Original Article

Public awareness of risk factors of gastric cancer and attitude toward disease screening in Saudi Arabia

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Abstract

Background:
Although incidence of gastric cancer in falling worldwide, it is the second leading cause of cancer-related mortality and the fourth most common cancer globally. The study aims to assess the public level of awareness of risk factors of gastric cancer and attitude toward disease screening among general population in Saudi Arabia.

Methods:
A cross-sectional study using a pre-tested questionnaire through social media applications was used to assess participants awareness of gastric cancer.

Results:
Total of 1410 respondents were included in this study and among them 858 (60.9%) were females and most of them were aged between 19 years to 29 years, 843 (59.8%). Respondents' perception of self-risk of gastric cancer were 693 (49.1%) had very low risk, 574 (40.7%) had low risk, 137 (9.7%) had average risk, and the remaining six respondents (0.4%) had high risk. Study participants were aware of 'chronic infection' as the most powerful risk factor, 764 (54.2%). Regarding the usefulness of regular gastric cancer screening, 1011 (71.7%) answered 'very useful' but only 30 (2.1%) undergo regular screening for gastric cancer. Respondents' age, health status, smoking habit, drinking habit, consumption of salty food, and consumption of spicy food were statistically significantly characteristics associated with their 'self-risk' of gastric cancer.

الملخص

الخلفية :
على الرغم من انخفاض معدلات الإصابة بسرطان المعدة يحل سرطان المعدة ثانيا في عدد وفيات السرطان ورابع أكثر الأورام في نسبة الإصابة. تهدف الدراسة إلى قياس الوعي بين عامة الشعب السعودي لعوامل الخطر بالإصابة بسرطان المعدة ورأيهم تجاه الفحص المنتظم لسرطان المعدة.

طريقة البحث :
تم استخدام استبيان ينشر في وسائل التواصل الاجتماعي لقياس الوعي.

النتائج :
عدد من أجابوا على الاستبيان ١٤١٠، كان عدد النساء فيها ٨٥٨ بنسبة (٦٠,٩٪) وغالبهم في الفئة العمرية ما بين ١٩-٢٩ بعدد ٨٤٣ (٥٩,٨٪). وعي المشاركين بخطر الإصابة بسرطان المعدة كان ٦٩٣ (٤٩,١٪) ضئيل جدا، و٥٤٧ (٤٠,٧٪) قليل، و ١٣٧ (٩,٧٪) متوسط و ٦ (٠,٤ عال. يعتقد المشاركون أن التهاب المعدة المزمن هو عامل الخطر الأكثر تأثيرا بعدد ٧٦٤ (٥٤,٢٪). يعتقد المشاركون أن الفحص المنتظم لسرطان المعدة مفيد جدا بعدد ١٠١١ (٧١,٧٪) ولكن ٣٠ شخصا فقط (٢,١٪) من يجري فحص منتظم لسرطان المعدة. عامل العمر والتدخين والحالة الصحية واستخدام الكحول واستهلاك الأكل المملح والأكل الحار كانت عوامل مؤثرة بوعي المريض بخطر إصابته بسرطان المعدة.

Conclusion:
The study showed low level of knowledge of gastric cancer risk factors in Saudi Arabia, but it indicates positive attitude towards screening with only 30 respondents undergoing regular screening.

Keywords:
gastric cancer, Saudi Arabia, Public awareness, gastric cancer screening.

الخلاصة :
أظهرت الدراسة قلة وعي عامة السعوديين بعوامل الإصابة بسرطان المعدة برغم رأيهم الإيجابي تجاه الفحص المنتظم، وإن كان عدد من أجروا الفحص المنظم ٣٠ شخصا فقط.

كلمات مفتاحية:
سرطان المعدة في السعودية، عوامل الخطر للإصابة سرطان المعدة، الفحص المنتظم لسرطان المعدة.

Introduction

Although incidence of gastric cancer in falling worldwide, it is the second leading cause of cancer-related mortality and the fourth most common cancer globally. Gastric cancer has geographical differences where significantly more cases of gastric cancer were reported in less developed countries than in more developed countries [1] . Comparing nations, the highest incidence rates are observed in East Asia, East Europe, and South America, while the lowest rates are observed in North America and most parts of Africa. Gender differences were Also reported with a rate of 2 to 3 folds higher in men [2] . Gastric cancer patients commonly present with vague symptoms such as dyspepsia in early stages. In advanced stages, patients might present with abdominal pain, weight loss, anorexia, or symptoms related to the site of tumor [3] . Diagnosis of gastric cancer remains a challenge as it is detected most of the time at late stages. Various diagnostic tools exist, but endoscopy and biopsy are needed to make diagnosis [4] .

In spite of high mortality and morbidity of gastric cancer, no well-established screening program has been implemented worldwide except for countries where incidence of gastric cancer is high such as South Korea [5] . Different screening programs were implemented in the past in countries with high incidence of gastric cancer. Upper gastrointestinal series, gastroscopy, Helicobacter pylori antibody and serum pepsinogen screening were used in Japan [6] . A large Japanese case-control study suggest 30% reduction in gastric cancer mortality by endoscopic screening compared with no screening within 36 months before the date of diagnosis of gastric cancer [7] . A recent meta-analysis found that an endoscopic screening for gastric cancer in Asian populations showed 40% reduction in mortality [8] .

Known risk factors of gastric cancer are previous Helicobacter pylori infection, old age, male gender, smoking, alcohol drinking, obesity, family history, and dietary habits. Dietary habits known to be a risk for gastric cancer are eating processed meat, salty or smoked food, and lack or inadequate intake of vegetables and fruit [9] . Dietary habits were believed to be responsible for the geographical variation of incidence of gastric cancer [10] . Public knowledge of warning signs and risk factors of gastric cancer hasn't been well-studied worldwide. A South Korean population-based study testing the public awareness of gastric cancer suggested that stress is believed to be the strongest factor to develop gastric cancer followed by chronic gastritis, and gastric ulcer. 60.4% Thought cancer can be prevented by lifestyle modifications such as avoidance of salty food and smoking [5] . Other study in prevalent area or gastric cancer in northern of Iran suggested that 74% of people believe that anemia is a warning sign of gastric cancer, and 91% believe that smoking is the most powerful risk factor, and cessation of smoking is the best way to prevent the cancer [11] . In addition, a recent study conducted in China to

assess people attitude toward screening, 47% showed low level of knowledge about warning signs and risk factors of gastric cancer, and 63% think that the reason for not undergoing a regular screening is lack of symptoms [12] .

The incidence of gastric cancer has been studied in Saudi Arabia, but no study has been conducted to assess people knowledge of gastric cancer and its risk factors. Although gastric cancer in Saudi Arabia incidence is falling, a large retrospective study in Riyadh suggested gastric cancer to be the most frequent gastrointestinal cancer [13] . In 2013, The Saudi Arabia Cancer Incidence Report showed that gastric cancer to rank the 9th cancer among men and the 12th in women. It accounts for 2.7% of all adult cancers in Saudi Arabia, and the median age at diagnosis was 65 [14] .

High morbidity and mortality of gastric cancer mandates education of Saudi population, and reduction of mortality in high-risk population was significant. Studies regarding knowledge about gastric cancer are lacking in Saudi population. This study might serve as basis for future practice and a step toward assessing quantitively people perception of preventable risk factors and warning signs of gastric cancer and attitude toward screening and early detection.

Methods

A cross-sectional study was conducted in September 2019 using pretested questionnaire through social media applications. The questionnaire was distributed along with structured informed consent by King Abdullah International Medical Research Centre. The calculated sample size is 1067 with 3% margin of error and 95% confidence level. The inclusion criteria were all Saudi males and females over the age of 18. The exclusion criteria were age less than 18, not living in Saudi Arabia, and non- Saudi participants.

The questionnaire used includes questions on the following issues:

1. Sociodemographic data.
2. Perception of the self-risk of gastric cancer
3. Awareness of the attributable and preventable extent of each risk factor for gastric cancer
4. Genetic factors of gastric cancer development
5. Factors preventable by lifestyle modification
6. Value of early detection and attitudes toward regular screening

Relationship between respondents' self-risk of gastric cancer and baseline characteristics were observed by Chi-Squared test. The Significance was set at $p<0.05$. The analysis was performed using the Statistical Package for Social Science (SPSS), version 24.0 (IBM, Armonk, NY, USA). The IRB was sought and approved by King Abdullah International Medical Research Centre. IRBC/1567/19

Results

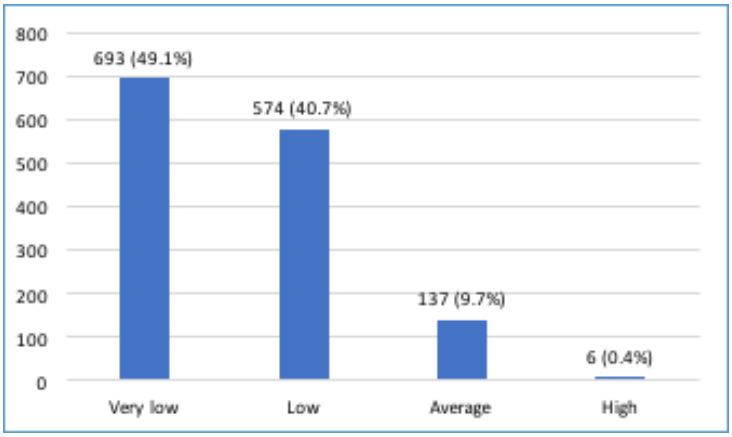
Total of 1410 respondents were included in this study and among them 858 (60.9%) were females. All respondents were adults and most of them were aged between 19 years to 29 years, 843 (59.8%). Majority of respondents had high educational level (college or above), 1093 (77.5%), reported having a good health status, 1236 (87.7%), non-smoker, 1226 (87.0%), and non-alcoholic, 1367 (97.0%) (Table 1).

Table 1: Baseline characteristics of the respondents (n = 1410)

Characteristics	Attributes	N	%
Gender	Male	552	39.1
	Female	858	60.9
Age in years	19-29	843	59.8
	30-39	197	14.0
	40-49	194	13.8
	50-59	157	11.1
	60 or more	19	1.3
Level of education	Elementary school	4	0.3
	Intermediate school	20	1.4
	High school	225	16.0
	Bachelor	1093	77.5
	Other	68	4.8
Health status	Good	1236	87.7
	Intermediate	170	12.1
	Bad	4	0.3
Smoking	Yes	184	13.0
	No	1226	87.0
Alcoholism	Yes	43	3.0
	No	1367	97.0
Consumption of salty food	Always	467	33.1
	Sometimes	774	54.9
	Rarely	161	11.4
	Never	8	0.6
Consumption of spicy food	Always	232	16.5
	Sometimes	696	49.4
	Rarely	354	25.1
	Never	128	9.1

According to respondents' perception of self-risk of gastric cancer, 693 (49.1%) had very low risk, 574 (40.7%) had low risk, 137 (9.7%) had average risk, and the remaining six respondents (0.4%) had high risk (Fig. 1).

Fig. 1: Distribution of all respondents by their perception of self-risk of gastric cancer (n = 1410)



Study participants were aware of 'chronic infection' as gastric cancer most powerful risk factor, 764 (54.2%), followed by 'alcoholism', 725 (51.4%), smoking, 707 (50.1%), and Helicobacter pylori infection, 655 (46.5%). The factors that the respondents were the least aware of were 'vegetables or fruits', 11 (0.8%) followed by, 'gender', 52 (3.7%), and 'previous gastrectomy', 140 (9.9%). When asked about the gastric cancer prevention if a certain factor was removed would lead to reduction of incidence of gastric cancer, the highest number of respondents recognized 'smoking', 722 (51.2%), then 'alcoholism', 623 (44.2%), and 'H. pylori infection', 589 (41.8%) (Fig. 2, 3).

Fig. 2: Distribution of all respondents by awareness about the factors responsible for gastric cancer, N (%) (n =1410)

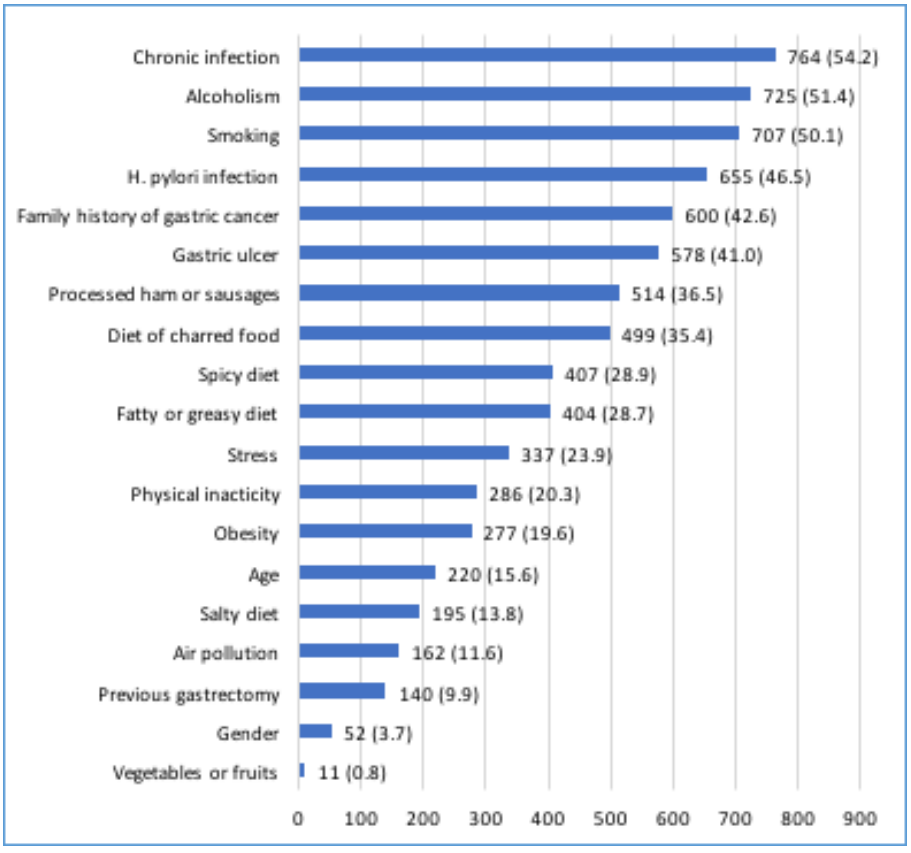
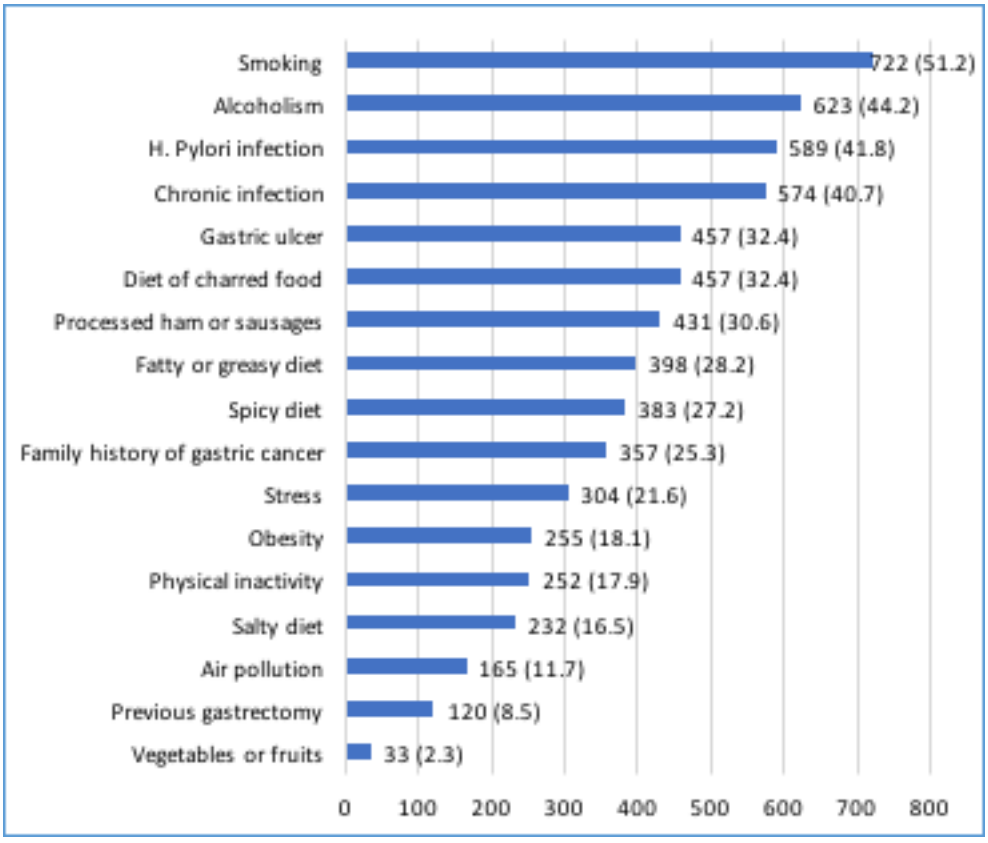


Fig. 3: Distribution of all respondents by their thought of gastric cancer prevention when a certain risk factor is totally removed, N (%) (n =1410)



About 30% of the respondents thought gastric cancer is genetically predetermined, 50% thought it can be prevented by lifestyle modification, and 50% thought gastric cancer could be fully curable (Table 2).

Table 2: Distribution of all respondents by their knowledge of genetic predisposition, lifestyle modification, and curability of gastric cancer (n = 1410)

	What % of gastric cancer do you think is genetically predetermined?	What % of gastric cancer do you think is preventable by modification of lifestyle?	What % of gastric cancer do you think is curable?
Mean	40.0525	60.4915	49.3582
Std. Error of Mean	5.75506	7.45304	0.79989
Median	30.0000	50.0000	50.0000
Std. Deviation	216.10240	279.86128	30.03589

Respondents' age, (p <.001), health status (p <.001), smoking habit (p <.001), drinking habit (p .008), consumption of salty food (p <.001), and consumption of spicy food (p <.001) were statistically significantly characteristics associated with their 'self-risk' of gastric cancer. However, gender, and level of education were not significantly associated with 'self-risk' of gastric cancer (p values > .050) (Table 4).

Table 4: Relationship between respondents' self-risk of gastric cancer and baseline characteristics.

Characteristics		Self-risk				p-value
		Very low %	Low %	Average %	High %	
Gender	Male	38.7	39.0	41.6	50.0	.872
	Female	61.3	61.0	58.4	50.0	
Age in years	19-29	51.5	68.6	65.7	33.3	<.001
	30-39	16.7	12.0	8.8	0.00	
	40-49	16.2	11.3	10.9	33.3	
	50-59	14.0	7.1	13.1	16.7	
	60 or more	1.6	0.9	1.5	16.7	
Level of education	Elementary school	0.4	0.0	0.7	0.0	.088
	Intermediate school	1.6	1.4	0.0	16.7	
	High school	15.6	16.6	16.1	0.0	
	Bachelor	76.5	78.6	78.8	66.7	
	Other	5.9	3.5	4.4	16.7	
Health status	Good	92.4	84.5	79.6	33.3	<.001
	Intermediate	7.4	15.5	19.7	50.0	
	Bad	0.3	0.0	0.7	16.7	
Smoking	Yes	8.4	17.8	16.1	33.3	<.001
	No	91.6	82.2	83.9	66.7	
Alcoholism	Yes	1.6	4.2	5.1	16.7	.008
	No	98.4	95.8	94.9	83.3	
Consumption of salty food	Always	29.1	34.8	45.3	50.0	<.001
	Sometimes	54.7	57.1	47.4	33.3	
	Rarely	15.6	7.3	7.3	16.7	
	Never	0.6	0.7	0.0	0.0	
Consumption of spicy food	Always	14.4	16.4	24.8	66.7	<.001
	Sometimes	47.0	53.7	44.5	16.7	
	Rarely	26.3	23.9	24.8	16.7	
	Never	12.3	6.1	5.8	0.0	

Discussion

Gastric cancer incidence is declining worldwide, but it remains the second leading cause of cancer-related mortality. Gastric cancer carries a very wide geographical variety where is it more common in Japan, South Korea, and China than other parts of the world [1] . Gastric cancer burden in Saudi Arabia is less where it ranks the 9th cancer among men and the 12th in women. It accounts for 2.7% of all adult cancers in Saudi Arabia [14] . The level of public knowledge about risk factors of gastric cancer has not been studied yet in Saudi Arabia.

Public awareness of gastric cancer has been studied previously in South Korea, Iran, and China [5, 11, 12] . Those three studies showed general lack of knowledge about the risk factors of gastric cancer. In our study, 54.2% of respondents chose the chronic infection as risk factor followed by alcohol drinking 51.4% and smoking 50.1%. These finding show gaps of knowledge about the role of diet, previous stomach surgery and genetics which are well-established risk factors as well [9] . Also, 49.1% and 40% of the respondents think their risk of developing gastric cancer is very low and low respectively. Surprisingly level of education was not associated with self-perception of risk of gastric cancer

There is no nation-wide implemented regular screening program in Saudi Arabia. People who had undergone a gastroscopic screening were selective cases in which they have some symptoms or family history. Only 2.1% of respondents had undergone screening. Respondents main reason not to go for screening was having no symptoms 44% and not having an idea about screening 27%. The incidence of gastric cancer in Saudi Arabia is declining despite poor prognosis, but the burden of gastric cancer is less compared to the burden of other cancers which make the cost-effectiveness of regular screening questionable. That makes the need for spreading knowledge about risk factors and warning symptoms is necessary for the people to seek help when they have symptoms.

The main strength of the study is number of respondents. The response rate was 100%, and 1410 have participated in the questionnaire. Which is attributed to the short survey and the questionnaire being distributed in most popular social media means in Saudi Arabia such as Twitter and WhatsApp. The study has some limitations as well. First, most of questions were answered subjectively. There were no specific definitions defining specific terms such as health status and salty, spicy, and charred food. Second, inclusion criteria involved all Saudis aged over the age of 18 and no exclusion of patients of personal history of cancer. Third, most of the respondents were aged between 19-29 and of high educational level which might explain most of participants are having a good health and low self-perception of the cancer.

Conclusion

The study shows low level of knowledge of gastric cancer risk factors in Saudi Arabia, but it indicates positive attitude toward screening with only 30 respondents undergoing regular screening. More health awareness campaigns should be considered to improve knowledge about gastric cancer risk factors in Saudi population.

References

[1] Ang TL, Fock KM. Clinical epidemiology of gastric cancer. Singapore Med J. 2014;55(12):621-8.

[2] Karimi P, Islami F, Anandasabapathy S, Freedman ND, Kamangar F. Gastric cancer: descriptive epidemiology, risk factors, screening, and prevention. Cancer Epidemiol Biomarkers Prev. 2014;23(5):700-13.

[3] Correa P. Gastric cancer: overview. Gastroenterol Clin North Am. 2013;42(2):211-7.

[4] Pasechnikov V, Chukov S, Fedorov E, Kikuste I, Leja M. Gastric cancer: prevention, screening and early diagnosis. World J Gastroenterol. 2014;20(38):13842-62.

[5] Oh D-Y, Choi KS, Shin H-R, Bang Y-J. Public awareness of gastric cancer risk factors and disease screening in a high risk region: a population-based study. Cancer Res Treat. 2009;41(2):59-66.

[6] Hamashima C. Current issues and future perspectives of gastric cancer screening. World J Gastroenterol. 2014;20(38):13767-74.

[7] Hamashima C, Ogoshi K, Okamoto M, Shabana M, Kishimoto T, Fukao A. A community-based, case-control study evaluating mortality reduction from gastric cancer by endoscopic screening in Japan. PLoS One. 2013;8(11):e79088-e.

[8] Zhang X, Li M, Chen S, Hu J, Guo Q, Liu R, et al. Endoscopic Screening in Asian Countries Is Associated With Reduced Gastric Cancer Mortality: A Meta-analysis and Systematic Review. Gastroenterology. 2018;155(2):347-54.e9.

[9] Yusefi AR, Bagheri Lankarani K, Bastani P, Radinmanesh M, Kavosi Z. Risk Factors for Gastric Cancer: A Systematic Review. Asian Pacific journal of cancer prevention : APJCP. 2018;19(3):591-603.

[10] Saghier A, Kabanja J, Afreen S, Sagar M. Gastric cancer: environmental risk factors, treatment and prevention. J Carcinogene Mutagene. 2013;14(8).

[11] Mansour-Ghanaei F, Joukar F, Soati F, Mansour-Ghanaei A, Naserani SB. Knowledge about gastric carcinoma in North of Iran, a high prevalent region for gastric carcinoma: a population-based telephone survey. Asian Pacific journal of cancer prevention : APJCP. 2012;13(7):3361-6.

[12] Liu Q, Zeng x, Wang W, Huang R-l, Huang Y-j, Liu S, et al. Awareness of risk factors and warning symptoms and attitude towards gastric cancer screening among the general public in China: a cross-sectional study. BMJ Open. 2019;9:e029638.

[13] A Al-Mofarreh M, Afzal M, A Al-Kraida A, O Al-Qasabi Q, M Fakunle Y, M Abul Quasem S, et al. Pattern of primary gastrointestinal tract malignancy among Saudi nationals: A retrospective study. Annals of Saudi medicine. 1991;11:15-8.

[14] Ali Abuderman A. Gastric Cancer & prospects of cancer in Saudi Arabia Peninsula. Saudi Journal of Biological Sciences. 2018.