

# Epidemiological, Diagnostic and Evolutionary Profile of Stomach Cancer at Bogodogo University Hospital (Chub) in Ouagadougou (Burkina Faso)

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## To cite this article:

Bambara Hierrhum Aboubacar, Zerbo Nina Assanatou Jumelle, Kouraogo Sonia Yasmina, Coulibaly Aboubacar, Zida Maurice. (2023). Epidemiological, Diagnostic and Evolutionary Profile of Stomach Cancer at Bogodogo University Hospital (Chub) in Ouagadougou (Burkina Faso). *International Journal of Clinical Oncology and Cancer Research*, 9(4), 101-106. <https://doi.org/10.11648/j.ijcocr.20230804.14>

**Received:** November 27, 2023; **Accepted:** December 11, 2023; **Published:** December 22, 2023

**Abstract:** Introduction: According to WHO estimates, in 2020 there will be over 1.1 million cases of stomach cancer, including 770,000 deaths, and it remains the third leading cause of cancer deaths worldwide. In Burkina Faso, Zoungrana et al. (2021) noted that stomach cancer ranked second among digestive cancers, with a prevalence of 74.28%. The aim of our study was to determine the epidemiological, diagnostic and evolutionary profile of stomach cancer in Ouagadougou. Patients and methods: This was a retrospective and descriptive study carried out in the Oncology and Clinical Hematology Department of CHUB in Ouagadougou from January 1, 2018 to December 31, 2022. We included in our study all patients who presented a stomach cancer confirmed by anatomo-pathological examination and who consulted in oncology and/or were hospitalized during the study period. Results: During the study period, 50 cases of gastric cancer were diagnosed, representing a hospital prevalence of 9.15%. The mean age of our patients was 57.6 years. The female gender was predominant (58% female). The most important risk factor was the consumption of salty foods (98%). Epigastric pain was the most frequent warning sign, found in 98% of patients, followed by vomiting (88%). Endoscopically, antral location was the most frequent with 58%. Adenocarcinoma was the most frequent histological appearance with 88%. The ulcerative-bourgeois aspect was the most frequent in 82% of patients. 66% of patients had secondary locations. The liver was the most frequent site of metastasis in 58% of patients. We found 66% of patients with stage IV pathology. In our study, 58% of patients received treatment, of which 83% of patients received palliative treatment. Surgical treatment was performed in 30%, partial gastrectomy in 80% of patients. In our study, 58% of patients received chemotherapy. The Folfox protocol was more used with 79.31%. At the end of our study, 32% of our patients were alive. The median survival was 2 months. Conclusion: Stomach cancer is not very common in our context. The implementation of awareness programs for the population is necessary.

**Keywords:** Stomach, Cancer, Ouagadougou

## 1. Introduction

Public health problem, stomach cancer is a multifactorial disease; many environmental and genetic factors can

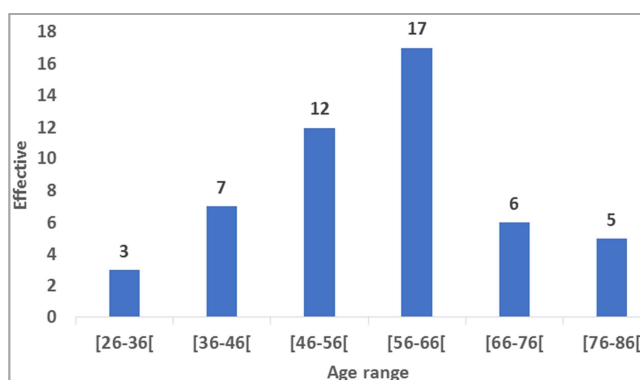
influence its development [1]. The main risk factors are chronic infection with *Helicobacter pylori* (by far the most frequent) high consumption of salt, dietary nitrates used as preservatives; alcohol and tobacco; infection with Epstein

Baer Virus (EBV), and the history of partial gastrectomy [2]. The diagnosis of this cancer is usually late, making it a cancer with a poor prognosis [3]. According to the World Health Organization (WHO) estimates in 2020, there are more than 1.1 million cases of stomach cancer including 770,000 deaths and it remains the third leading cause of cancer deaths in the world [4]. In the Maghreb, stomach cancer ranks 9th among all cancers, 2nd among cancers of the digestive tract [5]. In sub-Saharan Africa, its incidence is high. In Mali, Kouriba *et al.* (2021) noted that gastric cancer was the first digestive cancer at a frequency of 40.1% [5]. In Burkina Faso, Zoungrana *et al.* (2021), noted that stomach cancer came second in digestive cancers with a rate of 74,28% [6]. Our objective was to study the epidemiological, diagnostic and evolutionary profile of stomach cancer at CHU B in Ouagadougou from January 2018 to December 2022 in order to improve management.

## 2. Patients and Method

This was a retrospective descriptive study from January 1, 2018 to December 31, 2022. Were included all patients with stomach cancer confirmed by the anatomo-pathological examination who consulted in medical oncology and/ or were hospitalized in the Clinical Hematology Oncology department of CHU B during the study period. Patients with stomach cancer with incomplete medical records with a completion rate of less than 75% were not included. Data were collected from patients' clinical records, medical oncology consultation and/ or hospitalization records of the Clinical Hematology Oncology Department of the CHU B. The following parameters were collected: age, sex, medical and surgical history, the notion of alcohol consumption, tobacco, the notion of cancer in the family, clinical data of patients (reason for consultation, symptomatology, tumor location), results of upper digestive endoscopy and thoraco-abdomino-pelvic CT, pathology data, tumor classification and staging, chemotherapy and/or surgery data and evolutionary aspects. Patient fate and duration of follow-up since diagnosis. This data was captured with Epi info 7.2.2.6.

## 3. Results



**Figure 1.** Distribution of patients by age group ( $n = 50$ ).

During our study period, there were 546 cases of digestive cancer and 50 cases of stomach cancer (9.15%). The average age of patients was 57.06 years with extremes of 26 and 86 years. The age group [56 – 66] represented 34% followed by [46 – 56] 24%. Figure 1 shows the distribution of patients by age group.

There were 29 women (58%) with a sex ratio of 0.72.

The reasons for consultations were dominated by epigastric pain in 98% followed by vomiting with 88% of cases. Table 1 shows the distribution of patients by reason for consultation.

**Table 1.** Distribution of patients by reason for consultation.

Reasons for consultation	Effective	Percentage (%)
Epigastric pain	49	98
Vomiting	44	88
Weight loss	42	84
Dysphagia	34	68
Abdominal pain	31	62
Anorexia	22	44
Chest pain	22	44
Hematemesis	8	16
AEG	8	16
Eructation	8	16

Among the risk factors found, there was a consumption of salted food in nearly 98% followed by that of coffee in 68%. The distribution of risk factors is found at the level of table 2.

**Table 2.** Distribution of patients by risk factors.

Risk factors	Effective	Percentage (%)
Consumption of salted foods	49	98
Coffee	34	68
Cola	30	60
Alcohol	21	42
Personal ATCD of infection with Helicobacter Pylori or UGD	19	38
Consumption of fried or smoked foods	18	36
ATCD personal gastrectomy	4	8
Tobacco	2	4
Family ATCD of stomach cancer	1	2

Pathological examination was performed on gastric biopsies in 70% of cases and in 30% on gastrectomy parts. Adenocarcinoma was found in 44 patients (88%) followed by carcinomas and GIST with respectively 6% each. The HER2 profile was not searched in any of the patients.

Esosogastroduodenal fibroscopy (EGDF) was performed in all patients. Antral localization was found in 58% of cases followed by antropyloric localization in 18%. Table 3 presents the distribution of patients by EGDF site.

**Table 3.** Distribution of patients by tumor site at EGDF.

Tumor site at the EGDF	Effective	Percentage (%)
Antrum	29	58
Antropyloric	9	18
Body	6	12
Pylore	3	6
Cardia	2	4
Linite	1	2
Total	50	100

The ulcerative-bourgeois aspect was noted in 82% of cases

followed by ulcerative in 8%.

The division of patients into stage IV was found in 66% of cases followed by stage IIB in 10% of cases. Table 4 shows the distribution of patients by stage.

**Table 4.** Distribution of patients by stage.

Stage	Effective	Pourcentage (%)
Stage IA	2	4
Stage IB	4	8
Stage IIA	4	8
Stage IIB	5	10
Stage IIIA	1	2
Stage IIIB	1	2
Stage IV	33	66
Total	50	100

The metastases were in 33 patients (66%) on thoraco-abdominopelvic CT with liver localization (58%) followed by the lungs (24%). The distribution of patients according to the location of metastases is noted in table 5.

**Table 5.** Distribution of patients by site of metastases.

Metastases	Effective	Percentage (%)
Liver	19	58
Lungs	8	24
Peritoon	6	18

Metastases	Effective	Percentage (%)
Bone	0	0
Total	33	100

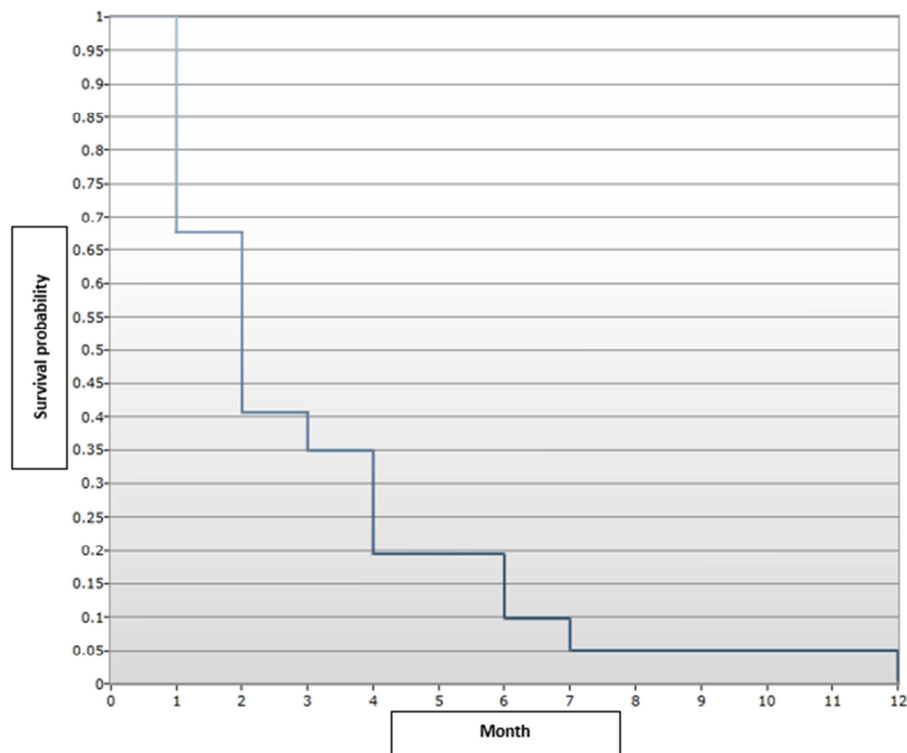
The surgery was performed in 15 patients (30%): 12 patients (80%) benefited from a partial gastrectomy of 4/5 and 3 patients (20%) of a feeding jejunostomy.

In our study, 29 patients (58%) received adjuvant chemotherapy in 5 patients (17%) and palliative chemotherapy in 24 patients (83%). The FOLFOX6 protocol was administered in 79.31% of patients followed by monotherapy with 500 mg CAPECITABINE tablet in 17.24%. The distribution of patients according to the chemotherapy protocol is represented by table 6.

**Table 6.** Distribution of patients by chemotherapy protocol.

Protocols	Effective	Percentage (%)
Folfox	23	79,31
Capecitabine	5	17,24
Capecitabine-oxaliplatin	3	10,34
Weekly Paclitaxel	2	6,88

At the end of our study, 32% of our patients were alive. The median survival was 2 months. Overall 12-month survival was 5%, and zero at 5 years. The overall patient survival curve is shown in Figure 2.



**Figure 2.** Overall patient survival curve (n = 50).

## 4. Discussion

In our study stomach cancer accounted for 9.15% of digestive cancers. Our score is higher than Bolenga et al.(2022) in Congo Brazzaville at 0.7% [1] and Kissi et al.(2016) in Côte

d'Ivoire at 6.4% [7]. However, this rate is lower than Youssouf et al. in Mali at 23.3% [8], Ouedraogo et al. (2018) in Burkina Faso in 2018 with 21.9% [9], and Bouglouga et al. (2014) in Togo in 2015 with 12.8% [10]. This may be due to the fact that some patients with suspected gastric cancer lesions whose malignant nature has not been confirmed histologically were

excluded from our study. Moreover, in sub-Saharan Africa, the geographical and financial inaccessibility of health facilities leads to self-medication.

Gastric cancer is rare before age 50 and the average age at diagnosis is over 70 in western series [11]. In our study, the average age was 57.06 years with extremes of 26 to 80 years. The most represented was 56 to 66 years. Our result is similar to those of Mabula *et al.* (2012) in Tanzania who was 52 [12], James *et al.* (2016) in Niger with 52.9 [13], Bang *et al.* (2021) in Cameroon with 54.98 [14], Youssouf *et al.* (2022) in Mali with 59.5 [8], then by Zoungrana *et al.* (2021) in Burkina Faso with 58.4 years [6] and in Algeria by Amar, Sahraoui, and Masmi who was 60.29 years [15]. But it is higher than that of Bolenga *et al.* (2022) in Congo Brazzaville with 50.71 years [1]. The average age for all these African authors is between 50 and 60 years. These results could be explained by the youth of African populations.

We note a female predominance in our series with a sex ratio of 0.72. Bang *et al.* (2021), also reported a female predominance of gastric cancer in Cameroon in 2020 with a sex ratio of 0.94 [14]. However, stomach cancer is generally more common in humans as reported by several authors such as: Koura *et al.* (2019) in Burkina Faso (1.9%) [16]; Bah *et al.* (2019) in Conakry (1.7%) [17], Diop *et al.* (2017) in Senegal (5, 1%) [18], Mabula *et al.* (2012) in Tanzania (2.91%) [12], Kpoussou *et al.* (2020) in Benin (2.1%) [19]. However, a Korean study found no statistically significant difference between the two sexes [20]. This difference in our study could be explained by the higher number of women than men in Burkina Faso [21], and by the fact that women consult more in hospital.

Epigastric pain was the main sign found in 49 patients (98%). This frequency is similar to that of Kouriba *et al.* (2021) in Mali with 98.6% epigastric pain [5]. This rate is lower than that of Koura *et al.* (2019) in Burkina reported epigastralgia in 22.3% [16]. This high frequency of epigastral pain in gastric cancer testifies to data from the literature.

Vomiting was noted in 44 patients or 88% of cases. This rate is close to that of Ismaili *et al.* (2014) in Morocco, representing 88.7% of cases [22]. It is higher than those of Bah *et al.* (2019) in Conakry [17] and Matallah and Dalil (2019) in Algeria [23] who obtained respectively 75.6% and 42.10%. This rate is lower than that of Tangara (2020) in Mali with 95.77% of cases [24]. This frequency could be explained by the fact that patients are seen at a late stage.

Weight loss was reported in 42 patients (84%). This frequency is higher than that of Kissi *et al.* (2016) in Côte d'Ivoire with 98.6% [7] of cases and Youssouf *et al.* (2022) in Mali in 91.9% of cases [8]. This rate is lower than that of Bang *et al.* (2020) in Cameroon with 67.5% (Bang *et al.* 2020). Weight loss is the accompanying sign of digestive cancers.

In our study, consumption of salted foods (98%) was the most common risk factor. Our result is similar to Tangara (2020) in Mali at 97.89% [24]. This rate is higher than Bolenga *et al.* (2012) in Congo Brazzaville at 76.92% [1] and Youssouf *et al.* (2022) in Mali at 86.4% [8].

Ingestion of salt directly damages the stomach mucosa,

increasing the carcinogenic effects. A preference for salt showed a 1.1 times higher risk of gastric cancer in a cohort study of 2,248,129 subjects [26].

Location at the den was the most frequent, observed in 29 patients or 58%. Our result is similar to the results obtained by Koura *et al.* (2019) in Burkina Faso with 57.2% [16], by Mabula *et al.* (2012) in Tanzania with 56.5% [12], by Bang *et al.* (2020) in Cameroon with 44.2% (Bang *et al.* 2020), by Bah *et al.* (2019) in Conakry with 50 % [17]. However, our result is lower than that of Diop *et al.* (2017) in Senegal with 79% [18].

At the beginning of the 20th century, distal location, body and den, was predominant. Currently, it is the proximal location that is most often encountered [27].

Stage IV was more represented in 33 patients or 66%. This frequency is consistent with that of Kouriba (2021) of Mali in 2021 with 72.81% [5]. This difference would be due to the delay in consultation.

In our study, thoraco abdomino pelvic CT was performed in all patients at 100%. Our result is higher than that of Kissi *et al.* (2016) in Côte d'Ivoire at 53.9% [7] and Bang *et al.* (2020) in Cameroon at 71.67% (Bang *et al.* 2020).

In our study, 33 patients or 66% had secondary locations. Our result is comparable to the results obtained by Mellouki *et al.* (2014) in Morocco with 56%, and by Bang *et al.* (2020) in Cameroon in 2020 with 58.4% (Bang *et al.* 2020). This could be explained by the delay in consultation.

The liver was the most frequent site of metastases in 19 patients or 58%. This frequency is higher than that of James *et al.* (2016) in Niger with 25% [13] and that of Tangara (2020) in Mali with 3.3% [24]. Liver localization is common in the metastatic spread of gastric cancers [27].

In our study, 15 patients or 30% benefited from surgery of which 12 patients or 80% had to perform a partial gastrectomy and 3 patients or 20% had a feeding jejunostomy. Our result is lower than that of Mabula *et al.* (2012) in Tanzania with 53.8% of patients who received partial gastrectomy [12].

In our study, 29 patients or 58% received chemotherapy. Our result is higher than that of Mabula *et al.* (2012) in Tanzania with 24.1% of patients receiving chemotherapy [12] and lower than that of Matallah and Dalil (2019) in Algeria with 73.68% [23]. No patient received neoadjuvant chemotherapy. On the other hand, 5 patients or 17% received adjuvant chemotherapy and 24 patients or 83% received palliative chemotherapy. This rate is lower than in Niger with 47.5% of patients receiving neoadjuvant chemotherapy, 65% receiving adjuvant chemotherapy and 17.5% receiving palliative chemotherapy [13].

The Folfox protocol was more used in 23 patients or 79.31%. Our result is comparable to that of Bang *et al.* (2020) in Cameroon with 78% [25]. In this study 10 patients or 34.5% had to perform 2 courses of chemotherapy. This could be explained by the frequency of advanced stages.

At the end of our study, 32% of our patients were alive. This rate is comparable to that of James *et al.* (2016) in Niger, which found 40% of patients alive [13].

The median survival was 2 months. Overall survival at 12 months was 5% and zero at 5 years. Our results are comparable to those of Bekolo-Nga et al. (2022) in Cameroon which regained an overall survival at 5 years [28]. Chevallay et al. in Switzerland recovered an overall 5-year survival of 30% [29], Fadlouallah et al. (2015) in Morocco reported an overall 5-year survival of 11% [30] and Mabula et al. (2012) in Tanzania recovered an overall 5-year survival of 6.9% [12].

Despite therapeutic advances, less than 30% of patients are alive after 5 years. In the absence of screening, attention should be paid to early diagnosis [27].

## 5. Conclusion

Stomach cancer is rare in our context. It occurs in a relatively young population, especially women. Generally diagnosed at a late stage, low socio-economic social strata are the most affected. Its symptomatology is dominated by epigastric pain, vomiting or nausea and abdominal pain. Eso-gastroduodenal fibroscopy coupled with biopsy histology allow diagnosis. The ulcer-budding form was the most frequent and preferentially antral. Adenocarcinoma was the most common histological type. A discussion of the files in a multidisciplinary consultation meeting is essential for a better therapeutic option. Late diagnosis in a context of deterioration of the general state leads to palliative management. In the early stage with a good nutritional status, curative surgery combined with perioperative chemotherapy can give hope for healing. Its prognosis is most often bleak in our context because of its late diagnosis and the difficulties of its management due to the meagre resources. Early diagnosis and adequate management of precancerous lesions would improve its prognosis. We suggest to pathologists, the systematic research of *Helicobacter pylori* in stomach cancer because it is this bacterium that is most often implicated in stomach cancer.

## Conflicts of Interest

The authors declare no conflicts of interest.

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