

Geographical Trends in Prevalence of Stomach Cancer in Nepal

Ganga Sapkota¹, Dipendra Kumar Mallik², Bhawna Wagle³, Sunil Dhakal¹, Sapana Bhandari¹

¹Department of Surgical Oncology, B.P. Koirala Memorial Cancer Hospital, Bharatpur, Nepal,

²Department of General Surgery, Ratnanagar Bakulahar Hospital, Ratnanagar, Nepal,

³Department of Anesthesiology, B.P. Koirala Memorial Cancer Hospital, Bharatpur, Nepal

Abstract

Background: Carcinoma stomach is a multifactorial disease accounting for second most common cancer among male and fifth most common cancer among Nepalese population. The prevalence of stomach cancer is partially influenced by geographical variation, social and cultural factors that significantly affect disease reporting and seeking medical care. In this study we have analyzed geographical trends in prevalence of stomach cancer among patients visiting BPKMCH.

Materials and Methods: A single center descriptive retrospective study to analyze the geographical trends among stomach cancer patients visiting BPKMCH from January 2013 to December 2017 was designed and patients' information available at medical record were obtained. Analysis was completed with SPSS Statistics.

Results: During the period of 5-year total 832 cases of stomach cancer were seen at the Department of Surgical Oncology at BPKMCH. These cases comprised of 349 female and 483 males with male to female (M: F) ratio of 1.4:1. The mean age of presentation was 55 years. Maximum number of cases 57.3% (477) were from terai region of Nepal.

Conclusions: This study provides clue regarding higher cases of stomach cancer among male patients and from terai region of Nepal.

Keywords: Cancer, Stomach, Geographical, Terai, Nepal

Introduction

The most significant challenges of 21st century is growing global burden of cancer, with breast and lung cancer leading the table, stomach cancer is the fifth most common

cancer accounting for 6 % of all cancer cases and second leading cause of cancer related mortality world-wide.¹

Carcinoma stomach is a multifactorial disease where both environmental and genetic factors have a role in pathogenesis of the disease. Some of the well documented environmental

Corresponding Author:

Dr Ganga Sapkota, MS, Consultant, Department of Surgical Oncology, B.P. Koirala Memorial Cancer Hospital, Bharatpur, Nepal. E-mail: sapkotaganga1977@gmail.com

risk factors are diet containing broiled or charbroiled animal meats, smoked food, alcohol consumption and smoking as well as infection with *Helicobacter pylori* and EB virus. A positive family history is present in 10-15% of the cases of stomach, whereas germline E-cadherin/CDH1 mutations have been identified in families with an autosomal dominant inherited predisposition to diffuse gastric cancer.²

In context of Nepal stomach cancer is the second common cancer in male after lung cancer and while fifth most common cancer among female after carcinoma cervix uteri, breast, lung and ovarian carcinoma.³ The prevalence of stomach cancer among several other factors described above is partially influenced by geographical variation, social and cultural factors that significantly affect disease reporting and seeking medical care. In this retrospective study, we analyze the geographical trends in case reporting of carcinoma stomach in Nepal among the patients visiting B P Koirala Memorial Cancer Hospital (BPKMCH) Bharatpur, Nepal.

Materials & Methods

A retrospective study to analyze the geographical trends among stomach cancer patients visiting BPKMCH for a period of 5 year was conducted with approval from the Department of Surgical Oncology. Study involved analysis of demographic data routinely recorded in the hospital registry and the study did not involve interaction with

patients or any additional intervention, therefore patient consent was not obtained.

Demographic records including age, gender, address, of histopathologically diagnosed cases of stomach cancer from January 2013 to December 2017 were obtained from cancer registry and recorded. Multiple entries were excluded by cross-referencing hospital number, name address of each patient. Benign cases were excluded. A descriptive analysis was done using SPSS 20.

Results

During the period of 5-year total 832 cases of stomach cancer were seen at the Department of Surgical Oncology at BPKMCH. These cases comprised of 349 female and 483 males with male to female (M: F) ratio of 1.4:1. The mean age of presentation was 55±14.73 years.

Maximum number of cases per year was 201 in the year 2016 and the least number of cases per year was 146 in the year 2017. The cases of stomach cancer were persistently higher in male than in female during the study period.

3.9% (33) of cases were from Himalayan region, 36% (306) cases were from Hilly region and 57.3% (477) cases were from Terai region of Nepal. Additional 16 (1.9%) cases were from India. Among Terai region, maximum cases per district were observed in Chitwan (56/832) and the neighboring districts, Nawalparasi and Rupandehi which were 41/832 and 37/832 respectively.

Discussion

To our knowledge this is the first retrospective study to analyze the geographical trends in prevalence of stomach cancer in Nepal. Using permanent address

individuals were categorized as from Hilly Himalayan or Terai region of Nepal.

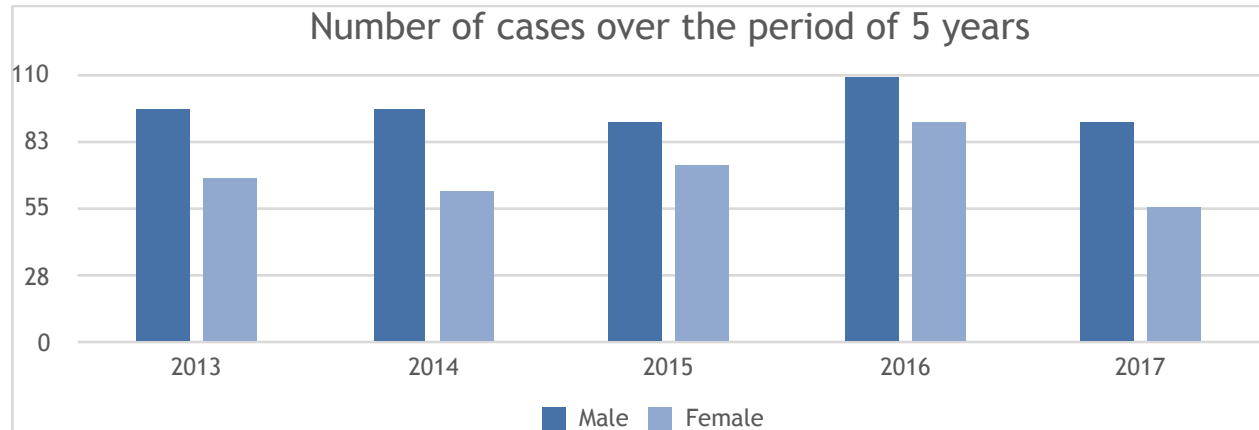


Figure 1.1: Chart showing number of male and female cases of stomach cancer over the study period.

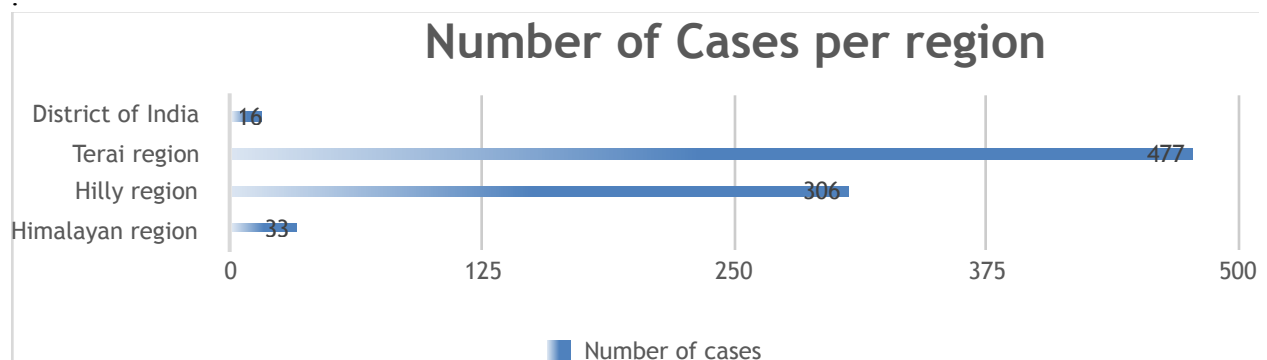


Figure 1.2: Bar chart showing number of stomach cancer cases per region.

In Nepal every year 27.8 new cases of cancer are diagnosed per 1000 population.⁴ The increasing burden of stomach cancer in Nepal has been additionally justified by the study conducted in 2013 which showed that 14.4 out of 1000 patients undergoing upper GI endoscopy had carcinoma stomach, at a

younger age group of 47.6 years with male predominance⁵. The male predominance in prevalence of stomach cancer as observed in this study corroborates with several other studies. The higher association of male gender with smoking and alcohol consumption could explain these findings, as the World Health Organization (WHO) has estimated that 38.4 % of total population of

Nepal above 15 years of age smoke, of which 48.4% are males and 28.7 % are females⁶. The mean age of incidence in this study was found to be 55 years while a study performed in 2012 to assess the age specific incidence of major cancers in Nepal reported the highest age specific incidence of stomach cancer in 65-69 age group.⁷

Several studies have concluded the incidence of stomach cancer displays significant geographical and gender variability⁸. This study also highlights the difference in number of stomach cancer cases among different regions of Nepal, highest cases being reported from Terai region. This could be due to the fact that the hospital in consideration itself is located in terai region and is more accessible to surrounding regions. Lack of cases screening, timely referral to tertiary center, patients' literacy rates and availability of resources in Himalayan region could also explain this variation. The comparative study on prevalence of helicobacter pylori infection and gastric mucosal atrophy in different ethnic group of Nepal have concluded that Helicobacter pylori infection is higher among people from Himalayan region of Nepal and have associated high risk gastric mucosal status, which have positive correlation with development of carcinoma stomach⁹. However, the number of cancer cases from Himalayan region were significantly less in BPKMCH.

There are limitations to this study. Firstly, it is a single center retrospective study and might be insufficient to describe the reasons for

geographical variation in cases of stomach cancer. Histological diagnosis and treatment outcome were not assessed. Further multicentric prospective study design to estimate the stronger geographical variation would be effective.

In conclusion, our study demonstrates the higher burden of stomach cancer in terai region, more in male. Apart from consideration of cases underreporting from Himalayan region, the environmental factors in terai region could have a significant role in causing the higher incidence of stomach cancer.

Reference

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2018 (6):394–424.
2. Petrovchich I, Ford JM. Genetic predisposition to gastric cancer. *Semin Oncol.* 2016;43(5):554–9.
3. Pun CB, Pradhananga KK, Siwakoti B, Subedi K, Moore MA. Malignant neoplasm burden in Nepal - data from the seven major cancer service hospitals for 2012. *Asian Pac J Cancer Prev.* 2015;16(18):8659–63.
4. Ferlay J, Shin H-R, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer.* 2010;127(12):2893–917.
5. KC Shiva Raj, Amatya GL, Lakhey A, Basnet S, Aryal G. Incidence of gastric cancer, its subtypes, and correlation with helicobacter pylori. *Journal of Pathology of Nepal* (2013) Vol.3, 403-407.
6. Ghimire GR. Going up in smoke. *Kathmandu Univ Med J (KUMJ).* 2004 Jul-Sep;2(3):180-1. PMID: 16400210.

7. Poudel KK, Huang Z, Neupane PR. Age specific incidence of five major cancers in Nepal, 2012. *Nepal J Epidemiol.* 2016 Jun 30;6(2):565-573.
8. Machlowska J, Baj J, Sitarz M, Maciejewski R, Sitarz R. Gastric Cancer: Epidemiology, Risk Factors, Classification, Genomic Characteristics and Treatment Strategies. *Int J Mol Sci.* 2020 Jun 4;21(11):4012.
9. Miftahussurur M, Sharma RP, Shrestha PK, Maharjan RK, Shiota S, Uchida T, et al. Helicobacter pylori Infection and Gastric Mucosal Atrophy in Two Ethnic Groups in Nepal. Vol. 16, *Asian Pacific Journal of Cancer Prevention.* Asian Pacific Organization for Cancer Prevention; 2015. p. 7911-6.