


Epidemiological, Clinical, Etiological and Evolutionary Profile of Patients Hospitalized for Upper Digestive Hemorrhage at the Sourô Sanou University Hospital Center in Bobo-Dioulasso

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Abstract

Introduction: Upper gastrointestinal bleeding, a potentially fatal medical and surgical emergency, is still frequent and polymorphic in our context. The objective of this work was to describe the epidemiological, clinical, etiological, and evolutionary profile of patients hospitalized for upper gastrointestinal bleeding at the Sourô Sanou University Hospital Center in Bobo-Dioulasso. **Patients and Methods:** This was a retrospective cohort study conducted from 01/01/2021 to 12/31/2023 in the Hepato-Gastroenterology Department of the Sourô Sanou University Hospital. It included patients hospitalized for upper gastrointestinal bleeding with a usable medical record. The study variables were sociodemographic, clinical, paraclinical, therapeutic, and evolutionary. Quantitative variables were measured by their means or medians, accompanied by their standard deviations, and qualitative variables by their proportions. **Results:** During the study period, the frequency of upper gastrointestinal bleeding was 16.9% and the records of 291 patients were included. The median age was 50 years, and the sex ratio was 2.6. Informal sector workers accounted for more than half of the patients (51.6%). The most common mode of presenta-



tion was hematemesis in 82% of cases. The main etiologies found were peptic ulcer disease and ruptured esophageal varices in 54.3% and 24% of cases, respectively. Blood transfusion was required for 46.4% of patients, and treatment with proton pump inhibitors was necessary in 95.2% of cases. The overall case fatality from upper gastrointestinal bleeding was 20%. **Conclusion:** Upper gastrointestinal bleeding affects at least one in six patients hospitalized in Gastroenterology in our setting. Men in their fifties, working in the informal sector, are the most affected. Peptic ulcers are the most common cause, and mortality remains high. Communicating the harmful effects of self-medication would help change behaviors.

Keywords

Upper Gastrointestinal Bleeding, Gastroduodenal Peptic Ulcer, Rupture of Esophageal Varices, Mortality, Sourô Sanou University Hospital

1. Introduction

Upper gastrointestinal bleeding (UGIB) is a common and potentially life-threatening medical and surgical emergency requiring rapid and effective management. It represents a major cause of morbidity and mortality worldwide, with epidemiological and clinical profiles that vary considerably depending on the region [1]-[3].

In developed countries, particularly in Europe and the United States, the incidence of UGIB varies from 45/100,000 to 150/100,000 inhabitants, depending on the country, with a decline in incidence reaching 40% in some countries [4]. However, despite progress in the practice of therapeutic endoscopy, mortality remains high, reaching 5% to 10% [5] and even 14% in 17.4% in Ghana [6].

In Africa, UGIB is often associated with higher mortality rates due to its occurrence in conditions of inaccessibility to therapeutic endoscopy and underlying pathologies [7]. Varying hospital prevalences of 7.3% in Togo [8], 6.7% in Mali [9], and 24.5% in Uganda [10], with respective mortality rates of 5%, 14.3% and 1.6% have been reported.

In Burkina Faso, Sombié [2] in 2015 reported that UGIB of ulcerative origin represented the most frequent etiology with 52.3% of cases and a mortality of 17% at the Yalgado Ouédraogo University Hospital Center. A hospital frequency of 11.5% and an overall mortality of 12.8% were reported by Kinda in 2021 at the Sourô Sanou University Hospital in Bobo-Dioulasso in a study on digestive hemorrhages [11]. Series from developed European countries are characterized by cohorts of elderly patients and, with multiple comorbidities weakening the terrain and favoring death [12]. While studies by African authors reported younger subjects rather weakened by bacterial infections, an unstable hemodynamic state, and hepatocellular insufficiency, factors favoring their death [2] [13]-[16]. An understanding of the conditions under which this high mortality reported in studies occurs is necessary to improve care. The objective of this study was to describe the

epidemiological, clinical, etiological, and evolutionary profile of patients hospitalized for upper gastrointestinal bleeding at the Sourô Sanou University Hospital in Bobo-Dioulasso, in order to better guide therapeutic interventions and prevention.

2. Patients and Methods

2.1. Study Framework

The study was conducted in the Hepato-Gastroenterology (HGE) Department of the Sourô Sanou University Hospital in Bobo-Dioulasso. The Sourô Sanou University Hospital is the reference center for western Burkina Faso, serving the health regions of Hauts-Bassins, Cascades, Sud-Ouest, and Boucle du Mouhoun.

2.2. Study Type and Period

This was a retrospective cohort study conducted from January 1, 2021, to December 31, 2023, a study period of 36 months.

2.3. Study Population and Sampling

The target of our study was all patients with upper gastrointestinal bleeding in the Sourô Sanou University Hospital catchment area. The source population consisted of patients hospitalized in the HGE department during the period. Patients admitted to the Sourô Sanou University Hospital HGE Department for UGIB during the study period and with complete, usable clinical records were included. Patients admitted to the Hepato-Gastroenterology department of the Sourô Sanou University Hospital Center for UGIB during the study period and with complete, usable clinical records were included.

Sampling consisted of a census and exhaustive recruitment. All patients meeting the study criteria were included.

2.4. Study Variables

The study variables were grouped into five main items: sociodemographic data (age, sex, residence, and occupation), clinical data (mode of admission, patient history, methods of UGIB detection, physical signs upon admission, and presence or absence of shock upon admission), paraclinical data (hemoglobin level, serum creatinine level, and upper gastrointestinal endoscopy results), therapeutic data (initial nonspecific treatment, specific medical treatment, surgical treatment), and outcome data (length of hospitalization, mode of discharge, existence or absence of recurrence, and occurrence or absence of complications during hospitalization).

2.5. Data Collection Techniques and Tools

Data collection was carried out using a form developed with Epi-Info and consisted of a review of the hospitalization register and clinical records of patients hospitalized in the Hepato-Gastroenterology department of the Sourô Sanou Uni-

versity Hospital during the study period.

2.6. Statistical Data Analysis

Data entry and statistical analysis were performed using Microsoft Office 2016 and STATA version 14. Quantitative variables were measured by their means or medians, along with their standard deviations, and qualitative variables by their proportions.

2.7. Ethical Considerations

The study received approval from representatives of the Sourô Sanou University Hospital Institutional Ethics Committee before its initiation.

Data collection was conducted with respect for patient anonymity and confidentiality. Therefore, only the medical record number was recorded. No patient names or identifying information were included. These data were used solely for this study.

3. Results

During the study period, 1791 patients were hospitalized in the Sourô Sanou University Hospital HGE department, including 303 patients for UGIB, representing an overall frequency of 16.9%. The usable records of 291 patients were included, with variations in frequency from one year to the next. Patient flow diagram and frequency of UGIB are detailed in **Figure 1**.

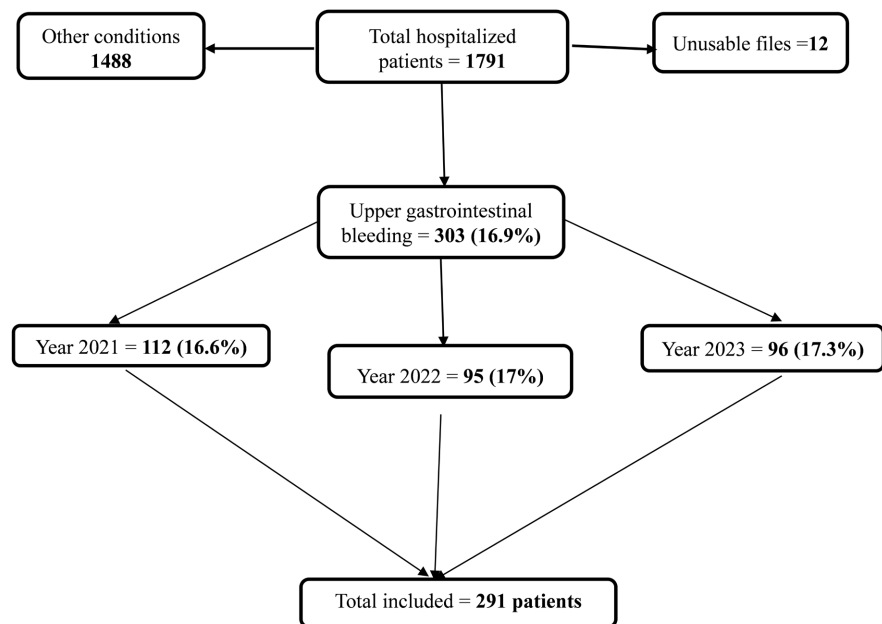


Figure 1. Patient flow diagram and frequency of upper gastrointestinal bleeding.

3.1. Sociodemographic Characteristics

In our series, the mean age was 50 years \pm 1.02 years, with a range of 36 to 63 years,

and the *sex ratio* was 2.6. The various sociodemographic characteristics of patients are detailed in **Table 1**.

Table 1. Sociodemographic characteristics of patients (N = 291).

Variables	Number	Percentage
Gender		
Male	210	72.2
Female	81	27.8
Main Occupation		
Informal Sector	150	51.6
Farmer	86	29.6
Employee	31	10.6
Housewife	17	5.8
Pupil/Student	7	2.4
Place of Residence		
Urban	161	55.3
Rural	130	44.7

3.2. Patient Medical History and Lifestyle

A history of peptic ulcer disease was found in 58 (20%) patients. Approximately 39 (13%) cases of viral hepatitis were documented, including 27 hepatitis B virus (HBV) infections, 10 hepatitis C virus (HCV) infections, and 2 HBV and HCV coinfections. Hypertension and cirrhosis affected 12% and 10% of patients, respectively.

Regarding risk behaviors, alcohol consumption, smoking, and nonsteroidal anti-inflammatory drug (NSAID) use were reported in 65 (23%), 45 (16%), and 35 (12%), respectively, of patients with gastroduodenal peptic ulcer.

3.3. Clinical and Laboratory Data

The majority of patients, 255 (87.6%), were evacuated in an emergency setting, and the others were seen during an outpatient consultation before hospitalization. The main mode of presentation was hematemesis (82%), followed by melena (54%); other functional signs such as abdominal pain and dizziness were reported in 108 patients (37%). Signs of hemodynamic shock were reported in 7.2% of patients. The mean complete Rockall score, assessed in 162 patients, was 2.8 ± 1.4 , with a range of 0 to 8 (**Table 2**).

Table 2. Distribution of the various clinical and laboratory signs of the patients.

Variables	Number	Percentage
Normal Consciousness		
Yes	269	92.4
No	22	7.6

Continued

Paleness		
Yes	191	65.6
No	100	34.4
Jaundice		
Yes	36	12.4
No	255	87.6
Ascites		
Yes	33	11.3
No	258	88.7
Hepatomegaly		
Yes	40	13.8
No	251	86.2
Oedema of the Lower Limbs		
Yes	36	12.4
No	255	87.6
Normal Pulse Rate		
Yes	176	60.5
No	115	39.5
Blood Pressure		
Normal	43	14.9
Low	198	68.1
High	49	17.0
Hypovolemic Shock		
Yes	21	7.2
No	270	92.8
Hemoglobin Level (g/dl)		
<7	155	53.4
[7 - 10]	81	27.8
]10 - 14]	37	12.8
>14	18	6.0
Hematocrit Level (%)		
<20	134	46.2
[20 - 30]	98	33.5
]30 - 45]	50	17.3
>45	9	3.0
Rockall Score		
[0 - 2]	82	50.6
<2	80	49.4

3.4. Etiologies of Upper Gastrointestinal Bleeding

In our study, 162 (55.7%) patients underwent upper gastrointestinal endoscopy. The main causes of upper gastrointestinal bleeding were gastroduodenal peptic ulcer (43.2%), followed by ruptured esophageal varices (19.1%). **Table 3** below provides a breakdown of UGIB etiologies based on upper gastrointestinal endoscopy results.

Table 3. Distribution of the main etiologies of upper gastrointestinal bleeding among patients who underwent upper gastrointestinal endoscopy.

Variables	Number	Percentage
Gastroduodenal peptic ulcer	70	43.2
Rupture of esophageal varices	31	19.1
Gastropathies	23	14.2
Gastric dysmitosis	3	1.9
Mallory-Weiss syndrome	2	1.2
Normal upper gastrointestinal endoscopy	33	20.4
Total	162	100

*A patient could have several types of lesions.

3.5. Therapeutic Data

Initial management of unstable patients was provided in the Sourô Sanou University Hospital emergency department, and patients were transferred to the HGE after stabilization. However, additional resuscitation measures, such as fluid replacement and blood transfusion, are sometimes performed in the HGE department following possible secondary decompensation (**Table 4**).

Table 4. Distribution of the main treatments administered to hospitalized patients (N = 291).

Variables	Number	Percentage
Vascular Filling		
No	269	92.4
Yes	22	7.6
Blood Transfusion		
No	156	53.6
Yes	135	46.4
Oxygen Therapy		
Yes	13	4.5
No	278	95.5
Proton Pump Inhibitors		
Yes	277	95.2
No	14	4.8

3.6. Evolutionary Data

The median length of hospitalization was five days, with an interquartile range of 3 to 8 days. The majority of patients were discharged alive, and 58 died, representing a case fatality rate of 20%. **Table 5** shows the distribution of patients by discharge method.

Furthermore, 10% (n = 29) of cases of recurrence were reported, and the major complication during hospitalization was decompensated anemia in 75.9% of cases (n = 22). Other complications were renal failure and sepsis in 4 and 3 cases, respectively.

Table 5. Distribution of discharge methods for different patients.

Variables	Number	Percentage
Alive	166	57
Death	58	20
Discharge against medical advice	46	16
Transfer	15	5
Discharge without medical advice	6	2
Total	291	100

In the bivariate analysis, sociodemographic factors and medical histories associated with mortality ($p < 0.2$) included age over 25 years, viral hepatitis, cirrhosis, and nonsteroidal anti-inflammatory drug use. Clinical and paraclinical factors associated with death included the presence of jaundice, edema, ascites, and hepatomegaly ($p < 0.2$). Therapeutic and progressive factors associated with mortality were an underlying bacterial infection, shock, and length of hospitalisation.

4. Discussion

Our study presented some limitations related to the lack of archiving and the handwritten system still in use. This may have led to a lack of completeness in hospitalized cases and the variables recorded in medical records and consultation registers. However, this study also contributes to knowledge on digestive hemorrhages in resource-limited countries in sub-Saharan Africa, and the results obtained are worth discussing.

4.1. Hospital Frequency of UGIB

The frequency of gastrointestinal bleeding (16.9%) during our study was comparable to that found by Kinda [11] in 2021 in Bobo-Dioulasso (17.9%). However, it remains higher than that reported in the Yahya study in 2022 in Kaduna [17], but lower than those reported by Saba [18] in 2019 in Ouagadougou (27.6%) and by Opio [10] in 2022 in Amolatar (24.5%). This difference in frequency could be explained by improved access to care through decentralized management of certain cases in district hospitals and private health centers. This thus limits medical evac-

uations to tertiary centers or referral hospitals.

The prevalence is clearly decreasing in developed countries due to better control of viral hepatitis through universal vaccination against hepatitis B and effective pangenotypic treatment of hepatitis C, thus reducing the progression to cirrhosis and its complications [19]. In sub-Saharan Africa [20], in several countries, we also noted a slight decrease in the frequency of UGIB reported during the study period, probably reflecting the overall improvement of health and care systems, with more specialists, allowing better diagnosis. Despite this decrease, the frequency of UGIB still remains high, probably related to self-medication by populations with NSAIDs, and the still high prevalence of viral hepatitis and cases of cirrhosis, sources of Esophageal varices [8].

4.2. Epidemiological Characteristics

In our study, the median age of patients was 50 years. Similar results have been reported by some authors in Africa, with median ages ranging from 42 to 54 years [14] [19] [21] [22]. This could rather be explained by the causes of UGIB in Africa, which are gastroduodenal peptic ulcer and rupture of esophageal varices [17]. Indeed, gastroduodenal peptic ulcer is a condition of young adults (mean age 46.2 years) that matures around the age of fifty. The rupture of esophageal varices is a corollary of the high prevalence of chronic viral hepatitis, of which cirrhosis is one of the main complications, also occurring at a young age. The average ages reported by authors in the West [23] are over 60 years. This reflects the aging of their populations, often associated with comorbidities and the regular use of NSAIDs and aspirin. Our study reports a male predominance with a sex ratio of 2.6, consistent with literature data [2] [19] [24]. There is a link between male predominance and the etiologies of UGIB; indeed, in the literature, gastroduodenal peptic ulcer is a condition that mainly affects the male gender, more exposed to certain risk factors in our context (alcoholism, smoking); the same is true for cirrhosis [2] [10] [20].

4.3. Clinical and Paraclinical Characteristics

A history of cirrhosis was reported in 10% of our patients. Surial *et al.* [25], through a 2021 systematic review, found a prevalence of viral cirrhosis between 4% and 13%. Indeed, chronic carriage of hepatitis B and C viruses is the main cause of cirrhosis in Burkina Faso [15]. NSAID use was found in 12% of patients. Proportions of 16% and 22% were reported by Gassaye [26] and Kinda [11], respectively. The retrospective nature of our study, the urgent nature of gastrointestinal bleeding, and self-medication by often uneducated populations, unaware of the types of NSAID molecules used, could lead to underreporting of NSAID use history in our patients.

Hematemesis was the main mode of revelation in our series, with 82% of cases. Hematemesis remains the most frequently reported mode of exteriorization of UGIB in most African studies [2] [8] [11] [19]. Signs of hemodynamic shock were reported in 7.2% of patients. Obeidat *et al.* [27], in a meta-analysis, reported a

proportion of hemodynamic instability between 22% and 25% at the admission of patients and less than 7% in hospitalized patients, which is comparable to our result. These results are explained by the fact that patients are hemodynamically stabilized upstream, in the emergency room or in intensive care, before their hospitalization in specialized services. The hemoglobin thresholds that triggered blood transfusion were those of less than 7 g/dL and <10 g/dL for patients with heart disease or renal failure. Vascular replacement was performed in the presence of signs of shock and unstable hemodynamic status (tachypnea, pallor of the mucous membranes, cold extremities, thready pulse, tachycardia, arterial hypotension), with or without an altered state of consciousness, while awaiting blood transfusion. Bhuyan *et al.* [28] reported a frequency of 50% in a population of elderly people with more comorbidities. In our series, 53.4% of patients had a hemoglobin level below 7 g/dl. Our result is similar to that of Bignoumba [14] in Gabon (50%) and higher than that of Moussa [16] in Tchad (30%). This could be explained, on the one hand, by the delay in consultation due to the low socioeconomic level and, on the other hand, by the difficulty of transfusion at the peripheral level linked to the insufficiency of labile blood products.

In our study, 162 (55.7%) patients underwent upper gastrointestinal endoscopy. During the study, 45% of eligible patients did not undergo endoscopy for several reasons: geographic inaccessibility (unavailability of digestive endoscopy at this hospital at the time the study was conducted), financial inaccessibility due to lack of social security, and third-party payment. And some patients also died before stabilization of their hemodynamic status. This missing information may indeed have a potential impact on the reported etiological distribution. However, the arguments concerning the youth of the population and the tendency toward self-medication with NSAIDs are also valid regarding the highlighted distribution. The two most common etiologies were gastroduodenal ulcer (43.2%) and ruptured esophageal varices (19.1%). Our result overlaps with those found by Kinda [11] and Sombié [2] in Burkina Faso, Bagny [8] in Togo, and Chaabane [29] in Tunisia, who all reported in their studies that gastroduodenal ulcerative disease is the main etiology of UGIB. This high frequency could be justified by a high prevalence of *Helicobacter pylori* infection in Africa, often asymptomatic, affecting more than 50% of the population [30], and the over-the-counter sale of NSAIDs, encouraging self-medication. As for the rupture of esophageal varices, it is also reported in second place in several studies [14] [31] from countries where the prevalence of cirrhosis of viral origin is also high. Other studies have reported the predominance of ruptured esophageal or gastric varices [3] [17] over gastric or duodenal ulcers. In all cases, these two etiologies are the most frequently implicated.

4.4. Therapeutic and Progression Characteristics

Nearly half of our patients (46.4%) received a blood transfusion. Higher proportions of transfusion cases were reported by Kinda [11], Ntagirabiri [31], and Dicko [9], in 63.4%, 63.9%, and 61.9% of cases, respectively. Improvements in the labile

blood product supply system, with the involvement of the highest government authorities, allowing rapid transfusion of patients in the emergency department, could explain the rate reported in our study. During hospitalization, 95.2% of patients ($n = 277$) received proton pump inhibitor therapy. These results thus corroborate the predominance of gastroduodenal ulcer, identified as the main etiology of UGIB in our series. No cases were treated with vasoactive substances or required hemostatic surgery. It is important to note the geographical and financial inaccessibility of vasoactive drugs and the unavailability of therapeutic and interventional endoscopy equipment at the Sourô Sanou University Hospital.

Bleeding recurrence during hospitalization was observed in 10% of patients. Lower results were reported by El Mekkaoui [32] in Tunisia (7.5%) and Dicko [9] in Mali (7.9%). The frequency of recurrence of UGIB depends on the underlying pathology; it is frequent in cases of rupture of esophageal varices and depends on the quality of care [15]. The hospitalization time observed in this study is superimposable with those of the studies of Kinda [11] and of Ntagirabiri [31], which reported an average stay of 6 days. Early performance of a digestive endoscopy in cases of upper gastrointestinal bleeding, as soon as the patient's hemodynamic state has stabilized, allows for rapid and appropriate intervention and is thus associated with a reduction in hospitalization times and rebleeding.

During the hospital stay, 58 cases of death, representing a mortality of 20%, were observed. A high mortality rate of between 14% and 22% has been reported by other authors in Sub-Saharan Africa [8] [9] [11] [15] [13] [31] contrasting with the results of series from developed countries [19] [29] [32] [33] which reported lower mortality rates of between 1.9% and 5.5%. The delay in consultation and treatment, the absence of a technical platform for endoscopic hemostasis of ulcers, and the failure to perform ligation of esophageal varices in our study could explain this high mortality. The mean complete Rockall score was 2.8, a result close to those reported by Sombié [2] and Zombré [34], which were 3.2 and 4.7, respectively. The Rockall score allows for the assessment of the risk of death. However, the incompleteness of the data due to a lack of endoscopic results in some patients limits its interpretation in our context.

In the bivariate analysis, sociodemographic factors and medical histories associated with mortality ($p < 0.2$) included age over 25 years, viral hepatitis, cirrhosis, and nonsteroidal anti-inflammatory drug use. Clinical and paraclinical factors associated with death included the presence of jaundice, edema, ascites, and hepatomegaly ($p < 0.2$). Therapeutic and progressive factors associated with mortality were an underlying bacterial infection, shock, and length of hospitalisation. In the Opio study, the factors significantly associated with UGIB on bivariate analysis included sex, previous gastrointestinal tract bleeding, smoking, alcohol consumption, engagement in fishing, schistosomiasis, esophagitis, and tuberculosis disease. Alcohol use ($p = 0.030$) and having a previous gastrointestinal bleeding ($p < 0.001$) were the factors independently associated with UGIB in the study of Opio [10]. Most acute upper gastrointestinal bleeding occurs in people who are already pre-

disposed, which could explain this situation. Indeed, people who have already experienced gastrointestinal bleeding already have pre-existing risk factors, generally chronic, making them vulnerable and exposed to an increased risk of recurrence.

5. Conclusion

Upper gastrointestinal bleeding remains common in our context. It mainly affects young adult males. It most often manifests as hematemesis, and the main cause is peptic ulcer disease. Management does not benefit from any endoscopic treatment or vasoactive drugs, which is a poor prognostic factor. Mortality remains high, and the factors associated with this mortality were the variceal origin of the bleeding and underlying bacterial infections. Effective control of viral hepatitis B and C, which cause cirrhosis, and accessibility to vasoactive drugs and endoscopic hemostasis treatments could improve patient prognosis.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Lasserre, N., Duval, F. and Pateron, D. (2009) Les hémorragies digestives hautes, conduite à tenir aux urgences. *3^{ème} Congrès de la société française de médecine d'urgence (SFMU)*, Paris, 3-5 June 2009, 98, 959-968.
- [2] Sombié, R., Tiendrébéogo, A., Guingané, A., Hagège, H., Lesgourgues, B., Lamy, V., *et al.* (2015) Hémorragie digestive haute: Aspects épidémiologiques et facteurs pronostiques au Burkina Faso (Afrique de l'ouest). *Journal Africain d'Hépatogastroentérologie*, **9**, 154-159. <https://doi.org/10.1007/s12157-015-0610-z>
- [3] Mohammed, Y.M.H., Abdelgader, A.A.M., Ahmed, I.B., Zidan, Y.M. and Ali, L.A. (2025) Clinical and Endoscopic Findings of Patients Presenting with Upper Gastrointestinal Bleeding in Khartoum, Sudan: A Cross-Sectional Study. *BMC Gastroenterology*, **25**, Article No. 636. <https://doi.org/10.1186/s12876-025-04256-5>
- [4] Lorenzo, D. and Debourdeau, A. (2021) L'hémorragie digestive en chiffres: Qu'avons-nous gagné en 30 ans? *La Presse Médicale Formation*, **2**, 460-465. <https://doi.org/10.1016/j.lpmfor.2021.10.016>
- [5] van Leerdam, M.E. (2008) Epidemiology of Acute Upper Gastrointestinal Bleeding. *Best Practice & Research Clinical Gastroenterology*, **22**, 209-224. <https://doi.org/10.1016/j.bpg.2007.10.011>
- [6] Adu-Darko, N., Gyabaah, S., Asamoah, O.Y., Laryea, T.A., Opong, B., Micah, E., *et al.* (2025) Etiology and Short-Term Outcomes of Upper Gastrointestinal Bleeding in Patients Presenting at the Emergency Department in a Tertiary Hospital in a Low Resource Setting—A Prospective Cohort Study. *JGH Open*, **9**, e70167. <https://doi.org/10.1002/jgh3.70167>
- [7] Odeghe, E.A., Adeniyi, O.F., Oluyemi, A.O., Nwude, V.N. and Keshinro, S.O. (2022) Upper Gastrointestinal Bleeding in a Nigerian Diagnostic Center: A Retrospective Study of Endoscopic Records. *Annals of African Surgery*, **19**, 28-32. <https://doi.org/10.4314/aas.v19i1.6>
- [8] Bagny, A., Bouglouga, O., Djibril, M.A., Mba, K.B. and Redah, D. (2012) Profil éti-

- ologique des hémorragies digestives hautes de l'adulte au CHU-campus de Lomé (Togo). *Journal Africain d'Hépatogastroentérologie*, **6**, 38-42.
<https://doi.org/10.1007/s12157-012-0356-1>
- [9] Dicko, M., Samake, D.K.W., Coulibaly, S.H.W., Soumaré, G., Tounkara, M., Katilé, D., et al. (2018) Acute Upper Digestive Bleedings in Hospital in Bamako. *Open Journal of Gastroenterology*, **8**, 387-393. <https://doi.org/10.4236/ojgas.2018.811040>
- [10] Opio, W., Okello, T.R. and Nyeko, R. (2025) Hospital-Based Prevalence and Predictors of Upper Gastrointestinal Bleeding in Northern Uganda: A Retrospective Cross-Sectional Study. *BMC Gastroenterology*, **25**, Article No. 475.
<https://doi.org/10.1186/s12876-025-04072-x>
- [11] Kinda, K. (2021) Profil Epidémiologique, Diagnostique, Thérapeutique et Pronostique des Hémorragies Digestives Au Service D'hépatogastroentérologie Du Centre Hospitalier Universitaire Sourô Sanou (CHUSS). Med Thesis, Nazi Boni University.
- [12] Alissa Sifatunnada, P., Maimunah, U. and Kahar, H. (2023) Risk Factors for Mortality among Upper Gastrointestinal Bleeding Patients: Literature Review. *International Journal of Research Publications*, **139**, 39-45.
<https://doi.org/10.47119/ijrp10013911220235767>
- [13] Bagny, A., Kogoe, L.R.M., Kaaga, L.Y., Lawson-Ananissoh, L.M., Redah, D., Gbolou, M.H., et al. (2021) Facteurs Épidémiologiques et Pronostiques Associés Aux Étiologies Des Hémorragies Digestives Hautes au CHU Campus de Lomé. *European Scientific Journal ESJ*, **17**, 44. <https://doi.org/10.19044/esj.2021.v17n34p44>
- [14] Bignoumba, P.E.L., Moussavou, I.F.M. and Kombila, J.B.M. (2019) Hémorragie Digestive Haute au Centre Hospitalier Universitaire de Libreville: Aspects Cliniques et Prise en Charge Réelle: À Propos de 210 Patients. *Health Sciences and Disease*, **20**, 20-22.
- [15] Sawadogo, A., Sermé, A.K. and Barro, S.D. (2006) Les hémorragies digestives et prise d'anti-inflammatoires. *Burkina Médical*, 25-28.
- [16] Moussa, A.M., Ouchemi, C., Béasngar, J.B., Saleh, T.M., Constant, A. and Nouedoui, C. (2018) Profil Clinique, Étiologies et Pronostic des Hémorragies Digestives Hautes à Ndjamena (Tchad). *Health Sciences and Disease*, **19**, 65-68.
- [17] Yahya, H., Umar, H., Shekari, B.T. and Sani, K. (2022) Endoscopy for Upper Gastrointestinal Bleeding in a Tertiary Hospital in Kaduna, North-West Nigeria: Experience and Findings. *Annals of African Medicine*, **21**, 262-268.
https://doi.org/10.4103/aam.aam_64_21
- [18] Saba, C. (2019) Les hémorragies digestives dans le service d'hépatogastro-entérologie du centre hospitalier universitaire Yalgado OUEDRAOGO: A propos de 60 cas. Med Thesis, Joseph Ki-Zerbo University.
- [19] Saydam, Ş.S., Molnar, M. and Vora, P. (2023) The Global Epidemiology of Upper and Lower Gastrointestinal Bleeding in General Population: A Systematic Review. *World Journal of Gastrointestinal Surgery*, **15**, 723-739.
<https://doi.org/10.4240/wjgs.v15.i4.723>
- [20] OHDHAF: Observatoire Hémorragies Digestives Hautes en Afrique Francophone. Méthodes et résultats préliminaires d'une aventure africaine de l'ANGH (2010).
<https://angh.net/abstracts/ohdhaf-observatoire-hemorragies-digestives-hautes-en-afrique-francophone-methodes-et-resultats-preliminaires-dune-aventure-africaine-de-langh/>
- [21] Abougergi, M.S. (2018) Epidemiology of Upper Gastrointestinal Hemorrhage in the USA: Is the Bleeding Slowing down? *Digestive Diseases and Sciences*, **63**, 1091-1093.
<https://doi.org/10.1007/s10620-018-4951-5>

- [22] Ouazzani, N., Hanafi, K., Benajah, D., Aqodad, N., El Abkari, M. and Ibrahimi, A. (2009) Profil épidémiologique des hémorragies digestives hautes associées aux anti-inflammatoires non stéroïdiens. *Revue d'Épidémiologie et de Santé Publique*, **57**, S46. <https://doi.org/10.1016/j.respe.2009.02.158>
- [23] Leport, J. (2014) Hémorragies digestives basses in Du symptôme à la prescription en médecine générale: Symptoms-Diagnostic-Thérapeutique. 476-480.
- [24] Hooi, J.K.Y., Lai, W.Y., Ng, W.K., Suen, M.M.Y., Underwood, F.E., Tanyingoh, D., et al (2017) Global Prevalence of Helicobacter Pylori Infection: Systematic Review and Meta-Analysis. *Gastroenterology*, **153**, 420-429. <https://doi.org/10.1053/j.gastro.2017.04.022>
- [25] Surial, B., Wyser, D., Béguelin, C., Ramírez-Mena, A., Rauch, A. and Wandeler, G. (2020) Prevalence of Liver Cirrhosis in Individuals with Hepatitis B Virus Infection in Sub-Saharan Africa: Systematic Review and Meta-Analysis. *Liver International*, **41**, 710-719. <https://doi.org/10.1111/liv.14744>
- [26] Gassaye, D., Atipo Ibara, B.I., Ndolo-Mpika, A.B., Ibara, J.R., Okouo, M., Ossendza, R.A., et al. (2004) Digestive Bleeding and Anti-Inflammatory Drugs at the Teaching Hospital of Brazzaville. *Bulletin de la Société de Pathologie Exotique*, **97**, 323-324.
- [27] Obeidat, M., Teutsch, B., Rancz, A., Tari, E., Márta, K., Veres, D.S., et al. (2023) One in Four Patients with Gastrointestinal Bleeding Develops Shock or Hemodynamic Instability: A Systematic Review and Meta-Analysis. *World Journal of Gastroenterology*, **29**, 4466-4480. <https://doi.org/10.3748/wjg.v29.i28.4466>
- [28] Bhuyan, S. and Chungkrang, S. (2023) Clinical Characteristics, Severity, and Outcome of Acute Upper Gastrointestinal Bleeding in Elderly and Non-Elderly Patients in a Tertiary Care Hospital—A Prospective Observational Study. *International Journal of Scientific Research*, **12**, 74-76. <https://doi.org/10.36106/ijsr/9505287>
- [29] Ben Chaabane, N., Ben Youssef, H., Ghedira, A., Loghmeri, H., Melki, W., Hellara, O., et al. (2010) Épidémiologie des hémorragies digestives hautes en Tunisie. *Acta Endoscopica*, **40**, 176-182. <https://doi.org/10.1007/s10190-010-0049-4>
- [30] Werme, K., Bisseye, C., Ouedraogo, I., Yonli, A.T., Ouermi, D., Djigma, F., et al. (2015) Diagnostic moléculaire d'helicobacter pylori par PCR chez les patients en consultation gastroentérologique au Centre Médical Saint Camille de Ouagadougou. *Pan African Medical Journal*, **21**, Article No. 123. <https://doi.org/10.11604/pamj.2015.21.123.6001>
- [31] Ntagirabiri, R., Mumana, A., Dunduri, D., Nimburanira, M. and Nzojyibiri, J. (2012) Hémorragie digestive haute de l'adulte au Burundi: Aspects épidémiologiques, étiologiques, thérapeutiques et évolutifs. *Journal Africain d'Hépatogastroentérologie*, **6**, 272-275. <https://doi.org/10.1007/s12157-012-0409-4>
- [32] El Mekkaoui, A., Saâda, K., Mellouki, I., El Yousfi, M., Aqodad, N., El Abkari, M., et al. (2012) La différence épidémiologique des hémorragies digestives hautes entre les hommes et les femmes. *Pan African Medical Journal*, **12**, Article No. 94.
- [33] Lauret, E., Herrero, J., Blanco, L., Castaño, O., Rodriguez, M., Pérez, I., et al. (2013) Epidemiological Clinical Features and Evolution of Gastroduodenal Ulcer Bleeding in a Tertiary Care Hospital in Spain, during the Last Seven Years. *Gastroenterology Research and Practice*, **2013**, Article ID: 584540. <https://doi.org/10.1155/2013/584540>
- [34] Zombré, N.M.S., Sawadogo, R., Coulibaly, A., Ouango, J., Guingane, A., Zongo, A., et al. (2023) Hémorragies Digestives Hautes: Facteurs Associés Au Risque De Décès Chez Les Patients Cirrhotiques Au Centre Hospitalier Universitaire Yalgado Ouédraogo. *3ème Congrès SOBUHGEEED*, Ouagadougou, 23-24 Novembre 2023, 160-161.