

EVALUATION OF RISK FACTORS ASSOCIATED WITH GASTRIC CARCINOMA**Dr. Md. Shariful Islam^{1*}, Dr. Bimal Chandra Roy², Dr. Md. Abdul Baset³, Dr. Bhupal Chandra Barman⁴, Dr. Md. Hamidul Islam⁵, Dr. Md. Abdul Jabbar⁶ and Dr. A.K.M. Kamrul Huda⁷**¹Assistant Register, Department of Surgery, Rangpur Medical College Hospital, Rangpur, Bangladesh.²Professor, Head of Dept. of Surgery, Rangpur Medical College, Rangpur, Bangladesh.³Assistant Professor, Department of Surgery, Rangpur Medical College, Rangpur, Bangladesh.⁴Junior Consultant, Department of Surgery, Rangpur Medical College Hospital, Rangpur, Bangladesh.⁵Assistant Professor, Department of Surgery, Rangpur Medical College Hospital, Rangpur, Bangladesh.⁶IMO, Department of Surgery, Rangpur Medical College Hospital, Rangpur, Bangladesh.⁷Assistant Professor, Department of Surgery, Army Medical College, Rangpur, Bangladesh.***Corresponding Author: Dr. Md. Shariful Islam**

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ABSTRACT

Background: Worldwide, gastric carcinoma is one of the leading causes of death. In some Asian countries, it is still the commonest cause of cancer death in patients for last 50 years. Gastric Carcinoma is a multi-factorial disease resulting from an interplay between host genetic susceptibility and Environmental risk factors. **Objective:** To evaluate the Risk Factors Associated with Gastric Carcinoma. **Methods:** This cross-sectional descriptive study was conducted at inpatient department of Surgery of Rangpur Medical College Hospital. After taking permission a total 40 eligible patients aged above 18 years who met the inclusion criteria were enrolled into this study. Proper history taking and meticulous physical examination was done. Endoscopy of upper gastrointestinal tract (GIT), then histopathological examination of biopsied gastric tissue sample and antibody to H.pylori was done. Data was analyzed through SPSS (Statistical Package for Social Science) software version 21.0. Significance for the statistical tests (Chi-Square test, z-test) were predetermined at a probability value of less than 0.05 ($p < 0.05$). Quality was assured through avoidance of missed data, filling of code, regular entry of data and careful data analysis. Ethical considerations met through achieving an informed written consent after briefing objectives. **Result:** Among 40 respondent smoking, duration of smoking, amount of smoking and Helicobacter pylori (antibody) were found statistically significant with gastric carcinoma. It was found that smoker were 67.5% ($n=27$) and non-smoker were 32.5% ($n=13$) and smoking was statistically significant ($p < 0.01$) with Gastric Carcinoma. The number of smoker according to their duration of smoking were < 5 years 3.7% ($n=01$), 5-10 years 3.7% ($n=01$) and > 10 years 92.6% ($n=25$), the duration of smoking was statistically significant ($p < 0.001$) with gastric cancer. This current study also found that > 20 cigarettes stick taker per day were 48% ($n=13$), 10-20 cigarettes stick taker per day were 44% ($n=12$) and < 10 cigarette sticks taker per day were 8% ($n=02$), the amount of cigarette sticks taken per day was statistically significant ($p < 0.001$) with Gastric Carcinoma also. This study also found that, among the respondent Helicobacter pylori (antibody) positive 72.5% ($n=29$) and negative 27.5% ($n=11$) and H. pylori was statistically significant ($p < 0.001$) with Gastric Carcinoma. **Conclusion:** The study findings will help to evaluate the risk factors of gastric carcinoma.

KEYWORDS: Gastric carcinoma, Prevention and Risk factors.**INTRODUCTION**

Gastric cancer remains an important burden for public health, particularly in less developed countries including Middle and Eastern Asia, South America and Eastern Europe, being responsible for 70% of cases worldwide.^[1] The highest incidence rates are currently observed in East Asia (about 60 cases per 100,000 males in Japan and Korea).^[2] It is the fifth most common cancer worldwide, and the third leading cause of cancer mortality.^[3] The peak age for gastric cancer is 60-80 years.^[4]

Early diagnosis of gastric carcinoma has evaded surgeons mostly due to nonspecific upper gastrointestinal (UGI) symptom like dyspepsia. Most of them go undiagnosed in the early stages and later present with advanced disease. Early gastric cancer has an excellent prognosis with a 5-year survival rate.^[5]

Its incidence rates vary widely between men and women and across different countries. Rates are 2 to 3 folds higher in men than women.^[6]

Stomach cancer is often either asymptomatic or it may cause only nonspecific symptoms in its early stages. By the time symptoms occur, the cancer has often reached an advanced stage and may have metastasized. Common presenting findings include epigastric pain, bloating, or a palpable epigastric mass. Other patients may have nausea and vomiting due to gastric outlet obstruction, early satiety due to linitis plastica, dysphagia due to cardia involvement or signs and symptoms of upper gastrointestinal bleeding due to ulceration of the tumor. Still other patients with advanced gastric cancer may present with clinical signs of metastatic disease, such as anorexia, weight loss, jaundice, ascites, and hepatic enlargement. Diagnosis is often delayed because symptoms may not occur in the early stages of the disease.^[7]

GC is a multifactorial disease resulting from an interplay between host genetic susceptibility and environmental factors.^[8] The development of gastric cancer is a complex, multistep process involving multiple genetic and epigenetic alterations in oncogenes, tumor suppressor genes, DNA repair genes, cell cycle regulators and signaling molecules.^[9]

OBJECTIVE

General objective

To evaluate the risk factors associated with gastric carcinoma.

Specific objectives

1. To find out the association between *H. pylori* and gastric cancer.
2. To identify the role of smoking in gastric cancer.
3. To determine the role of high intake of salt/salty food in gastric cancer.
4. To find out the role of smoked food in gastric carcinoma.
5. To identify the occurrence of gastric cancer in patients of different socioeconomic status.
6. To find out the prevalence of gastric cancer in different occupational group.
7. To determine age and sex variation in gastric cancer.

METHODOLOGY

Study design: Cross-sectional descriptive study.

RESULTS

Table 1: Distribution of age among respondent (n=40).

Age group	Age distribution		Z value at 95% CI	Probability
	Number	Percentage		
<20 years	00	0	85.34	P<0.05 (S)
21-40 years	09	22.5		
41-60 years	22	55		
61-80 years	07	17.5		
>80 years	02	5		

N : Number of patients

CI : Confidence interval

S : Significant

In Z test of significance of difference

Place of study: Department of Surgery, Rangpur Medical College Hospital, Rangpur.

Period of study: 24 months (January 2017 to December 2018)

Study Population: All admitted patients of carcinoma stomach in surgery unit of Rangpur Medical College Hospital, Rangpur.

Main outcome variables to be studied

Independent variable : Risk factors

Dependent variable : Gastric Cancer.

Sample size: The targeted sample size was 150. But the carcinoma stomach patient in Rangpur Medical College Hospital was not common. Average 80 patient were admitted in a year. Considering the situation my sample size for the study was 40.

Sampling method(s): Sampling technique was purposive sampling.

Inclusion criteria

- Patient suffering from gastric carcinoma confirmed by histopathological examination of biopsied gastric tissue sample of more than 18 years old.
- Patient suffering from gastric carcinoma of both sex.

Exclusion Criteria

- Patient with unwilling to give informed written consent to take part in the study.

Procedure of collecting data

- Data were collected and recorded by standard pre-designed data collection form.

Procedure of data analysis

- Data were entered in the computer using SPSS (Statistical Package for Social Science version 21.0), calculation of percentage resistance within 95% confidence interval (CI). Level of significance was considered as 'P' value less than 0.05 and double checked before analysis. Appropriate statistical test (Chi Square test/ Z-test) was performed. Clinical criteria and radiological findings was assessed by sensitivity, specificity, positive predictive value, negative predictive value.

Table 2: Distribution of Sex among respondent (n=40).

Sex	Sex distribution		X ²	Probability
	Number	Percentage		
Male	31	77.5	12.100	P=0.001 (S)
Female	09	22.5		

N : Number of patients

S : Significant

In Chi-square test (goodness-of-fit) of significance of difference

Table 2: Shows sex was not equally distributed among Gastric Carcinoma patient (p<0.001).

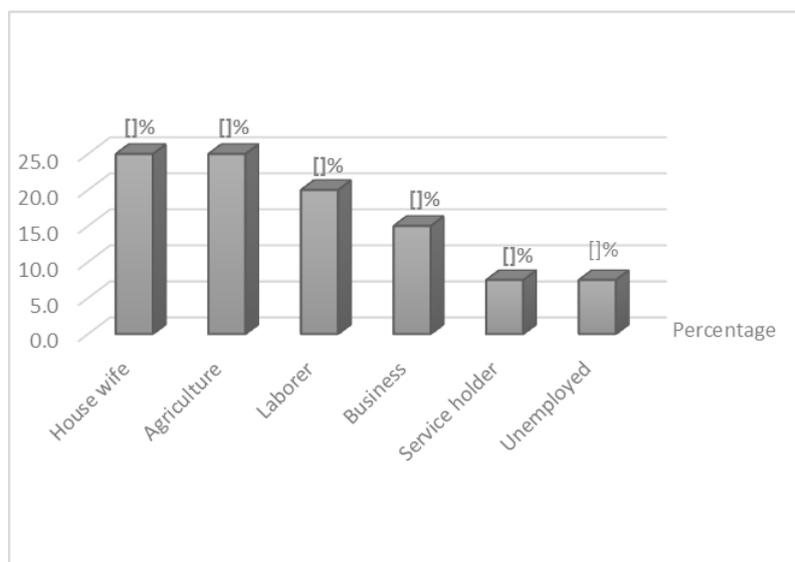


Figure 1 Shows the occupational distribution of respondent (n=40).

Table 3: Distribution of socioeconomic status of respondents (n=40).

Status	Number	Percentage	X ²	Probability
Low	24	60	3.093	p=0.213 (NS)
Middle	15	37.5		
High	01	2.5		

n : Number of patients

NS : Non-significant

In Chi-square Test of significance of difference

Table 3 Shows Gastric Carcinoma was statistically non-significant (p=0.213) with socioeconomic status of respondents.

Table 4: Distribution of respondent according to their amount of cigarette sticks per day (n=27).

Number of stick per day	Distribution of sticks quantity		X ²	Probability
	Number	Percentage		
>20 sticks	13	48	61.067	P<0.001 (S)
10-20 sticks	12	44		
<10 sticks	02	8		

N : Number of patients

S : Significant

In Chi-square test of significance of difference

Table 4 Shows amount of cigarette sticks per day and Gastric Carcinoma was statistically (p<0.001) associated with each other.

Table 5 Demonstrate association between High intake of salt/salty food and gastric carcinoma (n=40).

High intake of salt/salty food	Respondent distribution		Z value at 95% CI	Probability
	Number	Percentage		
Yes	7	17.5	1.14	p>0.05 (NS)
No	33	82.5		

n : Number of patients

CI : Confidence interval

NS : Non-significant

In Z test of significance of difference

Table 5 Shows High intake of salt/salty food and Gastric Carcinoma was not statistically associated ($p>0.05$) with each other.

Table 6: Demonstrate association between H. pylori and gastric carcinoma (n=40).

H.pylori (Antibody)	Respondent distribution		X ²	Probability
	Number	Percentage		
Positive	29	72.5	40.000	P<0.001 (S)
Negative	11	27.5		

n : Number of patients

S : Significant in Chi-square test of significance of difference

Table 6 Shows H. pylori and Gastric Carcinoma was statistically ($p<0.001$) associated with each other.

DISCUSSION

This study was aimed to evaluate the risk factors associated with gastric carcinoma.

In this study age distribution was <20 years 00, 21-40 years 09 (22.5%), 41-60 years 22 (55%), 61-80 years 07 (17.5%) and >80 years 02 (5%). Here age was not statistically significant ($p=0.05$) with Gastric Carcinoma. A similar study was conducted by Park YM et al where he found <40 years and >40 years age group are not statistically associated with Gastric Carcinoma ($p=0.068$).^[3]

In this study male were 77.5% (n=31) and female 22.5% (n=09), male and female ratio was almost 3:1. A similar study was conducted by Zeeneldin A A et al where he found male were 56.5% (n=95) and female were 43.5% (n=73).^[4] Shetty P et al conduct a similar study where he found that male were 58.82% (n=70) and female were 41.17% (n=49).^[5]

In this study occupation distributed among the patient were house wife 25%, Agriculture 25%, Laborer 20%, business 15%, service 7.5% and unemployed 7.5%.

A similar case control study was conducted by Al-qadasi F A et al where he found unemployed in cases group 1.4% (n=01) & control group 6.4% (n=09), non-professional in cases group 94.3% (n=66) & control group 90% (n=126) and professional case group 4.3% (n=03) & control group 3.6% (n=05).^[10]

Another similar study was conducted by Trujillo-Rivera A et al where he found occupational distribution were Professional or technical in case group 3 (6.5%) & in control group 4 (8.7%), Administrative auxiliary in case group 0 (0.0) & in control group 01 (2.2%), Shopkeeper

in case group 2 (4.3%) & in control group 05 (10.9%), Agriculture, livestock or fishing in case group 12 (26.1%) & in control group 12 (26.1%), Artisanal work in case group 06 (13%) & in control group 02 (4.3%), Industrial operative or driver in case group 02 (4.3%) & in control group 02 (4.3%), Basic or support activities in case group 05 (10.9%) & in control group 08 (17.4%) and Home worker or student in case group 16 (34.8%) & control group 12 (26.1%).^[11]

In this study the socioeconomic status of respondents were low level 60% (n=24), middle level 37.5% (n=15) and high level 2.5% (n=01). The socioeconomic status of respondents was non-significantly ($p=0.050$) associated with Gastric Carcinoma. A study was conducted by Sumathi B et al where she found Low level in case group 3.37% (n=03) & in control group 6.74% (n=06), Medium level in case group 30.33% (n=27) % in control group 17.98% (n= 16) and High level in case group 66.29% (n=59) & in control group 75.28% (n=67). But she did not find-out the association between socioeconomic status and gastric cancer.^[12]

A dissimilar study was conducted by Al-qadasi F A et al where he found that, there were no significant associations between tobacco smoking ($p=0.063$), duration of smoking ($p=0.650$), and number of cigarette packs per day ($p=0.523$) and the occurrence of gastric cancer.^[13] The different result may be due to the different method of investigation.

Another dissimilar study was conducted by Park Y M et al where he found never smoking 54.6% (control) & 55% (case), ex-smoker 21.9% (control) & 20.7% (case) and current smoker 23.5% (control) & 24.3% (case) and there was no significant association ($p=0.132$) between smoking and gastric cancer.^[3] The different result may be due to the different method of investigation.

This study found that, high intake of salt/salty food taker were 17.5% (n=07) and non-taker were 82.5% (n=33) which was statistically not associated (p=0.389) with Gastric Carcinoma. A similar study was conducted by Wu Y et al where he found that high salt diet was statistically no-significant (p=0.214) with gastric carcinoma.^[14]

Another dissimilar study was conducted by Park Y M et al where he found salty & spicy food was statistically significant (p=0.003) with gastric cancer.^[3] The different result may be due to the different method of investigation.

This study found that, no respondent were used or taken any kind of smoked food, as a result it was statistically found that there is no significant (p>0.05) association between smoked food and Gastric Carcinoma.

A dissimilar study was conducted by Strumylaitė L et al where he found that there was a statistically significant relationship between the risk of gastric cancer and use of smoked food (smoked meat p<0.001 & smoked fish p=0.021)^[15] The different result may be due to the different method of investigation.

This study found that, among the respondent *Helicobacter pylori* positive 72.5% (n=29) and negative 27.5% (n=11) and *H. pylori* was statistically significant (p<0.001) with Gastric Carcinoma.

Another similar study was conducted by Park Y M et al where he found *Helicobacter pylori* was statistically significant (n=0.044) with gastric carcinoma.^[3]

Sarker K K et al conduct another similar study and he found that, depicts the ORs and 95% confidence intervals for the association between *H. pylori* infection and GC by subgroup.^[16]

CONCLUSION

Evaluating the risk factors associated with gastric carcinoma we found that, smoking and *Helicobacter pylori* was associated with gastric carcinoma, which was statistically significant others factors are not associated with gastric carcinoma.

REFERENCE

1. Lee YY, Derakhshan MH. Environmental and Lifestyle Risk Factors of Gastric Cancer. *Arch Iran Med.*, 2013; 16(6): 358–365.
2. Cover TL. *Helicobacter pylori* diversity and gastric cancer risk. *American Society for Microbiology*, 2016; 7(1): e01869-15.
3. Park YM, Kim JH, Baik SJ, Park JJ, Youn YH, Park H. Clinical risk assessment for gastric cancer in asymptomatic population after a health check-up. *Medicine*, 2016; 95(44): e5351.
4. Zeeneldin AA, Ramadan H, Gammal MME, Saber MM, Elgamal D, Sherisher MA. Gastric carcinoma at Tanta Cancer Center: A comparative retrospective clinicopathological study of the elderly versus the non-elderly. *Journal of the Egyptian National Cancer Institute*, 2014; 26: 127-137.
5. Shetty P, Muktar L, Devaraju S, Vittal R. Incidence of gastric carcinoma in patient presenting with dyspepsia in tertiary care hospital. *Saudi Surgical Journal*, 2014; 2(2): 52-55.
6. Karimi P, Islami F, Anandasabapathy S, Freedman ND and Kamangar F. Gastric cancer: descriptive epidemiology, risk factors, screening and prevention, 2014; 23(5): 700-719.
7. Zali H, Rezaei-Tavirani M, Azodi M. Gastric cancer: prevention, risk factors and treatment. *Gastroenterology and Hepatology from bench to bench*, 2011; 4(4): 175-185.
8. Compare D, Rocco A, Nardone G. Risk factors in gastric cancer. *European Review for Medical and Pharmacological Science*, 2010; 14: 302-308.
9. Nagini S. Carcinoma of the stomach: A review of epidemiology, pathogenesis, molecular genetics and chemoprevention. *World Journal of Gastrointestinal Oncology*, 2012; 4(7): 156-169.
10. Mustafa M, Menon J, Muniandy RK, Illizam EM, Nornazirah A, Nang MK et al. Gastric cancer: risk factors, diagnosis and management. *Journal of Dental and Medical Sciences*, 2017; 16(3): 69-74.
11. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, et al. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer*, 2010; 127: 2893-2917.
12. Saghier AA, Kabanja JH, Afreen S, Sagar M. Gastric cancer: Environmental risk factors, treatment and prevention. *J Carcinogene Mutagene*, 2013; S14(8): 1-11.
13. Al-qadasi FA, Shah SA, Ghazi HF. Tobacco chewing and risk of gastric cancer: a case-control study in Yemen. *Eastern Mediterranean Health Journal*. EMHJ, 2016; 22(10).
14. Wu Y, Fan Y, Jiang Y, Wang Y, Liu H, Wei M. Analysis of risk factors associated with precancerous lesion of gastric cancer in patients from eastern China: A comparative study. DOI: 4103/0973-1482.113351.
15. Strumylaitė L, Žičkutė J, Dudzevičius J, Dregval L. Salt-preserved foods and risk of gastric cancer. Correspondence to L. Strumylaitė, Laboratory for Environmental Health Research, Institute for Biomedical Research, Kaunas University of Medicine, Eivenių 4, 50009 Kaunas, Lithuania. E-mail: loretas@kmu.lt *Medicina (Kaunas)*, 2006; 42(2).
16. Sarker KK, Kabir MJ, Bhuyian AKMMU, Alam MS, Chowdhury FR, Ahad MA, Rahman MA, Rahman MM. *H. pylori* infection and gastric cancer in Bangladesh: a case-control study. *International Journal of Surgery Oncology (2017)* 2:e44. Received 7 August 2017; Accepted 15 August 2017 Published online 16 October 2017.