

## Clinicopathological Features of Gastric Cancer: A Retrospective Study from a Tertiary care Center, Odisha

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### Abstract

#### Background:

Gastric cancer (GC) is a prevalent malignancy that causes considerable health problems in India. Although clinicopathological investigations of GC assist to create baseline data and guide future health care policies and treatment, there is little literature on the subject, especially in this geographical area. In this research, we aimed to examine the clinicopathological characteristics of stomach cancer in order to diagnose it early and reduce morbidity and death.

#### Materials and Methods:

In this hospital-based retrospective analysis, clinicopathological data were gathered from hospital records of GC patients who had subtotal or complete gastrectomy between 2018 and 2020.

#### Results:

A total of 279 cases of gastric cancer were included, with a male-female ratio of 2.4:1. The study population had a mean age of  $54.47 \pm 12.2$  years, ranging from 18 to 82 years. The incidence of stomach cancer was greatest in the antrum. Adenocarcinoma was the most common histological subtype. Most of our patients manifested at an advanced stage locally.

#### Conclusion:

This research demonstrates that the incidence of stomach cancer increases between the fourth and sixth decades. Males are particularly affected. The most common symptom is stomach discomfort, which is often nonspecific and hence ignored. Most individuals had advanced

illness. Raising public awareness may help us discover the illness sooner and create more effective treatments.

**Keywords:** Gastric Cancer, Clinicopathological Profile, Advanced Stage.

## Introduction

Gastric cancer (GC), often known as stomach cancer, is a prevalent malignancy that has a large worldwide health impact. According to worldwide statistics (Globocan 2020), it is the world's fifth most common malignant tumor in 2020, with about 1.1 million new cases, and the fourth leading cause of cancer-related mortality, with around 800,000 deaths [1]. The incidence of GC in males is nearly twice that of women.

Because of cultural and nutritional differences, the frequency of GC varies by geography. In Eastern Asia and Eastern Europe, incidence is rising due to the high prevalence of established risk factors, whereas incidence and mortality are falling in the rest of the world, owing largely to economic development and the implementation of preventative measures against the leading risk factors [2].

In India, it is the fifth most common cancer in males and the seventh most common in women [2, 3]. The prevalence varies greatly between India. The prevalence is highest in the southern and north-eastern regions, with Mizoram reporting rates of 50.6% for males and 23.3% for women when adjusted for age [4]. Odisha has a high incidence of GC [5]. There is little research on the clinicopathological presentation of GC, especially in this location. It is critical to collect baseline data on the occurrence of GC in each location so that future health care policies and GC management may be based on this knowledge. In this research, we wanted to investigate the demographics, lifestyle variables, presenting symptoms, and histological characteristics of GC patients in order to minimize morbidity and death by early detection.

## Materials & Methods

This hospital-based retrospective study was carried out between 2018 and 2020 at the SRM Medical college and Hospital, Kalahandi a tertiary care facility in Odisha. This research comprised histologically verified primary cases of GC. The study's final Age, gender, smoking and alcohol dependency, clinical presentation, type of surgery, final comprehensive histology, TNM staging, and stage aggregation were all included in the study. Tumor location, size, and appearance were among the macroscopic parameters examined. Gross gastrectomy specimens were reported in terms of histology, depth of invasion, lymphovascular invasion (LVI), perineural invasion (PNI), margins, residual tumor, omental deposits, number of nodes resected, number of positive nodes, biggest node removed, TNM staging, and stage grouping.

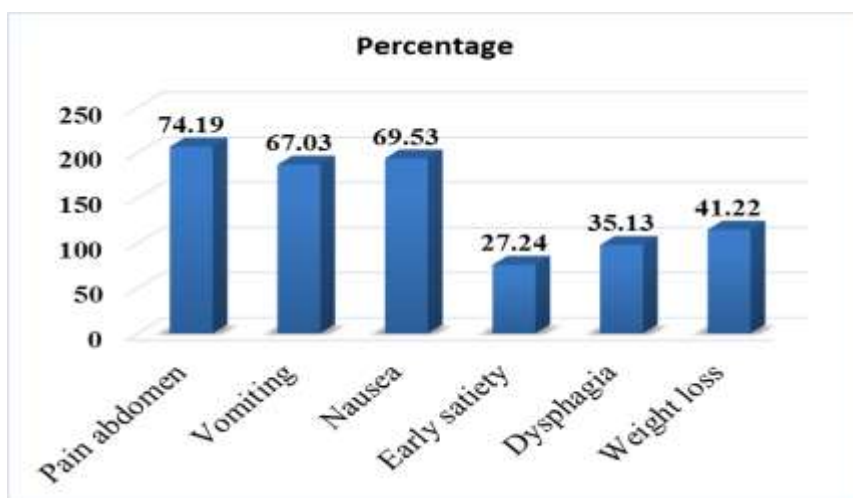
## Results

In all, 279 instances with GC were included. Following an endoscopy and biopsy, all patients had surgical resection based on clinical and radiographic findings. The sample cohort had a male-female ratio of 2.4:1. The study population varied from 18 to 82 years, with a mean age

of 54.47±12.2 years. Males and females had mean ages of 57.04 ± 9.08 and 49.01 ± 10.04 years. There were 34 (12.1%) instances under 40 years of age, with 13 (38.23%) male cases and 21 (61.76%) female cases. (Table1) A history of addiction was found in 65.23 percent of the patients. In all, 129 patients (46.23%) were determined to be addicted to both smoking and alcohol usage, with just 20 (7.16%) hooked to smoking and 83 (29.74%) addicted to alcohol. No women in the research were addicted to alcohol or cigarettes. In 207 individuals (74.19%), the most common presenting symptom was nonspecific stomach pain, followed by nausea (69.53%) and vomiting (67.0%). (Fig. 1). Endoscopic examination indicated growth at the distal end of the stomach in 235 (60.58%) instances and at the proximal end in 46 (16.49%) cases. The majority of patients (48%), were treated with radical distal gastrectomy. The specimen retrieved after surgery was inspected. The tumor's size ranged from 1 cm to 7 cm, with an average of 4.45 cm. 47.31% of patients had ulcerative growth, with 67 (24.01%) having ulcer infiltrative growth. The majority of patients (89/31.9%) had typical adenocarcinoma, followed by tubulosecretory and diffusely infiltrative. In 153 (54.84%) instances, the growth was not differentiated. In 127 (45.52%) instances, the depth of penetration reached the subserosa. Vascular invasion was seen in 197 (70.61%) cases, whereas perineural invasion was seen in 145 (51.97%). The margin was positive in 47 (16.85%) cases (Table 2).

**Table 1: Age and sex wise distribution of carcinoma stomach cases.**

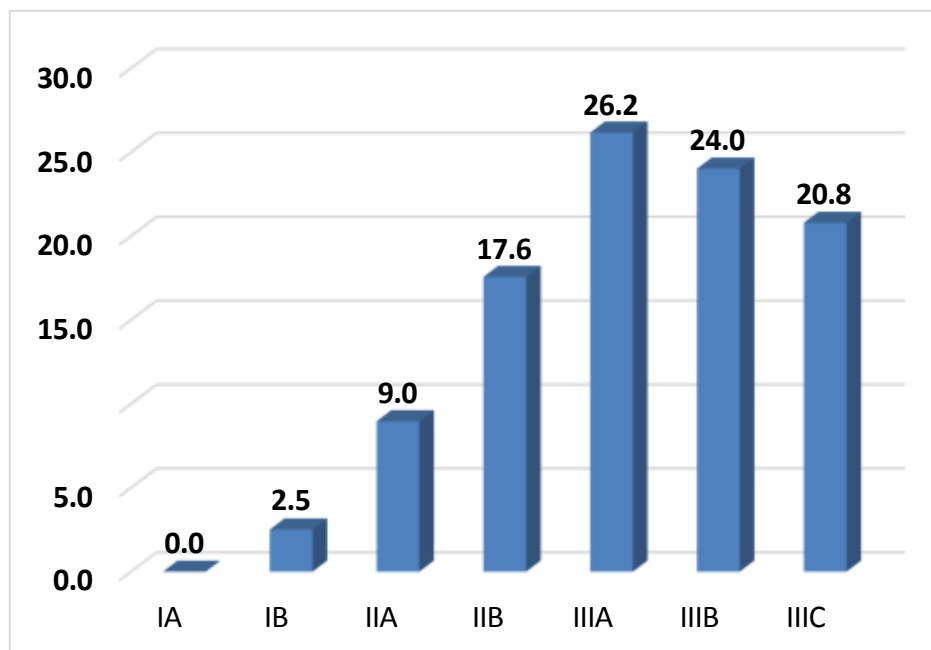
Numbers	Male	%	Female	%	Total	%
<30	2	1.02	5	6.10	7	2.51
31-40	11	5.58	16	19.51	27	9.68
41-50	46	23.35	26	31.71	72	25.81
51-60	62	31.47	21	25.61	83	29.75
61-70	60	30.46	11	13.41	71	25.45
71-80	13	6.60	3	3.66	16	5.73
>81	3	1.52	0	0.00	3	1.08
Total	197	100	82	100	279	100



**Table 2: Clinico-pathologic characteristics of patients with gastric cancer.**

Pathological Features		Numbers	%
Tumor size	< 5cm	209	74.91
	> 5cm	70	25.09
Tumor site	Cardia	46	16.49
	Body	64	22.94
	Pylorus	71	25.45
	Antrum	98	35.13
Appearance	Proliferative	21	7.53
	Ulcer proliferative	59	21.15
	Ulcer infiltrative	67	24.01
	Ulcerative	132	47.31
Histo-type	Adenocarcinoma	89	31.90
	Tubulosecretory	58	20.79
	Mucinous	42	15.05
	Tubular	36	12.90
	Diffuse	54	19.35
Grade	Well differentiated	50	17.92
	Moderate differentiated	76	27.24
	Poorly differentiated	153	54.84
Depth of infiltration	Lamina propria	12	4.30
	Submucosa	5	1.79
	Muscularis propria	36	12.90
	Sub serosa	127	45.52
	Serosa	99	35.48
Vascular Invasion	Present	82	29.39
	Absent	197	70.61
Perineural Invasion	Present	145	51.97
	Absent	134	48.03
Margin	Present	47	16.85
	Absent	232	83.15
Lymph node	Positive	171	61.29
	Negative	69	24.73

Pathologically, the preponderance of patients, 137 (49%), were classified as T3, 1% as N3a, and none as having distant metastases. Figure 2 displays that the majority of patients (71%) were in Stage III.



**Figure 2: Pathological staging of carcinoma stomach.**

## Discussion

The research indicated that the incidence of GC peaks between the fifth and sixth decades and gradually reduces beyond the age of 60, which is consistent with earlier results [6, 7]. Our investigation revealed a male predominance, with a male-to-female ratio of 2.40:1. The condition affects more men than women worldwide [8, 9, 10]. It has been established that environmental and genetic risk factors contribute to sex differences in stomach cancer. Men who have a high frequency of *H. pylori* infection, use more tobacco and alcohol, and work in a stressful workplace may be more likely to develop GC [11, 12]. In females, a meta-analysis supported the concept that extended exposure to oestrogen effects from either ovarian or exogenous sources may reduce the incidence of GC. The fundamental causes are not yet known, however numerous processes have been proposed. There is evidence that estrogen may stimulate the production of trefoil factor proteins, which protect mucosal epithelia and prevent oncogene expression [11]. In this research, the majority of females were between the ages of 40 and 50, while the majority of men were between the ages of 50 and 60. This finding is consistent with prior research, which shows that females are diagnosed with GC sooner than men [12]. Equal access to cancer care is insufficient to address gender disparities, but greater focus should be paid to the male disadvantage in GC. These results highlight the need for sex-sensitive health policies to address the worldwide stomach cancer burden. Abdominal discomfort, nausea, vomiting, and weight loss were seen in a large percentage of GC patients in both this research and earlier investigations [3, 13, 14]. Healthcare practitioners should be aware to the likelihood of gastric cancer. Our results demonstrated that the most prevalent location of tumor was the distal end of the stomach (60%), which is consistent with previous research [3]. Proximal gastric cancer (PGC) was also detected in 17% of patients. Previous studies have also shown a higher incidence of tumors at the

proximal end [15,16,17]. This might be due to a variety of reasons, including *Helicobacter pylori* infection and dietary habits. A meta-analysis and subgroup analysis revealed that PGC patients had a poorer 1-year overall survival (OS) rate than distal gastric cancer patients. Furthermore, PGC patients had worse 3- and 5-year OS rates than DGC patients in Eastern nations, although there were no significant differences in Western countries [18]. The prognosis for PGC and DGC is likely to improve progressively as diagnostic facilities become more accessible, multimodal therapies become more effective, cancer screening and early detection programs are promoted, and novel surgical methods develop. However, the findings remain contentious, demanding more clinical confirmation in future trials. In 74.91% of instances, the tumor was less than 5 cm. In 47.31% of patients, the development appeared ulcerative, followed by ulceroinfiltrative growth. In 31.9% of instances, the histopathological type was conventional adenocarcinoma, 20.79% were tubulosecretory, and 19.35% were diffusely infiltrative. This outcome is also consistent with previous research [19]. In 45.52% of cases, the growth had reached the subserosa. Perineural invasion (PNI) was positive in 51.97% of cases, while lymphovascular invasion (LVI) was positive in 29.39% of cases. Previous research has also shown that GCs have a high incidence of LVI/PNI, which is directly related to illness progression. On multivariate analysis, LVI/PNI may be an independent risk factor for lymph node status, tumor size, and depth of invasion, among other biological factors. Large prospective studies are still required to establish PNI/LVI as an independent predictive factor for gastric cancer. These results will be useful in better predicting survival outcomes and developing tailored treatment approaches [20, 21]. In 83.15% of instances, there was no margin. The great majority of big tumors were poorly differentiated, with invasion of the subserosa and lymph node metastases. The majority of the smaller tumors were well-differentiated, did not involve lymph nodes, and were at a lower stage. The present study supports prior findings that well-differentiated malignancies appear sooner than poorly differentiated tumors [22, 23]. The average size of the biggest resected node was 1.6 cm, with an average of 21 nodes removed. None of the evaluated patients developed metastatic disease. 70% of the patients had stage III illness. In contrast to early gastric cancer, the majority of patients had locally progressed stomach cancers. However, because to increased awareness and thorough screening procedures, the majority of patients in Western countries are in the early stages [24]. This emphasizes the need of frequent endoscopy and biopsy for mildly symptomatic individuals in order to diagnose the condition early.

### **Conclusion**

The present study's results show that the prevalence of stomach cancer often climbs between the fourth and sixth decades. The bulk of individuals impacted are guys. The most common symptom, which is often confused and overlooked, is stomach discomfort. The majority of the patients had advanced illness when they arrived. Public education may help us diagnose illnesses early and treat them more effectively.

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