleeding rate of the Cluj-Napoca city of Romania study finding [6]. This could be due to the different methods and adequacy of securing hemostasis, the different study methodology and the lower sample sizes in this study. But 3 out of 5 of the patients had rebleeding immediately after endoscopy, which could be expected in the immediate post procedure period.

Eight patients died at ED and making the overall mortality rate in our study to be 6.1%. Our finding of the mortality rate was by far lower than the findings of studies done in Rio de Janeiro city of Brazil, Cluj-Napoca city of Romania and Giza city of Egypt, with mortality rates of 15.34%, 18.7% and 15%, respectively [2,6,29]. However, it was nearly similar to a study finding of Prishtina city of Kosova where it was 5.7% [3]. From these, 50% of the deaths occurred within 24 hours of patients' presentations and admissions to the ED. Three of the deaths (37.5%) occurred within 48 hours of admission while one of them died after staying more than a week at ED. One patient was admitted to Medical Intensive Care Unit (MICU), 30 patients were admitted to medical wards (30 of them) and 87 were discharged home after improvement. Six patients have left the ED against medical advices. Seven (87.5%) of the deaths occurred in those  $\leq 60$  years old while one (12.5%) of the deaths was an elderly participant. This finding was different from the findings in the Thai study where 16 patients (7%) aged  $\geq 65$  years and 18 patients (6%) aged  $< 65$  years died which was comparable unlike ours [18]. This difference can be explained by the majority of our study participants being  $\leq 60$  years old as well as the smaller sample size of our study. Hemorrhagic shock was the commonest cause of the deaths resulting in three deaths (37.5%) out of 8. This was similar to the findings of the Thailand study which reported as profound shock at presentation caused by active variceal bleeding (five) and ulcer bleeding (one) as the causes of death in the young patients [18]. Hence, in this study, the majority of causes of death being hemorrhagic shock and 50% being within 24 hours, should give emphasis to crucial need of identifying those patients at higher risk of rebleeding along with early diagnosis and management of hemorrhagic shock in the ED.

During our univariate analysis, we found that a patient being transfused with PLT (p-value= 0.004), the patient being transfused with FFP (p-value= 0.092), the patient being given an antibiotic (p-value= 0.135) and given vitamin K (p-value= 0.092) were the significant risk factors

for the UGIB patients to die in our study. We found also that the patient being a male patient was a protective factor against the UGIB patients to die (p-value= 0.136).

On multivariate analysis, we found that being a male UGIB patient (p-value= 0.017) was the only significant factor causing the UGIB patients to die in our study participants. On the other hand, we found that receiving antibiotics (p-value= 0.021) and being transfused with PLT (0.008) were the protective factors in our study.

## **7. LIMITATIONS**

- ❖ As this study was retrospective, outcome of patients who were transferred out and who left against medical advice is unknown
- ❖ Detailed identification of risk factors like alcohol, cigarettes and medication use was limited due to the retrospective nature of the study
- ❖ Unavailability of the medical records and poor documentation of results and management, contributed to the low sample size
- ❖ Single center study

## **8. CONCLUSION**

The most common causes of UGIB were esophageal varices and PUD. Diagnostic endoscopy was done for only 69 of the patients and only 30 (22.7%) of all the patients had therapeutic endoscopy. Mortality was higher in the patients <60 years old, with the leading cause of death being hemorrhagic shock. Hence early scoring, diagnosis and management of patients with hemorrhagic shock along with appropriate transfusions and prophylaxis antibiotic use may lead to better outcome of patients with UGIB in the emergency department.

## **9. RECOMMENDATIONS**

- Early diagnosis and management of hemorrhagic shock has to be emphasized
- Appropriate use of prophylactic antibiotics should not be overlooked.
- More number of diagnostic and interventional endoscopies need to be done seeing how variceal bleeding is the commonest cause of UGIB.
- A prospective study with larger sample size needs to be done to better describe and analyze risk factors and scoring systems

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## Annex A: CHECKLIST FOR DATA COLLECTION

Addis Ababa University School of Medicine-Emergency Department

ID \_\_\_\_\_

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### Section I. Socio-Demographic Data of the Patient

1. Age (In completed Years) \_\_\_\_\_
2. Sex
  - I. Male
  - II. Female
3. Does the patient live in Addis Ababa?
  - I. yes
  - II. no

### Section II: Medical History of the Patient during the current presentation

- 5 For the current presentation, does the patient have *hematemesis*?
  - I. Yes
  - II. No
- 6 If “Yes” for Q-1 above, what kind is the hematemesis
  - I. Frank blood
  - II. Coffee colored
  - III. Both
- 7 Does the patient have *melena*?
  - I. Yes
  - II. No
- 8 Does the patient have *hematochezia*?
  - I. Yes
  - II. No
- 9 What was the systolic blood pressure of the patient at presentation
  - I.  $\leq 90$
  - II. 90 -119
  - III. 120-139
  - IV. 140-159
  - V. 160-179
  - VI.  $\geq 180$
- 10 What was the DBP of patient at presentation
  - I.  $\leq 60$
  - II. 60-69
  - III. 70-79
  - IV. 80-89
  - V. 90-100
  - VI. 100-119

VII.  $\geq 120$

11 Pulse rate

I.  $\leq 60$

III. 101-120

II. 60-100

IV.  $\geq 120$

12 Pulse pressure

I. 40-60

III.  $> 60$

II.  $< 40$

**SECTION 3 risk factors**

13 Major Symptoms

I. Jaundice	Yes	No
II. loss of appetite	Yes	No
III. Fatigue	Yes	No
IV. weight loss	Yes	No
V. dizziness and tinitis	Yes	No
VI. Headache	Yes	No
VII. Epigastric PAIN	Yes	No

14 Other Symptoms\_\_\_\_\_

15 COMORBIDITIES

I. Does The Patient Have Comorbidities Yes No

16 Comorbidity Illness

I. DM	V. Hematologic Malignancy
II. CKD	VI. RVI
III. Cardiac illness	VII. Two or more comorbidities
IV. Solid Organ Malignancy	VIII. others

17 Aims 65 Score\_\_\_\_\_

18 Clinical Rockall Score\_\_\_\_\_

19 Medication

II. Recent medication intake history Yes No

20 Type of medication taken if any\_\_\_\_\_

21 Chronic Alcohol use for greater than 5 to 10 years (2 drinks per day for men; 1 drink per day for women)

I. Yes

II. No

22 Chronic Cigarette smoker

I. Less Than One Pack Year?

III. >3 Pack Years

II. 1-3 Pack Years

23 repeated dyspepsia treatment

I. Yes

II. No

24 Clinical diagnosis of UGIB\_\_\_\_\_

#### **SECTION 4 Diagnostic modalities**

25 HEMOGLOBIN IN GM/DL

I. Done

II. Not Done

26 HGB result

I.  $\leq 8$

III. 13-15

II. 9-12

IV.  $\geq 16$

27 PLATELET IN MICROLITERS

I. Done

II. Not Done

28 PLT result

I.  $< 20000$

V. 150001-450000

II. 20000-50000

VI.  $> 450000$

III. 50001-100000

VII. Not Done

IV. 100001-150000

29 Was stool H pylori test done

I. Yes

II. No

30 if yes to Q 27, the result is

I. positive

II. negative

31 Was INR done?



I. Yes

II. No

44 If the answer for the above Q is “Yes”, what was the finding? \_\_\_\_\_

45 Was therapeutic endoscopy done?

I. Yes

II. No

46 If yes to Q 37, what procedure was done?

I. Band ligation

III. Epinephrine injection

II. Ballon tamponade

IV. open surgery

47 How long did the patient stay in the Emergency room before endoscopy was done ?

I. within 24hours

V. more than 7 days

II. 48 hours

VI. after discharge from ed

III. 3 to 5 days

VII. before admission to ed

IV. 5 to 7 days

VIII. not done

48 What management was given at emergency? \_\_\_\_\_

49 Was The Patient Kept NPO for 24 hours

I. Yes

II. No

50 Was the patient given packed RBC or whole blood?

I. Yes

II. No

51 If yes, What was the indication

I. hemoglobin <8

III. active bleeding

II. hemoglobin 8-9

IV. severe anemia plus active bleeding

52 Was the patient transfused with platelets

I. Yes

II. No

53 If yes, what was the indication

I. <=20,000

IV. severe thrombocytopenia plus active bleeding

II. 20000-50000

III. active bleeding

54 Was the patient transfused with Fresh frozen plasma?

I. YES

II. NO

55 If yes, what was the indication

- I. INR>1.5  
 II. Active Bleeding  
 III. Unknown
- 56 Were prophylaxis antibiotics given for variceal bleeding  
 I. Yes  
 II. No
- 57 indication for antibiotics\_\_\_\_\_
- 58 If Yes, What Antibiotic?  
 \_\_\_\_\_
- 59 Was Vit K given ?  
 I. Yes  
 II. No
- 60 What was the indication  
 I. INR > 1.5  
 II. Active Bleeding  
 III. Unknown
- 61 Were NSAIDS, ASA, WARFARIN or anticoagulants, Herbal or There Offending Medications Discontinued  
 I. YES  
 II. NO
- 62 Was the patient intubated?  
 I. Yes  
 II. No
- 63 If yes for Q51, what was the indication?  
 I. GCS <=8 at presentation  
 II. airway protection for endoscopy  
 III. Massive Aspiration  
 IV. respiratory failure
- 64 Time of intubation?  
 I. at admission  
 II. Immediately before endoscopy  
 III. after endoscopy  
 IV. after deterioration
- 65 What was the outcome of the patient?  
 I. Deteriorated at Ed  
 II. Died at Ed  
 III. Improved
- 66 if deteriorated, cause?  
 I. Rebleeds  
 II. Hepatic Encephalopathy  
 III. Hospital Acquired Infection  
 IV. Electrolyte Abnormality  
 V. Sepsis  
 VI. Improved  
 VII. Died
- 67 Rebleeds?  
 I. Yes  
 II. No

68 if rebleeding, when?

I. after medical management

II. after Medical and endoscopic intervention

69 Onset of rebleeding after endoscopy?  
\_\_\_\_\_

70 diagnosis of hepatic encephalopathy?

I. at admission

III. No Encephalopathy

II. after deterioration

71 cause of death? \_\_\_\_\_

72 Duration of ED stay BEFORE DEATH?

I. Within 24 Hours of Admission

IV. More Than One Week After Admission

II. Within 48 Hrs After Admission

III. 48hrs To One Week After Admission

V. Discharged

73 Where was the disposition?

I. Ward

IV. OR

II. Discharged

V. Left against medical advice

III. ICU