

Review Article

Visibility of gastric cancer awareness programs

Namrata Hange^{1*}, Manoj Reddy Somagutta², Sai Harsha Bobba³, Narayana Reddy Bathula²,
Erkan Batti³, Obumneme Jude Iloeje⁴, Klodin Ghazarian⁵, Gouthami Sajjanagandla⁶,
Ulhas Vasave¹, Bernard Emuze⁷

¹Eurasian Cancer Research Council (ECRC), Chembur, Mumbai, Maharashtra, India

²Department of Medicine, Avalon University School of Medicine, Willemstad, Curacao

³Department of Medicine, Washington University of health and science, Jade Street, San Pedro Belize

⁴Department of Medicine, University of Health Sciences, Antigua

⁵Department of Medicine, Avalon University School of Medicine, Churchill Hubbard Road, Youngstown, OH, United States

⁶China Medical School, Shenbei, Shenyang, Liaoning, China

⁷Department of Medicine, St. James School of Medicine, Park Ridge, U.S.A

Received: 24 June 2021

Revised: 20 July 2021

Accepted: 03 August 2021

*Correspondence:

Dr. Namrata Hange,

E-mail: namratah3@yahoo.co.in

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ABSTRACT

Gastric cancer is one of the most common and deadliest cancers known globally. Due to historically low survival rates and available few treatment modalities, especially in developing nations with high burden incidence of gastric cancers, reducing incidence seems to be the key to reducing mortality. This article has emphasized the planning and visibility of the gastric cancer awareness program. The gastric cancer awareness programs shall help people approach health care facilities if reported to be symptomatic and help to reduce the mortality burden through early detection and access to treatment. Stomach cancer awareness programs involve sensitization of the population regarding symptom recognition, screening, identification of vulnerable people, and preventive measures focused on disease control. Recognition of people at risk, symptom screening protocol along with prevention, and management of gastric cancer is meant to achieve this Gastric cancer control strategy. Gastric cancer awareness campaign, along with identification of risk factors, shall include prevention, early detection, and potential gastric cancer treatments through appropriate programs and activities. Targeting high-risk populations including males, aged more than 40 years, smokers, obese, alcoholic, red-meat eaters, population with low socioeconomic status, and people with a positive family history of gastric cancer along for health education shall be directed towards the annual gastric cancer screening programme either free or subsidized rate. Holistic gastric cancer awareness programs encompass the integrated lifestyle modification approach-addressing a healthy balanced diet; de-addiction for smoking and alcohol and stress-free life. Specific local, country-specific strategies tailored to each country's risk factor profile shall be considered while planning a gastric cancer awareness program.

Keywords: Stomach cancer, Awareness, Programs, Treatment, Gastric cancer

INTRODUCTION

Globally, gastric cancer is a silent public health calamity with poor survival, possibly because of late diagnosis making it tough to get cured.^{1,2} It is one of the death-dealing cancers, the fourth leading cause of cancer death worldwide despite progress in medical and surgical treatments of gastric cancers.^{3,4} Related incidence and mortality of stomach cancer are remarkably fluctuating, mostly secondary to dietary changes and a history of *Helicobacter pylori* infection.^{2,3,5} Radical gastrectomy is the only curative treatment of gastric cancer, specifically at early stages with common recurrences.^{4,5-8} Early diagnosis of gastric cancer may be achievable through screening of the high-risk population.⁶ This is possible in Japan and Korea, where gastric cancer screening has been conducted regularly.⁶⁻⁸ For these patients, systemic chemotherapy is the mainstay of treatment when diagnosed in later phases. Considering limited treatment options for a later in advanced stages of gastric cancer leading to poor prognosis; a decline in incident cases through early detection seems a total solution to tackle the burden of mortality.⁴⁻⁶ Still, awareness of gastric cancer is horrifyingly flat. Thus, this review tries to address the planning and visibility of stomach cancer awareness programs.

DISCUSSION

Epidemiology of gastric cancer

Despite declining incidence globally, gastric cancer is one of the sixth most common cancers, with 1.09 million incident cases globally (5.6% amongst all cancers).⁹ About 1 in 13 of all cancer-related deaths is attributable to gastric cancers.⁹ It has proved to be the most lethal cancer with 769 000 deaths with 7.7% cancer deaths.⁹⁻¹⁰ These cancers are more generally diagnosed in developed nations. About 70% of cancer cases occur in the least developed countries, with more than half in East Asia particularly, Mongolia, Japan, South Korea, and China.^{8,10-11} Despite gastric cancer frequently diagnosed in developed nations, this has been reported as the leading cause of cancer death in several South-Central Asian countries, including Iran, Afghanistan, Turkmenistan, and Kyrgyzstan.⁸⁻¹¹ Gastric cancer is more prevalent in males. The male to female ratio of stomach cancer is 2.2 in developed countries, while 1.83 in developing countries.¹¹⁻¹³ Even the mortality from gastric cancer is higher among males.^{4-6,9} The average five-year survival rate for gastric cancer varies from 19% (United Kingdom)-31% (United States).^{13,14} These survival rates have gradually heightened over the past few decades, with medication innovations contributing to earlier detection and better treatment options. This has been translated from the five-year survival rate ranging from 18% for stage IIC tumours treated with surgery while 94% and 88% for stage IA and IB tumours treated with surgery, respectively.^{5,9,10}

Gastric cancer clinico-pathology

Out of all cancers of the stomach, 95% are adenocarcinoma, followed by primary gastric lymphoma. Gastric cancer refers to tumours of the stomach that arise from the gastric mucosa (adenocarcinoma), the connective tissue of the gastric wall (gastrointestinal stromal tumours), neuroendocrine tissue (carcinoid tumours), or lymphoid tissue (lymphomas). This adenocarcinoma can be classified according to two topographical sub-sites, the cardia (upper stomach) and non-cardiac (lower stomach). Histologically, well-differentiated noted to have the highest incidence in older adults and better prognosis while undifferentiated noted to have in young populations.^{10,15,16} Gastric cancer is an inflammation-associated malignancy triggered when cells in the stomach lining start to develop uncontrollably. This infection, directly and indirectly, causes progressive genetic damage to the gastric epithelium that may eventually lead to gastric adenocarcinoma. Deregulation of proliferation/stem cells, NF-kappa β , and Wnt/beta-catenin pathways have been identified as oncogenic pathways in most gastric cancers.¹⁷ Gastric cancers evolve the combined effect of existing genetic susceptibility, *H. pylori* infection, lifestyle changes inclusive of diet and addiction and few environmental factors.¹⁸ Often patients present with late reporting of signs and symptoms when the disease is already in advanced stages.^{12,19} In the early stages, stomach cancer with possibly few or nil symptoms makes early detection difficult. One tricky diagnosis, most of the people, retrospectively felt symptoms, but these vague symptoms can be confused with many other benign gastrointestinal disorders. An unexpected loss of weight, appetite plummets, exhaustion, bloating, altered bowel habit, gastrointestinal (GI) bleeding (Melena, hematochezia, hematemesis), gastroesophageal reflux and Prolonged nausea, abdominal discomfort are presenting symptoms of stomach cancer in most stomach cancer cases.^{6,11,18,20,21} Overall, symptoms of new-onset dyspepsia (in patients aged >55 years), family history of upper gastrointestinal cancer, unintended weight loss, upper or lower gastrointestinal bleeding, progressive dysphagia, odynophagia, unexplained iron deficiency anaemia, persistent vomiting, palpable mass or lymphadenopathy, jaundice has been reported red flags for suggestive of gastric cancer.^{4,11,21-22}

Vulnerabilities and risk of gastric cancer

Identifying risk factors and high-risk groups is of utmost importance for creating awareness and screening programs. The epidemiological triad of stomach cancer causation has been explained in Figure 1 below to specify risk and vulnerabilities. Gastric cancer is known to be prevalent in males. Despite these can occur in the young population, most people get diagnosed in the 60-70s, with increased incidence after 40s.^{6,12,19-22} Long-term infection with *Helicobacter pylori* (*H. pylori*) bacteria has been reported as a major cause of gastric cancer, especially in

the lower (distal) part of the stomach. Family history is one of the risk factors for stomach cancer. The risk of stomach cancer is increased at least 1.5 times in first-degree relatives, including siblings or offspring of patients with stomach cancer.²² A global attributable fraction of more than 85% for *H. pylori* in gastric cancer directly translates to the need to eliminate *H. pylori* for the prevention of gastric cancer.^{4,5,10,23,24} Epstein-Barr virus (EBV) is found in the cancer cells of about 5% to 10% of people with stomach cancer, although nil direct association has been established with stomach cancer.^{10,25,26} The high-risk population for gastric cancer involves patients above age 50 or above, atrophic gastritis patients, patients with pernicious anaemia, ethnic populations with a high incidence rate of gastric carcinoma and patients with a condition such as sporadic gastric adenomas, menetrier disease, familial adenomatous polyposis, or hereditary non-polyposis colon cancer.^{2,3,6,10,18,19,26,27}

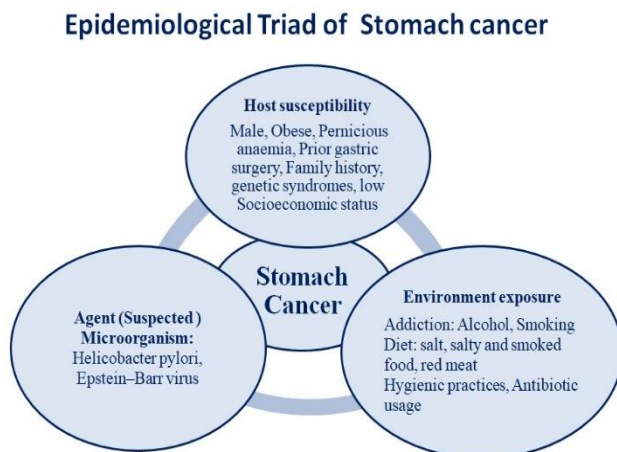


Figure 1: Epidemiological triad of gastric cancer.

There is strong evidence of association of stomach cancer with greater body fatness, smoking, and consumption of alcoholic drinks. There is some evidence that consumption of preserved food by salting; processed, grilled, or charcoaled meats and low consumption of fruit might increase the risk of stomach cancer. Consumption of citrus fruit and raw vegetables appears to protect against the risk of stomach cancers.^{2,6,10,12,16,18,19} These entities differ in terms of risk factors, carcinogenesis, and geographical, ethnic, and socioeconomic differences in distribution. Improved socioeconomic status, hygienic practices, and widespread antibiotics leading to a decrease in infection rates have helped reduce the incidence of gastric cancer.²⁸ A positive correlation was found between increased stomach cancer risk and several occupations with exposure to dusty and high-temperature

environments, including cooking, wood processing, coal industry, mining, farming, refining, and fishing, as well as in workers processing rubber, timber, and asbestos.^{30,31}

Screening of gastric cancer

People with these symptoms suggestive of stomach cancer shall be considered for further workup. Despite nil standard or routine screening tests for stomach cancer, several screening tests have been studied to find stomach cancer at an early stage. Along with non-invasive tests, including *H. pylori* serology, Serum-pepsinogen test, Gastrin-17 helps predict gastric-cancer development and can be used as the first level of screening.^{31,32} Invasive tests such as contrast radiography such as photofluorography, upper-gastrointestinal endoscopy, and upper gastrointestinal (UGI) series are recommended for screening gastric cancer in high risk or symptomatic patients.^{33,34} In most high-risk countries, Japan and Korea, gastric cancer screening is conducted annually for all residents aged 40 and older with upper gastrointestinal (UGI) series.³⁴⁻³⁶ Gastroscopy possible with biopsy will be helpful in confirmation of gastric cancer diagnosis.^{33,34,36} British consensus guidelines recommended diagnostics of stomach cancer involving endoscopic visualization of a mass followed by histological confirmation with biopsy.^{5,36-38}

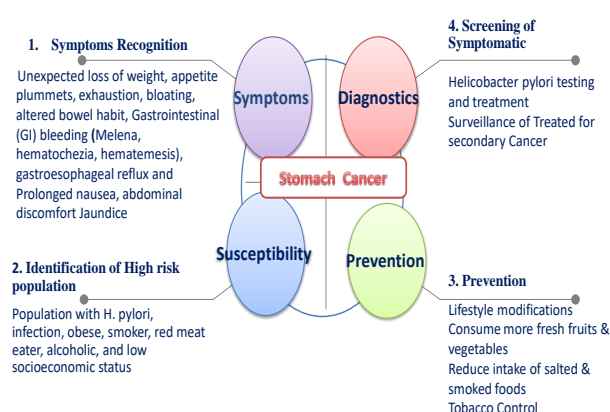
Prevention and management of gastric cancer

GC is a malignant disease with a generally poor long-term prognosis.^{5,38} Surgical resection, including subtotal or total gastrectomy enhanced by standardized lymphadenectomy, remains the gold standard in gastric cancer therapy.³⁹⁻⁴¹ Subtotal or total gastrectomy with radical lymph node dissection, adjuvant chemoradiotherapy or perioperative chemotherapy, Neoadjuvant therapy represents potentially curative treatment options for gastric cancer.^{41,42} Due to historically low survival rates and few treatment options, especially in developing nations, reducing incidence seems to be the key to reducing mortality. Gastric cancer is one of the major preventable cancers and is influenced by lifestyle changes and behaviour. Gastric cancer is treatable and potentially curable if diagnosed in early phases.^{2,3,6,11,12,27,43} The steady decline in gastric cancer Incidence globally over half a century preceded the significant decrease of *H. pylori* infection and possibly attributable alternation in food and meat processing and preservation.^{4,5,44} Eradication of *H. pylori* reduces the risk of gastric cancer in infected subjects and reduces the risk of metachronous gastric cancer after resection of early gastric cancer.^{23,24,31,42-44} The level of prevention for gastric cancer discussed in the following Table 1.

Table 1: Level of prevention in gastric cancer.^{2,6,45-47}

Level of prevention	Stages of cancer	Target population	Activities
Primordial	Total population	Healthy population	Tobacco control-smoking cessation, lifestyle modification (Avoid eating smoked and pickled foods and salted meats and fish. eat fresh fruits and vegetables and plenty of whole grain foods), maintaining a healthy body mass index (Healthy diet and exercise)
Primary	High risk conditions and risk factors	High risk population and positive family history of Stomach cancer	<i>H. pylori</i> vaccination, prophylactic eradication <i>H. pylori</i> , public awareness of risk factors lifestyle modification for healthy lifestyle, tobacco control-smoking cessation
Secondary	Sub-clinical and early stages of disease	Gastric cancer patients	Serological pre-screening of premalignant conditions (pepsinogens, gastrin-17, anti- <i>H. pylori</i> antibodies), Invasive pre-screening-photofluorography and endoscopy, Endoscopic detection, resection of early gastric cancer and treatment
Tertiary	Advanced stages of diseases	Gastric cancer patients	

Outline Gastric Cancer Awareness Campaign

**Figure 2: Gastric cancer awareness programme.**

Awareness campaign

November is gastric cancer awareness month. A soft, powdery-blue ribbon is a sign of support for those living with stomach or gastric cancer. This awareness campaign focuses on motivating populations with concerns to visit their doctor as early as possible. This awareness month and raising awareness shall support efforts to educate people about stomach cancer, including risk factors, prevention, early detection, and potential stomach cancer treatments through appropriate programs and activities.^{2,3,5,6,10} This outline of awareness campaign has been described in Figure 2. Main target audience for awareness includes the general population with particular emphasis on high-risk patients, patients with a family history of gastric cancer, patients with precancerous

lesions. These shall flag off high-risk populations such as males, aged more than 40 years, smokers, obese, alcoholic, red-meat eater, population with low socioeconomic status, and people with a positive family history of gastric cancer.^{2,3,5,7-12,46} Gastric Cancer awareness campaign focuses on imparting knowledge regarding symptoms identification, screening of suspects/symptomatic, vulnerable population and recommendation for prevention of gastric cancers.⁴⁷⁻⁴⁹ Risk modification involves consuming fresh vegetables and fruits, reducing salted and smoked foods, avoiding preservative life; addiction focused on smoking cessation and quitting liquor/ alcohol^{3, 6,8,10,12.}

CONCLUSION

Due to the increased incidence and lethality of stomach cancer, the population shall be cognizant of gastric cancer symptoms, especially in high prevalence countries like East Asian countries. Cancer awareness programs emphasize the integrated lifestyle modification approach, addressing a healthy diet, de-addiction and stress-free life. Several elements like symptom sensitization, recognizing the population at risk, and screening for symptomatic and preventive measures to the awareness programs have added benefits. All East-Asian governments shall consider promoting awareness and targeted screening programs a priority. Locality and specific strategies tailored to each country's risk factor profile shall be deemed while planning a stomach cancer awareness program.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Hange N, Somagutta MR, Bobba SH, Bathula NR, Batti E, Iloeje OJ et al. Visibility of gastric cancer awareness programs. *Int J Community Med Public Health* 2021;8:4605-10.