Epidemiology of Gastric Carcinoma and the Role of Palliative Resection in Cases with Peritoneal Metastasis at a Tertiary care centre in South India

Dr. Deepika[1], Dr. Nitin Akileshwar[2], Dr. Rejith Pawan Sai[3], Dr. Vikram Balaji[4], Dr. R.Ramprasath[5], Dr. M.Bhaskar[6]

[1]*Senior Resident, Department of General Surgery, Karpaga vinayaga institute of medical sciences.*
[2]*Final Year Post Graduate, Department of General Surgery, Karpaga vinayaga institute of medical sciences.*
[3]*Second Year Post Graduate, Department of General Surgery, Karpaga vinayaga institute of medical sciences.*
[4]*First Year Post Graduate, Department of General Surgery, Karpaga vinayaga institute of medical sciences.*
[5]*Associate Professor, Department of General Surgery, Karpaga vinayaga institute of medical sciences.*
[6]*Professor, Department of General Surgery, Karpaga vinayaga institute of medical sciences.*

**Corresponding Author: Dr.Deepika*
Senior Resident, Department of General Surgery, Karpaga vinayaga institute of medical sciences.

KEYWORDS

ABSTRACT:

INTRODUCTION: Cancer is a major health problem in many countries including India. Since Cancer Registries are incomplete in India, only a few epidemiological studies have been done so far. The objective was to determine to examine the various factors influencing the incidence of gastric carcinoma

Stomach cancer remains a major cause of cancer-related deaths worldwide, with a low 5-year survival rate (<30%) due to late diagnosis. Adenocarcinoma, the most common type, is linked to **Helicobacter pylori** infection. Though India has a relatively low incidence, urbanization and dietary shifts are contributing to its rise. Early detection in Japan has improved survival rates, unlike most regions. Surgical removal is the only effective treatment, but recurrence remains a challenge. Efforts are ongoing to develop adjuvant therapies for better outcomes.

AIM: To study the epidemiology of various cases of carcinoma stomach and the role of palliative resection in cases presenting with peritoneal metastasis.

OBJECTIVES:

1. To study the prevalence of carcinoma stomach in Karpaga vinayaga institute of medical sciences.To assess the etiology, risk factors carcinoma stomach, histopathological types in relation to site of growth and age.

Materials and methods:

It is a hospital based prospective observational study conducted in the Karpaga vinayaga institute of medical sciencesUsing statistical table, a sample size of 70 was calculated and patients were recruited as per inclusion criteria. After informed consent, detailed clinical examination relevant investigations such as CBC, RFT, LFT, serum electrolytes, ultrasonography of abdomen and pelvis, plain CT/ CECT of abdomen and pelvis are performed for each participant.

MATERIALS AND METHODS

STUDY DESIGN–A PROSPECTIVE OBSERVATIONAL STUDY
STUDY AREA–Karpaga vinayaga institute of medical sciences.
STUDY POPULATION– Adult patients with clinical features of carcinoma stomach confirmed by computed tomography and endoscopy guided biopsy.
SAMPLE SIZE – 70 [4pq/d*d]
STUDY PERIOD – 2years [December 2019 - December 2021]
INCLUSION CRITERIA:

1. Patient aged above 18 years with complaints and investigations suggestive of carcinoma stomach.
2. Both operable and inoperable cases

EXCLUSION CRITERIA:

- Carcinoma stomach patients not willing for the study.

METHODOLOGY: After obtaining informed written consent, clinical history, detailed clinical examination relevant investigations such as CBC, RFT, LFT, serum electrolytes, ultrasonography of abdomen and pelvis, plain CT/ CECT of abdomen and pelvis were done. After confirming the diagnosis, evaluating the nature of the disease and considering patient general condition, mode of treatment were planned including both surgical and non-surgical measures.

All the epidemiological and demographic data, clinical presentation, radiological, histopathological (preoperative and post operative) findings, inraoperative staging inoperable cases, findings in inoperable cases, need for preoperative and postoperative chemotherapy, different modalities of surgeries, management of cases with peritoneal metastasis were tabulated. Post operative followup was done and all events were tabulated. Statistical analysis of all collected data was done and conclusions were arrived for each of the classical findings and events.

Results: On a total of 70 participants, 30 percent were between the ages of 55 and 64, 24.29 percent were between the ages of 55 and 64, and 21.43 percent were between the ages of 65 and 75. Males made up 67.14 percent of the study population, while females made up 32.86 percent. In terms of occupation, 62.86 percent of participants were unemployed, while 37.14 percent were Coolie workers. On a total of 70 participants, 55.71 percent are middle-class and 44.29 percent are low-income. Our study revealed that Spicy foods, soda, tobacco and alcohol as risk factors for gastric cancer.

Conclusion: More research is needed to understand the aetiology, develop appropriate screening tests, identify high-risk populations, and develop and assess the effectiveness of primary prevention programmes.

INTRODUCTION

Globally, stomach cancer is still the third leading cause of cancer-related death, even though its incidence is on the decline. A million new instances of stomach cancer were diagnosed in 2008, according to estimates. Case fatality ratios for these tumours ranged from 78% to 78% in Eastern Asia, Europe, and South America compared to 66% in the industrialised world. The 5-year survival rate for gastric cancer patients is less than 30% when diagnosed in nearly one-half of all patients.1 Various predisposing circumstances and etiological variables contribute to the development of gastric cancer. Most gastric cancers are adenocarcinomas, which can be further split into intestinal and diffuse histotypes based on their location in the stomach. Undifferentiated medullary, squamous, and adenosquamous melanoma are less common. By far, the most common form of stomach cancer, intestinal-type gastric cancer (which accounts for 50–70% of cases) is found in areas where Helicobacter pylori infection is prevalent.1 Adenocarcinoma of the stomach was a prominent cause of cancer-related death around the world in the 21st century. Adenocarcinoma is the second leading cause of cancer-related death in the world, after lung cancer. An estimated 4,50,000 people worldwide die each year as a result of stomach cancer, which is diagnosed in roughly 9,88,000 people each year. Due to dietary changes, food preparation, and other environmental factors, stomach cancer is more common in certain parts of the country than others. India has a fairly low incidence of stomach carcinoma, although it was one of the ten most common cancer locations in men and women in most major cities. Stomach cancer cases are on the rise in India, thanks to urbanisation, a healthier lifestyle, and a longer life expectancy. Dietary changes are one of the factors that have influenced the rate of disease occurrence. Due to thousands of years of religious and cultural diet teachings, India has a dietary variety that most other countries can only dream of. However, little is known about the function of Indian diet in causing or preventing stomach cancer, hence more focus is paid to particular diet characteristics such as vegetarianism, spices, and food additives.2 Other than in a few nations, the prognosis for stomach cancer patients is poor due to various variables. The lack of distinct symptoms and the low incidence of the disease have contributed to a delay in diagnosis, which has resulted in a late diagnosis. Since stomach cancer is prevalent in Japan, most patients are diagnosed at an earlier stage, which results in an increase of overall survival rates.3 Cancers below the esophagogastric junction account for most of the decline in stomach cancer incidence over the past few decades. Proximal stomach carcinomas are becoming more common, though. It is tough to treat these tumours because they are usually more aggressive.4 The only effective treatment for Gastric cancer is surgical intervention to remove the tumour both microscopically and macroscopically. Despite the fact that majority of the patients have been successfully treated, the disease continues to recur, either in the same area or in a new location. There are currently efforts to create systemic and localised adjuvant medicines that can be administered before and after surgery. Reduce the content to 6 lines

AIMS AND OBJECTIVES

AIM:

To study the epidemiology of various cases of carcinoma stomach and the role of palliative resection in cases presenting with peritoneal metastasis.

OBJECTIVES:

2. To study the prevalence of carcinoma stomach in Government Karpaga vinayaga institute of medical sciences.Medical College.
3. To assess the etiology, risk factors carcinoma stomach, histopathological types in relation to site of growth and age.

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METHODOLOGY

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STATISTICAL METHOD: Statistical Package for Social Sciences

STATISTICAL METHODS:

Subsite was considered as primary outcome variables. Gender, Age, symptoms, complication, HPE was considered as explanatory variable.

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. Data was also represented using appropriate diagrams like bar diagram, pie diagram.

Categorical outcome variable and explanatory variable assessed by using chi square test.

P value < 0.05 was considered statistically significant.

RESULT

Total 70 participants included in to the final analysis.

Table 1: Descriptive analysis of age in the study population (N=70)

Age	Frequency	Percentages
25 - 34	3	4.29%
35 - 44	12	17.14%
45 - 54	17	24.29%
55 - 64	21	30.00%
65 - 75	15	21.43%
>75	2	2.86%

On 70 participants, 30.00% of them age group between 55 – 64 years, 24.29% of them age group between 55 – 64 years, 21.43% of them age group between 65 – 75 years. **Table 1 & Figure 1**

Figure 1: Pie chart of age in the study population (N=70)

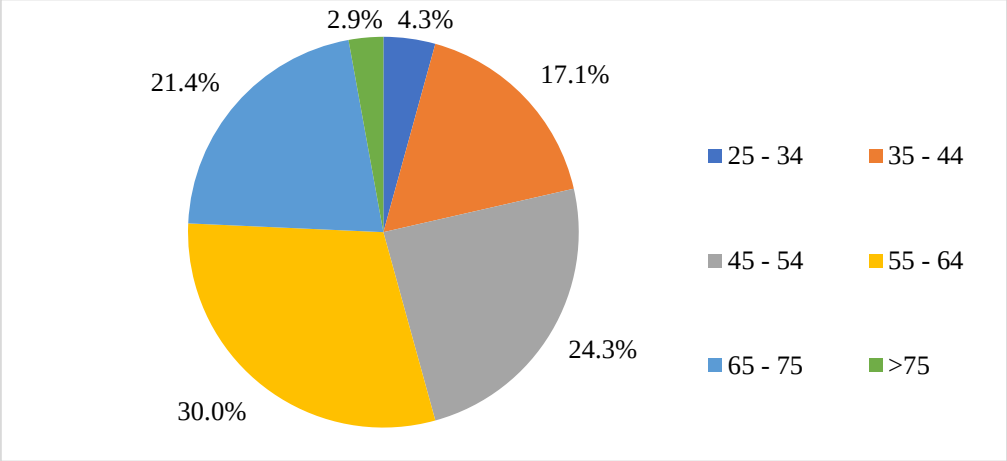

Table 2: Descriptive analysis of sex in the study population (N=70)

Sex	Frequency	Percentages
Male	47	67.14%
Female	23	32.86%

Among the study population, 67.14% of them were male, 32.86% of them were female. **Table 2 & Figure 2**

Figure 2: Bar chart of sex in the study population (N=70)

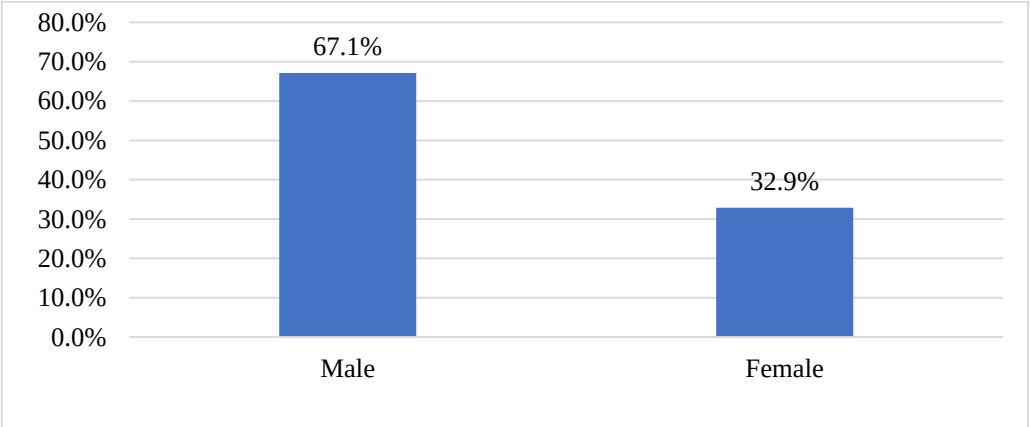

Table 3: Descriptive analysis of occupation in the study population (N=70)

Occupation	Frequency	Percentages
Coolie	26	37.14%
Unemployed	44	62.86%

On participants with occupation, 62.86% of them were unemployed and 37.14% of them were Coolie workers. **Table 3 & Figure 3**

Figure 3: Bar chart of occupation in the study population (N=70)

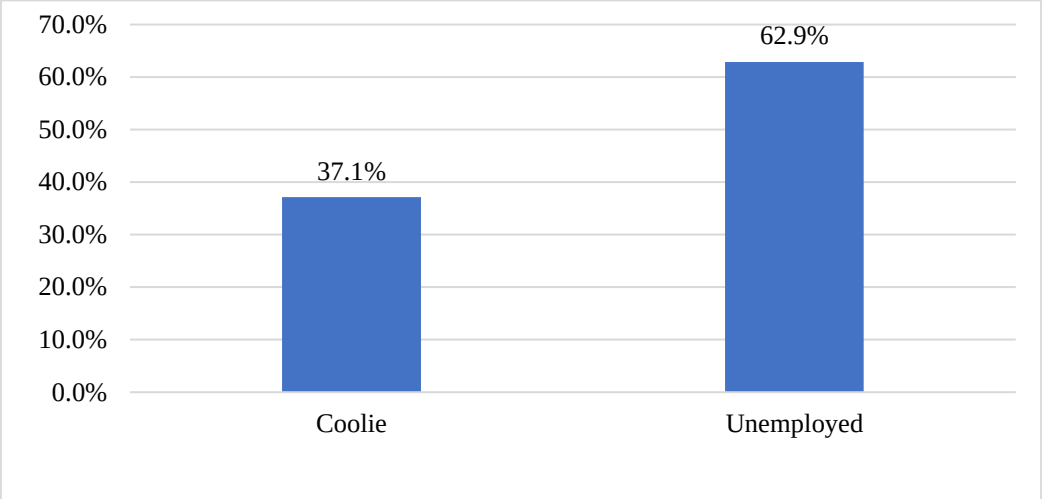

Table 4: Descriptive analysis of socioeconomic status in the study population (N=70)

Socioeconomic Status	Frequency	Percentages
Low	31	44.29%
Middle	39	55.71%

On 70 participants, 55.71% of them belongs to middle class and 44.29% of them were Low. **Table 4 & Figure 4**

Figure 4: Bar chart of socioeconomic status in the study population (N=70)

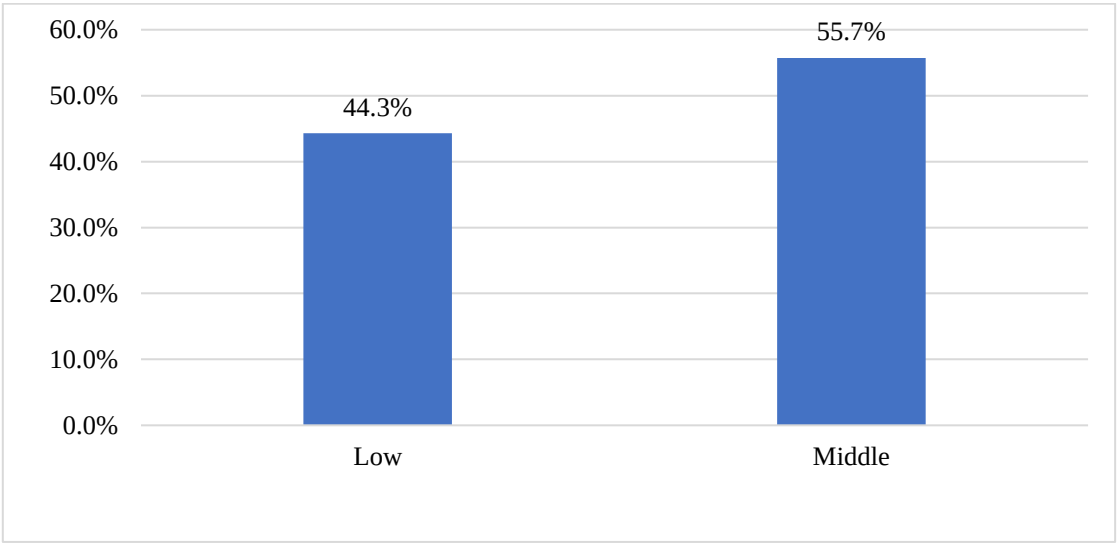

Table 5: Descriptive analysis of risk factors in the study population (N=70)

Parameter	**Summary statistics**	
Diabetes	**Frequency**	**Percentages**
Yes	38	54.29%
No	32	45.71%
Hypertension	Frequency	Percentages
Yes	32	45.71%
No	38	54.29%
Smoking	Frequency	Percentages
Yes	37	52.86%
No	33	47.14%
Alcohol	Frequency	Percentages
Yes	25	35.71%
No	45	64.29%
Spicy Food	Frequency	Percentages
Yes	55	78.57%
No	15	21.43%

On 70 participants with risk factors, 54.29% of them had diabetes and 45.71% of them had hypertension, 52.86% of them had habit of smoking, 35.71% of them had habit of alcohol, 78.57% of them had habit of taking spicy foods. **Table 5**

Table 6: Descriptive analysis of blood group in the study population (N=70)

Blood Group	**Frequency**	**Percentages**
A	24	34.29%
AB	9	12.86%
B	19	27.14%
O	18	25.71%

On 70 participants, 34.29% of them blood group were A, 27.14% of them were B, 25.71% of them were O. **Table 6 & Figure 5**

Figure 5: Bar chart of blood group in the study population (N=70)

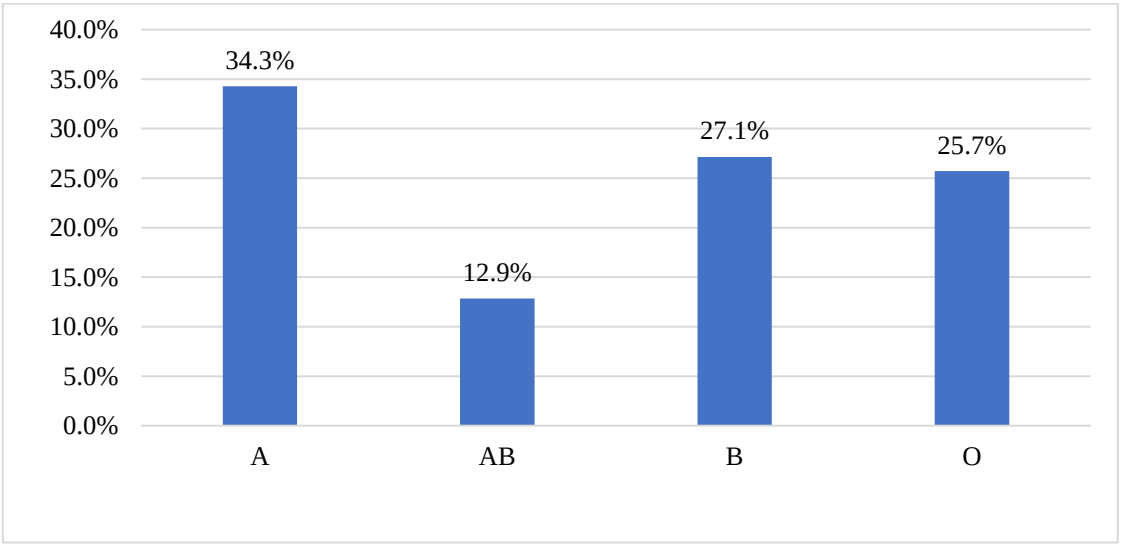

Table 7: Descriptive analysis of fatty food in the study population (N=70)

Symptoms	**Symptoms**	
Fatty Food	**Frequency**	**Percentages**
Yes	17	24.29%
No	53	75.71%
Pain	**Frequency**	**Percentages**
Yes	60	85.71%
No	10	14.29%
Vomiting	**Frequency**	**Percentages**
Yes	60	85.71%
No	10	14.29%
Mass	**Frequency**	**Percentages**
Yes	16	22.86%
No	54	77.14%
Lymph Node	**Frequency**	**Percentages**
Yes	59	84.29%
No	11	15.71%
Dehydration	**Frequency**	**Percentages**
Yes	34	48.57%
No	36	51.43%

On 70 participants with symptoms, 24.29% of them had fatty food and 85.71% of them had pain, 85.71% of them had vomiting, 22.86% of them had presence of mass, 84.29% of them had lymph node and 48.57% of them had dehydration. **Table 7**

Table 8: Descriptive analysis of mass palpable in the study population (N=70)

Mass Palpable	**Frequency**	**Percentages**
Epigastric	34	48.57%
Left Hypochondrium	10	14.29%
NO	24	34.29%
Right hypochondrium	2	2.86%

On 70 participants, 48.57% of them mass palpable at epigastric, 14.29% of them mass palpable at Left Hypochondrium and 2.86% of them mass palpable at right Hypochondrium. **Table 8 & Figure 6**

Figure 6: Bar chart of mass palpable in the study population (N=70)

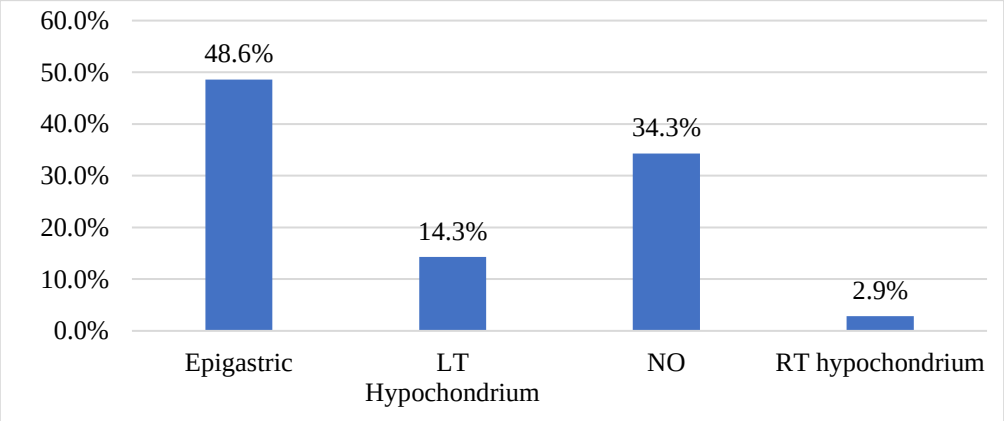

Table 9: Descriptive analysis of liver in the study population (N=70)

Liver	Frequency	Percentages
2 CM	2	2.86%
3 CM	4	5.71%
4 CM	3	4.29%
NO	61	87.14%

Among the study population, 5.71% of them liver were 3 cm, 5.71% of them liver were 4 cm and 2.86% of them liver were 2 cm. **Table 9**

Table 10: Descriptive analysis of ascitis in the study population (N=70)

Ascitis	Frequency	Percentages
NO	57	81.43%
YES	13	18.57%

Among the study population, 18.57% of them had ascites. **Table 10**

Table 11: Descriptive analysis of subsite in the study population (N=70)

Subsite	Frequency	Percentages
Antrum	54	77.14%
Body	6	8.57%
Cardia	4	5.71%
Linitis plastica	3	4.29%
OG junction	3	4.29%

Among the study population with subsite, 77.14% of them were antrum, 8.57% of them were body, 5.71% of them were cardia, 4.29% of them were Linitis plastica and 4.29% of them site were OG junction. **Table 11 & Figure 7**

Figure 7: Pie chart of subsite in the study population (N=70)

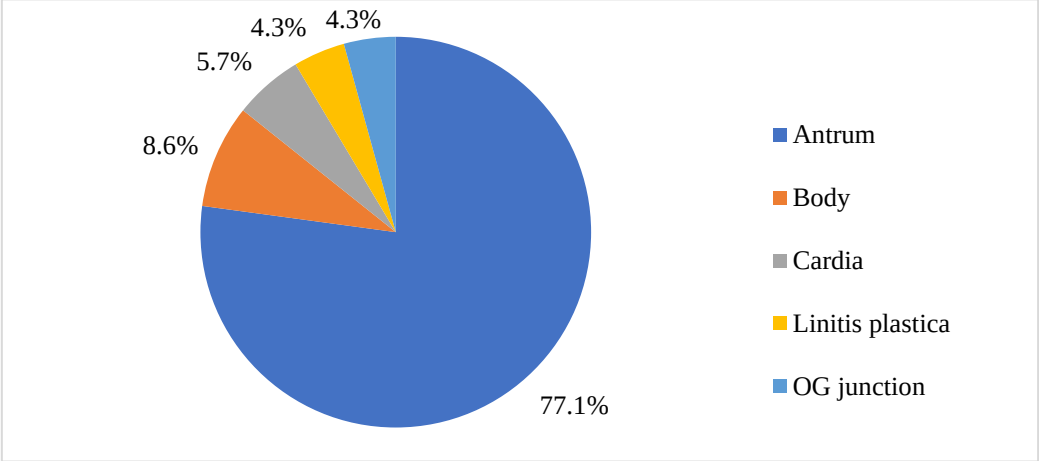

Table 12: Descriptive analysis of preop ca 19-9, postop ca 19-9 in study population (N=70)

Parameter	Mean ± SD	Median	Minimum	Maximum
Preop Ca 19-9	218.9 ± 310.51	29.95	1.60	1056.00
Postop Ca 19-9	160.19 ± 339.57	23.65	1.20	1756.00

Among the study population, the mean pre-op CA was 218.9 ± 310.51 and the mean post-op CA was 160.19 ± 339.57. **Table 12**

Table 13: Descriptive analysis of usg abdomen / ct abdomen in the study population (N=70)

USG Abdomen / CT Abdomen	Frequency	Percentages
Antral growth	8	11.43%
Antral thickening	7	10.00%
Antral wall thickening	34	48.57%
Ascites	3	4.29%
Distended stomach	7	10.00%
Mass body of stomach	5	7.14%
Normal	6	8.57%

Among the study population with USG Abdomen / CT Abdomen, Times New Roman of them findings were Antral wall thickening, 11.43% of them findings were Antral growth, 10.00% of them findings were Distended stomach, 10.00% of them findings were Antral thickening. **Table 13**

Table 14: Descriptive analysis of type in the study population (N=70)

Type	Frequency	Percentages
Diffuse	11	15.71%
Intestinal	56	80.00%
Mixed	3	4.29%

On participants with type, 80.00% of them were Intestinal, 15.71% of them were diffuse and 4.29% of them mixed. **Table 14 & Figure 8**

Figure 8: Bar chart of type in the study population (N=70)

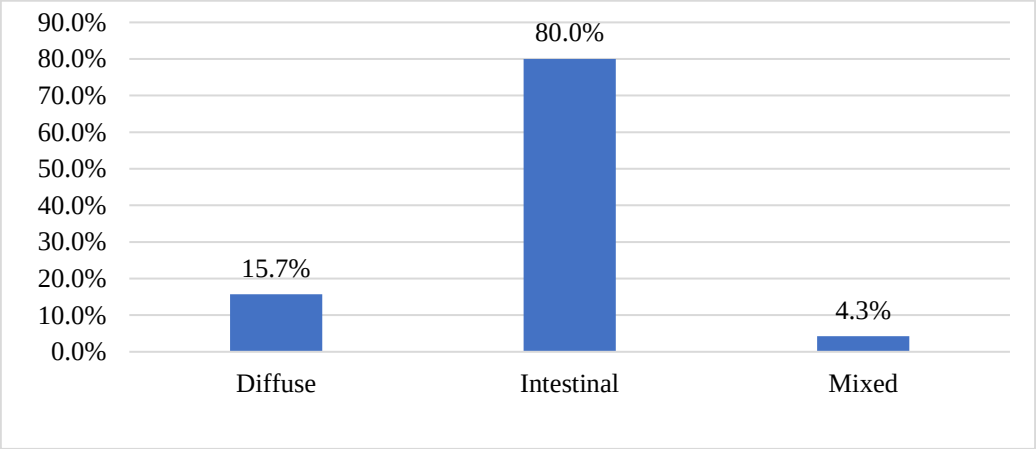

Table 15: Descriptive analysis of stage in the study population (N=70)

Stage	Frequency	Percentages
2	5	7.14%
3	1	1.43%
3a	5	7.14%
3b	2	2.86%
4	57	81.43%

On participants with stage, 81.43% of them were stage 4, 7.14% of them were stage 2, 7.14% of them were stage 3a, 2.86% of them were stage 3b. **Table 15**

Table 16: Descriptive analysis of nodal staging in the study population (N=70)

Nodal Staging	Frequency	Percentages
N0	11	15.71%
N1	41	58.57%
N2	17	24.29%
N3	1	1.43%

On participants with nodal stage, 58.57% of were N1, 24.29% of them were N2, 15.71% of them were N0 and 1.43% of them were N3. **Table 16 & Figure 9**

Figure 9: Bar chart of nodal staging in the study population (N=70)

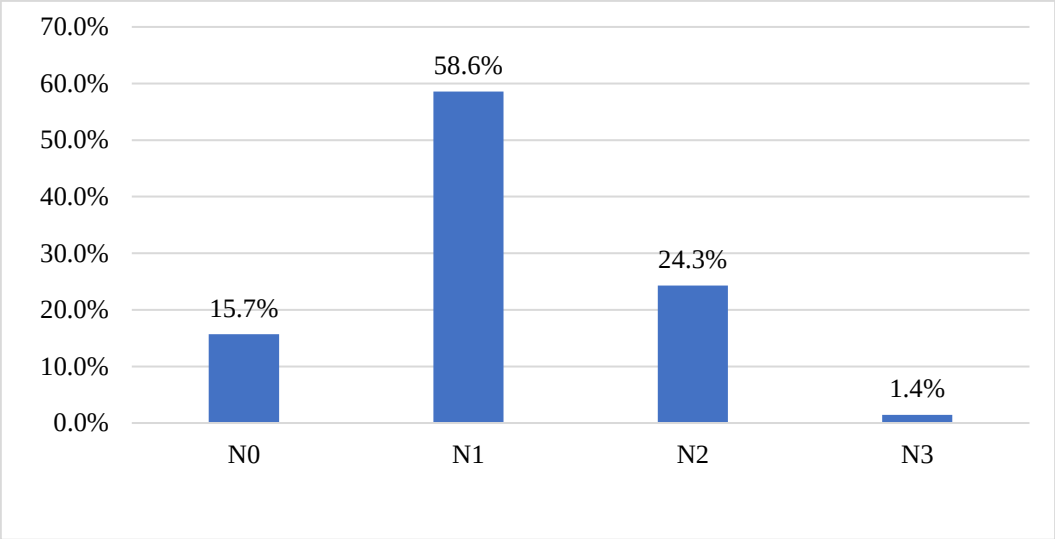

Table 17: Descriptive analysis of preop ct/ rt in the study population (N=70)

Preop Ct/ Rt	Frequency	Percentages
Yes	60	85.71%
No	10	14.29%

On 70 participants, 85.71% of them had Preop Ct/ Rt. **Table 17**

Table 18: Descriptive analysis of procedure in the study population (N=70)

Procedure	Frequency	Percentages
Anterior gastrojejunostomy	30	42.86%
Distal gastrectomy	5	7.14%
Distal gastrectomy and Roux en Y	2	2.86%
Feeding jejunostomy	7	10.00%
Palliative distal gastrectomy	22	31.43%
Total gastrectomy	4	5.71%

On 70 participants, 42.86% of them undergone Anterior gastrojejunostomy, 31.43% of them undergone Palliative distal gastrectomy, 10.00% of them undergone Feeding jejunostomy. **Table 18**

Table 19: Descriptive analysis of hpe in the study population (N=70)

HPE	Frequency	Percentages
Moderately differentiated	25	35.71%
Mucinous	3	4.29%
Poorly differentiated	9	12.86%
Signet ring	1	1.43%
Well differentiated	32	45.71%

45.71% of them HPE findings were Well differentiated, 35.71% of them HPE findings were Moderately differentiated, 12.86% of them HPE findings were Poorly differentiated and 4.29% of them findings were Mucinous. **Table 19 & Figure 10**

Figure 10: Bar chart of hpe in the study population (N=70)

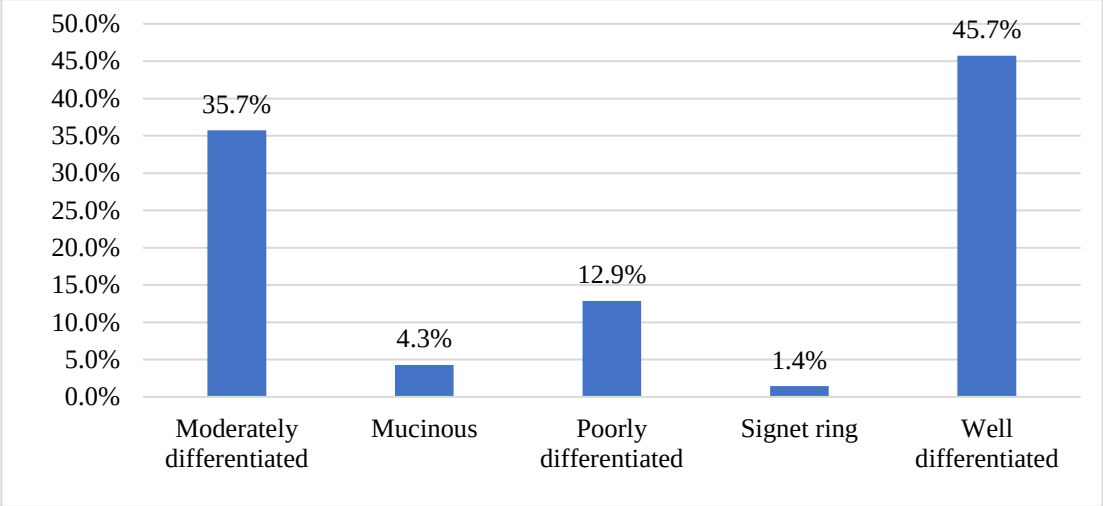

Table 20: Descriptive analysis of complications in the study population (N=70)

Complications	Frequency	Percentages
Anastomotic leak	3	4.29%
Intra-abdominal infection	4	5.71%
Intra luminal bleeding	2	2.86%
Nil	51	72.86%
Small bowel obstruction	6	8.57%
Wound infection	4	5.71%

On participants with complication, 8.57% of them had Small bowel obstruction, 5.71% of them had Intra-abdominal infection, 5.71% of them had of them had Wound infection, 4.29% of them had Anastomotic leak. **Table 20 & Figure 11**

Figure 11: Bar chart of complications in the study population (N=70)

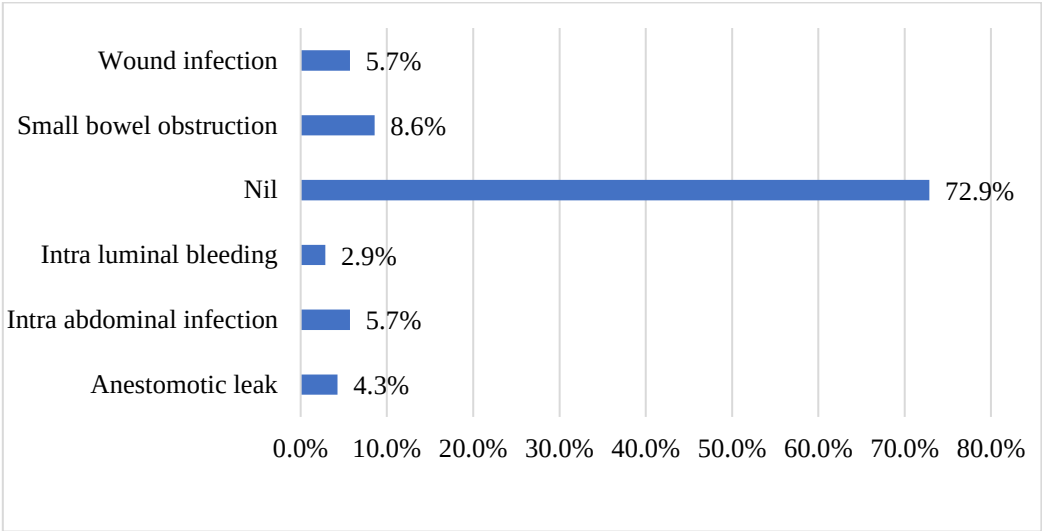

Table 21: Descriptive analysis of chemotherapy in the study population (N=70)

Chemotherapy	Frequency	Percentages
Yes	36	51.43%
No	34	48.57%

On 70 participants, 51.43% of them undergone chemotherapy. **Table 21**

Table 22: Descriptive analysis of mortality in the study population (N=70)

Mortality	Frequency	Percentages
Yes	9	12.86%
No	61	87.14%

Among the study population, 12.86% of them were died. **Table 22 & Figure 12**

Figure 12: Bar chart of mortality in the study population (N=70)

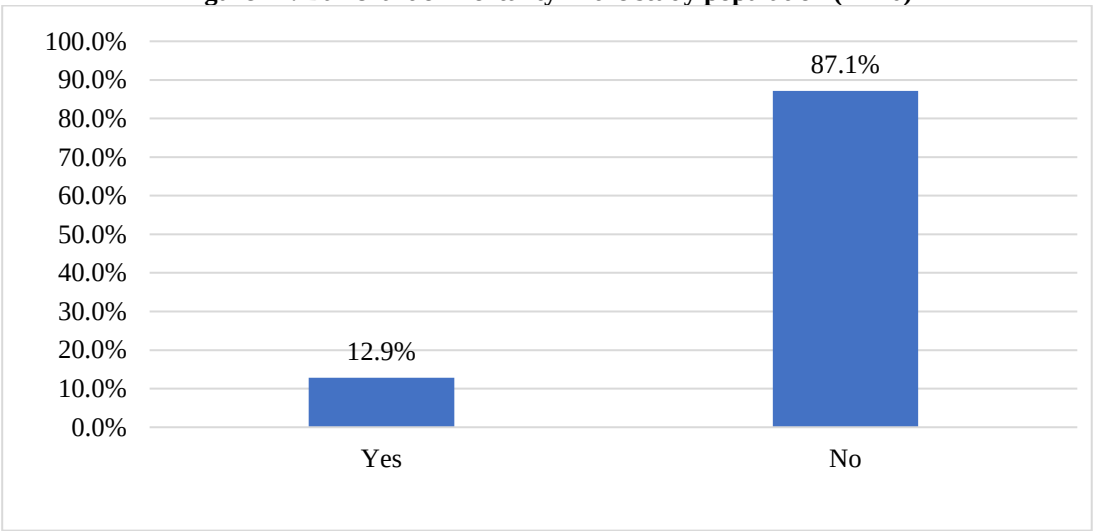

Table 23: Comparison of age between sex (N=70)

Age	Sex		P value
	Male (N=47)	Female (N=23)	
25 - 34	2 (4.26%)	1 (4.35%)	0.826
35 - 44	7 (14.89%)	5 (21.74%)	
45 - 54	12 (25.53%)	5 (21.74%)	
55 - 64	13 (27.66%)	8 (34.78%)	
65 - 75	12 (25.53%)	3 (13.04%)	
>75	1 (2.13%)	1 (4.35%)	

Among the study population, among male participants 13 (27.66%) of them age group were between 55 – 64 years, 12 (25.53%) of them age group were between 45 – 54 years and among female participants 8 (34.78%) of them age group were between 55 – 64 years, 5 (21.74%) of them age group were between 45 – 54 years. **Table 23 & Figure 13**

Figure 13: Cluster bar chart of comparison of age between sex (N=70)

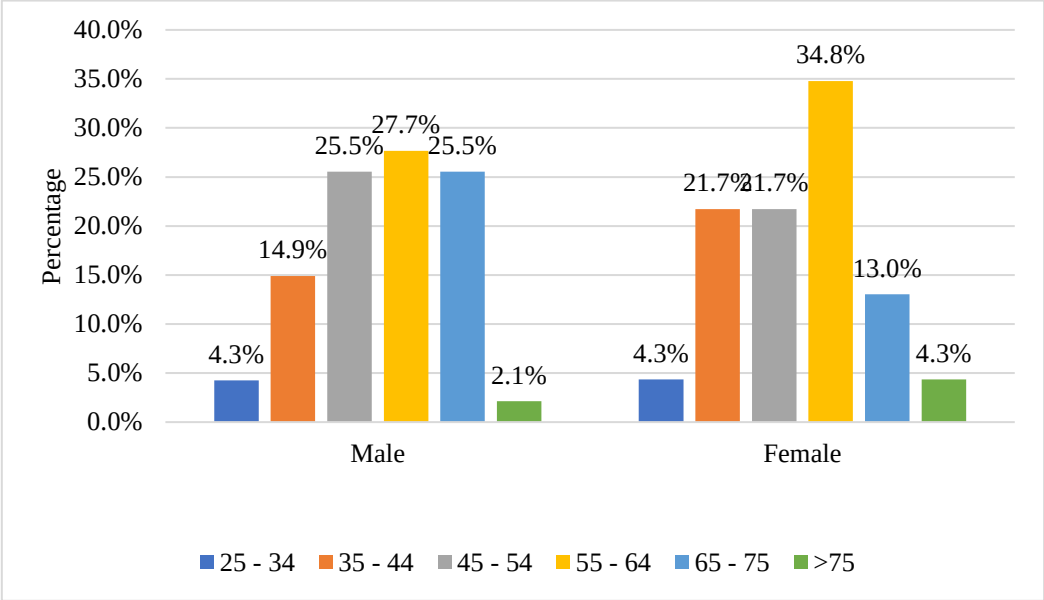

Table 24: Comparison of socioeconomic status between sex (N=70)

Socioeconomic Status	Sex		P value
	Male (N=47)	Female (N=23)	
Low	17 (36.17%)	14 (60.87%)	0.051
Middle	30 (63.83%)	9 (39.13%)	

Among the study population, among male participants 17 (36.17%) of them SES were Low, 30 (63.83%) of them SES were middle and among female participants 14 (60.87%) of them SES were Low, 9 (39.13%) of them SES were middle. **Table 24 & Figure 14**

Figure 14: Cluster bar chart of comparison of socioeconomic status between sex (N=70)

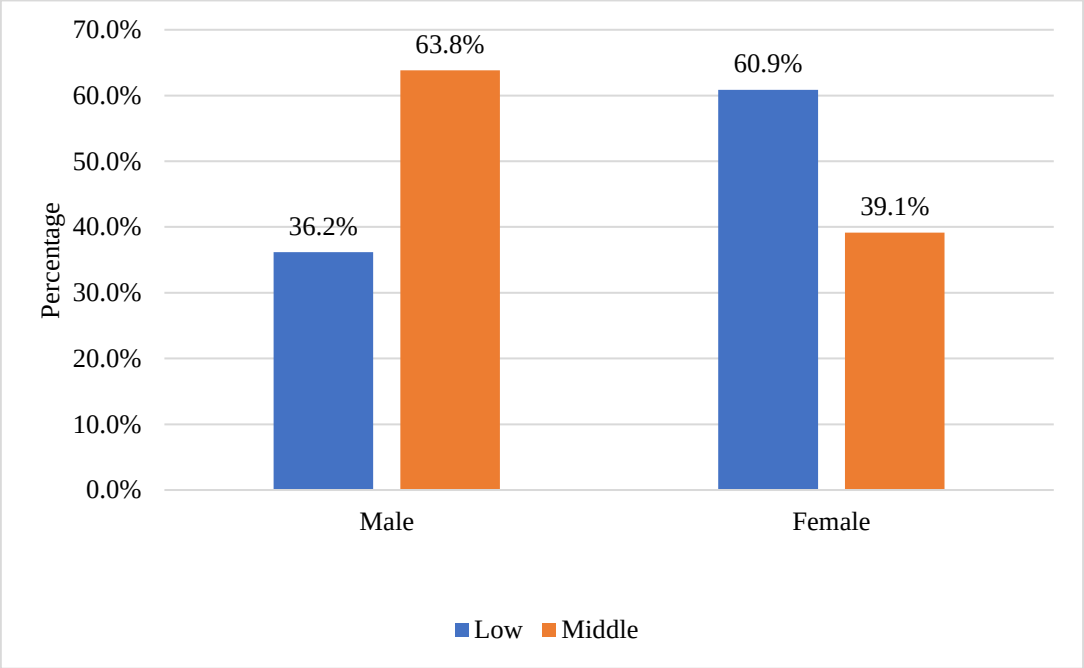

Table 25: Comparison of fatty food between sex (N=70)

Fatty Food	Sex		P value
	Male (N=47)	Female (N=23)	
Yes	11 (23.4%)	6 (26.09%)	0.806
No	36 (76.6%)	17 (73.91%)	

Among the study population, among male participants 11 (23.4%) of them taking fatty food, and among female participants 6 (26.09%) of them taking fatty food. **Table 25**

Table 26: Comparison of HPE between sex (N=70)

HPE	Sex		P value
	Male (N=47)	Female (N=23)	
Moderately Differentiated	16 (34.04%)	9 (39.13%)	0.959
Mucinous	2 (4.26%)	1 (4.35%)	
Poorly Differentiated	6 (12.77%)	3 (13.04%)	
Signet Ring	1 (2.13%)	0 (0%)	
Well Differentiated	22 (46.81%)	10 (43.48%)	

Among the study population, among male participants 16 (34.04%) of them HPE findings were Moderately Differentiated**,** 22 (46.81%) of them HPE findings were Well Differentiated and among female participants 9 (39.13%) of them HPE findings were Moderately Differentiated**,** 10 (43.48%) of them HPE findings were Well Differentiated. **Table 26 & Figure 15**

Figure 15: Cluster bar chart of comparison of hpe between sex (N=70)

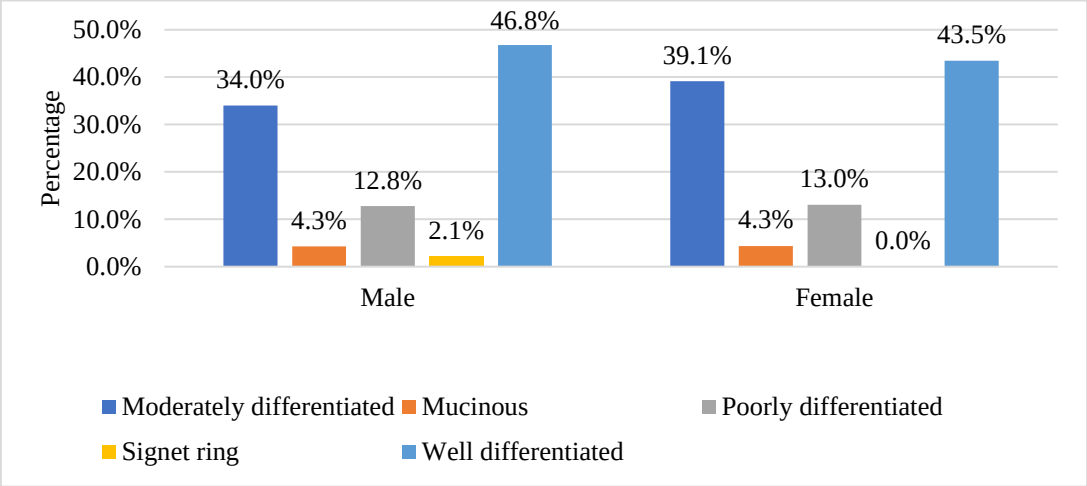

Table 27: Comparison of sex across subsite (N=70)

Sex	Subsite					P value
	Antrum	Body	Cardia	Linitis Plastica	Og Junction	
Male (N=47)	36 (76.6%)	5 (10.64%)	2 (4.26%)	1 (2.13%)	3 (6.38%)	0.370
Female (N=23)	18 (78.26%)	1 (4.35%)	2 (8.7%)	2 (8.7%)	0 (0%)	

Among male participants, 36 (76.6%) of them subsite was antrum, 5 (10.64%) of them were body and among female population, 18 (78.26%) of them subsite was antrum, 2 (8.7%) of them were cardia. The difference in proportion of gender across subsite was not statistically significant. (P value 0.370) **Table 27 & Figure 16**

Figure 16: Cluster bar chart of comparison of sex across subsite (N=70)

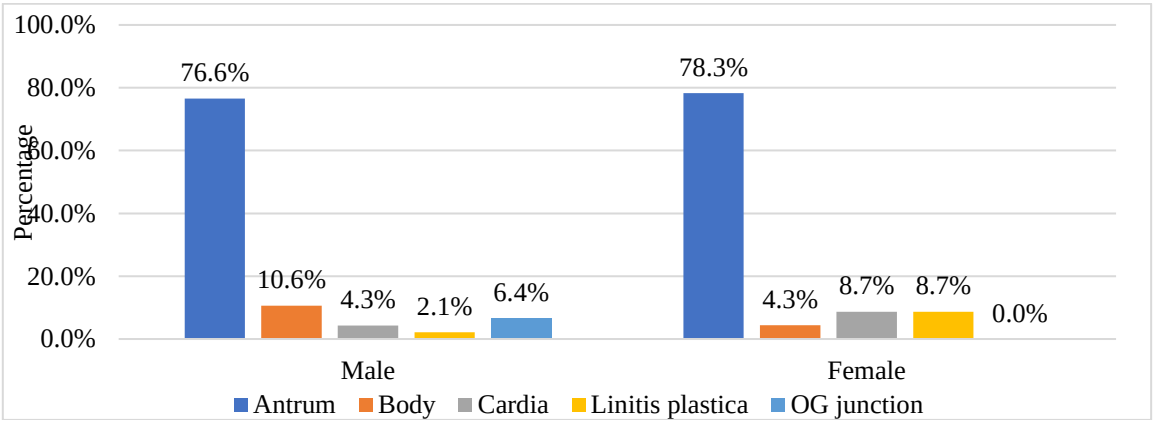

Table 28: Comparison of hpe across subsite (N=70)

Hpe	Subsite				
	Antrum	Body	Cardia	Linitis Plastica	Og Junction
Moderately Differentiated (N=25)	22 (88%)	1 (4%)	1 (4%)	1 (4%)	0 (0%)
Mucinous (N=3)	1 (33.33%)	1 (33.33%)	0 (0%)	1 (33.33%)	0 (0%)
Poorly Differentiated (N=9)	7 (77.78%)	0 (0%)	0 (0%)	1 (11.11%)	1 (11.11%)
Signet Ring (N=1)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Well Differentiated (N=32)	23 (71.88%)	4 (12.5%)	3 (9.38%)	0 (0%)	2 (6.25%)

*No statistical test was applied- due to 0 subjects in the cells

Among study participants, those who HPE findings was Moderately Differentiated, 22 (88%) of them subsite was antrum, 1 (4%) of them were body and, those who HPE findings was Mucinous, 1 (33.33%) of them subsite was

antrum, 1 (33.33%) of them were body. Those who HPE findings was Well Differentiated, 23 (71.88%) of them subsite was antrum, 4 (12.5%) of them were body. **Table 28**

Table 29: Comparison of age across subsite (N=70)

Age	Subsite				
	Antrum	Body	Cardia	Linitis Plastica	Og Junction
25 - 34 (N=3)	3 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
35 - 44 (N=12)	7 (58.33%)	2 (16.67%)	1 (8.33%)	1 (8.33%)	1 (8.33%)
45 - 54 (N=17)	12 (70.59%)	2 (11.76%)	1 (5.88%)	1 (5.88%)	1 (5.88%)
55 - 64 (N=21)	16 (76.19%)	2 (9.52%)	2 (9.52%)	1 (4.76%)	0 (0%)
65 - 75 (N=15)	14 (93.33%)	0 (0%)	0 (0%)	0 (0%)	1 (6.67%)
>75 (N=2)	2 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Among study participants, those who age between 25 - 34 years, 3 (100%) of them subsite was antrum, those who age between 35 - 44 years, 7 (58.33%) of them subsite was antrum, 2 (16.67%) of them were body and those who age between 45 - 54 years, 12 (70.59%) of them subsite was antrum, 2 (11.76%) of them were body and those who age between 55 - 64 years, 16 (76.19%) of them subsite was antrum, 2 (9.52%) of them were body. **Table 29**

Table 30: Comparison of pain across subsite (N=70)

Pain	Subsite				
	Antrum	Body	Cardia	Linitis Plastica	Og Junction
Yes (N=60)	46 (76.67%)	5 (8.33%)	3 (5%)	3 (5%)	3 (5%)
No (N=10)	8 (80%)	1 (10%)	1 (10%)	0 (0%)	0 (0%)

Among study participants, those who had pain, 46 (76.67%) of them subsite was antrum, 5 (8.33%) of them subsite was body, 3 (5%) of them subsite was cardia. **Table 30**

Table 31: Comparison of vomiting across subsite (N=70)

Vomiting	Subsite					P value
	Antrum	Body	Cardia	Linitis Plastica	Og Junction	
Yes (N=60)	46 (76.67%)	4 (6.67%)	4 (6.67%)	3 (5%)	3 (5%)	0.484
No (N=10)	8 (80%)	2 (20%)	0 (0%)	0 (0%)	0 (0%)	

Among study participants, those who had vomiting, 46 (76.67%) of them subsite was antrum, 4 (6.67%) of them subsite was body, 4 (6.67%) of them subsite was cardia. The difference in proportion of vomiting across subsite was not statistically significant. (p value 0.484) **Table 31**

Table 32: Comparison of mass across subsite (N=70)

Mass	Subsite					P value
	Antrum (N=54)	Body (N=6)	Cardia (N=4)	Linitis Plastica (N=3)	Og Junction (N=3)	
Yes	14 (25.93%)	1 (16.67%)	1 (25%)	0 (0%)	0 (0%)	0.698
No	40 (74.07%)	5 (83.33%)	3 (75%)	3 (100%)	3 (100%)	

Among study participants, those who had mass, 14 (25.93%) of them subsite was antrum, 1 (16.67%) of them subsite was body, 1 (25%) of them subsite was cardia. The difference in proportion of mass across subsite was not statistically significant. (p value 0.698) **Table 32**

Table 33: Comparison of lymph node across subsite (N=70)

Lymph Node	Subsite					P value
	Antrum (N=54)	Body (N=6)	Cardia (N=4)	Linitis Plastica (N=3)	Og Junction (N=3)	
Yes	48 (88.89%)	4 (66.67%)	3 (75%)	2 (66.67%)	2 (66.67%)	0.415
No	6 (11.11%)	2 (33.33%)	1 (25%)	1 (33.33%)	1 (33.33%)	

Among study participants, those who had lymph node, 48 (88.89%) of them subsite was antrum, 48 (88.89%) of them subsite was body, 3 (75%) of them subsite was cardia. The difference in proportion of lymph node across subsite was not statistically significant. (p value 0.415) **Table 33**

Table 34: Comparison of dehydration across subsite (N=70)

Dehydration	Subsite					P value
	Antrum	Body	Cardia	Linitis Plastica	Og Junction	
Yes (N=34)	28 (82.35%)	1 (2.94%)	1 (2.94%)	2 (5.88%)	2 (5.88%)	0.360
No (N=36)	26 (72.22%)	5 (13.89%)	3 (8.33%)	1 (2.78%)	1 (2.78%)	

Among study participants, those who had dehydration, 28 (82.35%) of them subsite was antrum, 1 (2.94%) of them subsite was body, 1 (2.94%) of them subsite was cardia, and 2 (5.88%) of them subsite was Linitis Plastica and, 2 (5.88%) of them subsite was 2 (5.88%). The difference in proportion of dehydration across subsite was not statistically significant. (p value 0.360) **Table 34**

Table 35: Comparison of mass palpable across subsite (N=70)

Mass Palpable	Subsite				
	Antrum	Body	Cardia	Linitis Plastica	Og Junction
Epigastric (N=34)	27 (79.41%)	4 (11.76%)	1 (2.94%)	0 (0%)	2 (5.88%)
Lt Hypochondrium (N=10)	8 (80%)	1 (10%)	1 (10%)	0 (0%)	0 (0%)
No (N=24)	19 (79.17%)	1 (4.17%)	1 (4.17%)	3 (12.5%)	0 (0%)
Rt Hypochondrium (N=2)	0 (0%)	0 (0%)	1 (50%)	0 (0%)	1 (50%)

Among study participants with mass palpable, those who had Epigastric mass, 27 (79.41%) of them subsite were antrum,8 (80%) was them subsite were body and those who had left hypochondrium mass, 8 (80%) of them subsite were antrum,1 (10%) was them subsite were body. **Table 35**

Table 36: Comparison of complications across subsite (N=70)

Complications	Subsite				
	Antrum (N=54)	Body (N=6)	Cardia (N=4)	Linitis Plastica (N=3)	Og Junction (N=3)
Anastomotic Leak	2 (3.7%)	0 (0%)	0 (0%)	1 (33.33%)	0 (0%)
Intra-Abdominal Infection	2 (3.7%)	1 (16.67%)	0 (0%)	0 (0%)	1 (33.33%)
Intra Luminal Bleeding	2 (3.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Nil	38 (70.37%)	5 (83.33%)	4 (100%)	2 (66.67%)	2 (66.67%)
Small Bowel Obstruction	6 (11.11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Wound Infection	4 (7.41%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

Among study participants with complication, those who subsite was antrum, 2 (3.7%) of them had Anastomotic Leak, 6 (11.11%) of them had Small Bowel Obstruction, 4 (7.41%) of them had wound infection and those who subsite was body, 1 (16.67%) of them had Intra-Abdominal Infection. **Table 36**

Table 37: Comparison of mortality across subsite (N=70)

Mortality	Subsite				
	Antrum	Body	Cardia	Linitis Plastica	Og Junction
Yes (N=9)	8 (88.89%)	0 (0%)	0 (0%)	1 (11.11%)	0 (0%)
No (N=61)	46 (75.41%)	6 (9.84%)	4 (6.56%)	2 (3.28%)	3 (4.92%)

Among study participants, those who died, 8 (88.89%) of them subsite was antrum, 1 (11.11%) of them subsite was Linitis Plastica. **Table 37**

DISCUSSION

Over the last half-century, the global incidence of gastric cancer has decreased significantly. Nonetheless, gastric cancer remains a global health issue as the fifth most common cancer and the third leading cause of cancer-related deaths worldwide. Even today, the incidence and mortality rates for gastric cancer are disproportionately high in East Asia, Latin America, and Eastern Europe, as well as in certain subgroups in the United States.

Although the incidence of gastric carcinoma is decreasing globally, it is still a major malignant disease that affects the low socioeconomic population in India. So, in light of these facts, this study was conducted to examine the various factors influencing the incidence of gastric carcinoma as well as the various treatment modalities available at the Department of General Surgery, Karpaga vinayaga institute of medical sciences.

Characteristics of our study population:

On a total of 70 participants, 30 percent were between the ages of 55 and 64, 24.29 percent were between the ages of 55 and 64, and 21.43 percent were between the ages of 65 and 75. Males made up 67.14 percent of the study population, while females made up 32.86 percent. In terms of occupation, 62.86 percent of participants were unemployed, while 37.14 percent were Coolie workers. On a total of 70 participants, 55.71 percent are middle-class and 44.29 percent are low-income.

According to data from the Bombay Population-based Cancer Registry[88], stomach cancer ranks fifth among all male cancers and seventh among all female cancers in terms of age-adjusted incidence rates (Bombay Cancer Registry 2003). During the period 1988 to 1999, there was a declining trend in the overall age-adjusted incidence rates of stomach cancer, with a yearly decrease of 4.44 percent in males and 2.56 percent in females, and this decrease was most noticeable in males in the age groups 40-59 and 60+, but only in females in the age group 40-59.

There has been a downward trend in the incidence of stomach cancer reported around the world. The reasons for this dramatic drop are unknown, but they could be associated with increased use of refrigeration for food storage and a decrease in the consumption of salted and smoked foods. In both men and women, stomach cancer has decreased. Reduced salt intake, which has been identified as a risk factor for stomach cancer in numerous correlation and case control studies, could be one reason. Salt consumption has decreased in most of countries as a result of public health campaigns aimed at reducing hypertensive diseases.

The association of blood group A is well known, and this study found the same results. Patients in the Rh negative group were found to have the lowest occurrence in this study. The findings were similar to those of Kamalesh Guleria et al.[89] and Jose et al.[90]

In our study nearly 53% of them are smokers. In a case–control study from Chennai [91], smokers had a twofold increased risk of gastric cancer compared to non-smokers, with current smokers having a significantly higher risk than ex-smokers. The risk was three times higher among "bidi" smokers than among cigarette smokers. In this study, the habits of drinking alcohol and chewing "quid" did not emerge as risk factors. But Rao et al. [92] did not find any relation between tobacco use and risk of gastric cancer.

In the western world, there has been a remarkable shift in the location of gastric cancer from the distal to the proximal stomach. In the United Kingdom, approximately 60% of all malignancies occur near the esophagogastric junction [93]. However, this is similar to the current series, which has an antrum subsite as the most common, accounting for 77.14 percent of the total. This finding, once again, corroborates the similar high incidence of distal cancer in Japan[94].

Consumption of dry fish, spicy food, high consumption of chili, high temperature food and infection with Helicobacter pylori increases the risk of stomach cancer in India [95,96] where as in our study nearly 79% of the

respontents are consuming spicy foods.

CONCLUSION

Gastric cancer incidence has decreased dramatically around the world, owing largely to economic advancements that have resulted in improved food preservation, availability, sanitation, access to clean water, and improved household hygiene, all of which have resulted in a decrease in H. pylori acquisition and a decrease in prevalence among subsequent generations. Gastric cancer is currently the most prevalent in Japan, Korea, and China. Overall, decreasing H. pylori prevalence and active gastric cancer screening and surveillance have resulted in lower incidence and mortality from gastric cancer. Tobacco smoking is emerging as a modifiable risk factor to target in the context of gastric cancer prevention. The observation gives the need for careful surveillance, and public health action added that stomach cancer incidence is increasing in some parts of the country. Improving dietary habits and public health education would be a more affordable way to reduce the incidence of stomach cancers

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