Original Article

Prevalence, Frequency, Types, and Stages of Gastric and Esophageal Cancer Based on Endoscopy During 2015- 2019 in Ilam City

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ABSTRACT

Background:
Gastric cancer is a prevalent malignancy that poses a serious threat to global health. Given that gastrointestinal cancer is analyzed at an advanced stage of the illness, early and opportune discovery of cancers through endoscopy can lead to extended life expectancy for patients.

Objectives: Considering the symptoms of gastric and esophageal cancer in Iran in numerous cases, this study was conducted to determine the frequency and types of gastric and esophageal cancers based on endoscopy during 2015-2019 in Ilam city.
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Material and Methods:
This study was conducted retrospectively on patients with persistent gastrointestinal symptoms who underwent endoscopy. The results of lesions sent to pathology were prepared, and detailed endoscopic results were collected and recorded. According to the Borman classification, the status of cardia cancers was reported in the endoscopic results. All patients with gastric and esophageal cancer diagnosed during the years 2015-2019 were included in this study

Results:
This study was conducted on 627 patients with gastroesophageal cancer, with an average age of 64.31 years in the age range of 1-95 years. Most patients were male and fell within the 61-70 year age group. In the age group under 20 years, gastric cancer was the most common type of cancer. The frequency of gastric and esophageal cancer in the age group of 6-70 years increased with increasing age.

Conclusions:
The results of this study show that the incidence of various types of cancer increases with age. More than half of the recorded cancers in our study were associated with individuals over 60 years of age.

Keywords: Gastric cancer, Esophageal cancer, Cardia, Endoscopy

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INTRODUCTION

Cancer could be a leading cause of death worldwide. After cardiovascular infections, cancer is the leading cause of death in most countries (1). In terms of rate, stomach cancer is the fourth most common cancer and the second leading cause of cancer deaths worldwide (2,3). The frequency of this cancer is diminishing around the world (particularly in developed nations) (4,5). In the United States, the incidence of this cancer has been decreasing in recent decades. This situation has also been observed in Canada, where from 1984 to 2013, the incidence of this cancer decreased from 18.4 to 9.5 per 100,000 people (6). This cancer is not common in other European countries, while the incidence of this cancer is increasing in Asian and developing countries (7).

In Iran, contrary to developed countries, the incidence of stomach cancer is increasing. This increase is particularly significant in western Iran and is considered a problem (8). In Iran, this cancer is also common and is a major health problem (8,9). According to the latest research conducted in Iran in 2009, stomach cancer was the third most common cancer in the country, with a prevalence of 9.3% in both men and women (10). Given the prevalence of this disease and the high mortality rate of gastric cancer in the country, it is necessary to investigate further the causes and factors affecting the occurrence of this disease.

A total of 1,500,000 new cases of cancer and more than 500,000 deaths from cancer are expected to occur in the United States between 2004 and 2009. The cancer death rate has been increasing for 70 years and has been decreasing since 1997. At the same time, the survival rate of patients with cancer has increased, with the 5-year survival rate for white patients being 39% in 1960-1963 and 68% in 1996-2002. In 2002, there were an estimated 11 million new cases of cancer and 7 million deaths, as well as 12.7 million cases of cancer and 7.6 million deaths worldwide. A review of each region based on 2002 statistics shows that about 45% of cancer cases were reported in Asia, 26% in Europe, 14.5% in North America, 7.1% in South and Central America, 6% in Africa, 1% in Australia and New Zealand (11,12). Gastric cancer is the third most common malignancy worldwide (13).

According to a recent report by the Iranian Ministry of Health, cancer is the third most common cause of death, accounting for 14% of all deaths in Iran. Upper gastrointestinal (GI) cancers account for 55% of cancer-related deaths in Iran, with stomach cancer is the most common. Stomach cancer accounts for approximately 50% of all GI cancers (11). The incidence of esophageal squamous cell cancer and gastric cancer is very high compared with their incidence in Western countries (12). Also, according to 2008 statistics, 56% of people with cancer and 64% of deaths from it were in developing countries (12). Breast cancer in women and lung cancer in men are the most commonly diagnosed cancers and are also the most common causes of death from them, although in recent years, prostate cancer has surpassed lung cancer in terms of mortality in developing countries (14). In these nations, after the cancers specified, esophageal and stomach cancer in men and cervical and lung cancer in women were the most common cancers, whereas in developed nations, after the cancers mentioned, lung and colon cancer were detailed as the most common cancers in both sexes (8). According to the American Cancer Society, the digestive system is the second most common site for non-skin cancer and the second leading cause of cancer death (15,16). Also, cancer is the third leading cause of death with an annual incidence of 500,000 cases in Iran, accounting for 14% of all deaths, and the most common system involved (after the skin) is the GI tract. A system that accounts for 38% of all cancer cases and about half (44.4%) of deaths from it. The stomach, esophagus, colon, and rectum are the most common cancer sites in men, and in women, esophageal, stomach, and colon cancer are the most common after breast cancer (16,17). The clinical outcome of cancer depends on early detection, which can lead to improved quality of life. Early distinguishing proof of patients incorporates screening tests, observation and early treatment. Considering the symptoms of gastric and esophageal cancer in Iran in numerous cases, this study was conducted to determine the frequency and types of gastric and esophageal cancers based on endoscopy during 2015-2019 in Ilam city.

MATERIALS AND METHODS

In this research, which was conducted by reviewing records to determine the rates of different types and stages of stomach and intestinal cancers based on endoscopy from 2015 to 2019 in Ilam city, the census method was employed to gather information. The files of all patients with stomach and esophagus cancer from 2015 to 2019 were compiled, and the needed details were gathered through relevant questionnaires. The questionnaire included demographic details of the patients, such as age, sex, place of residence, area of gastrointestinal issues, main complaint, occupation, and educational level. According to the Borman system, the condition of cardia cancer was noted in the endoscopy findings. Patient details were recorded from their files using a standardized checklist, and the information was analyzed using SPSS software version 24, along with various statistical assessments, including ANOVA and t-tests.

Ethical considerations

This study was conducted with approval from the

university's Ethics Committee, and the data collected were kept confidential.

Limitations of project implementation and methods for reducing them:

Due to the retrospective nature of the study, patient records were reviewed, which may be limited by the incompleteness of the records in terms of history, tests, differential diagnoses, and pathology results, among other factors.

RESULTS

This study was conducted on 627 patients with gastroesophageal cancer, with a mean age of 64.31 years in the age range of 1-95 years. Most patients were male and fell within the 61-70 year age group. In the age group under 20 years, gastric cancer was the most common type of cancer. Gastric and esophageal cancer was the most common in the age group of 61-70 years, and the incidence of gastric and esophageal cancer increased with increasing age(Table 1, Figure 1).

Table 1. Determining the frequency distribution of patients with gastric and esophageal cancers based on age group

Age group	Frequency	Percentage
<20	5	0.8
21-30	13	2.1
31-40	47	7.5
41-50	51	8.1
51-60	104	16.6
61-70	168	26.8
71-80	138	22
>80	101	16.1

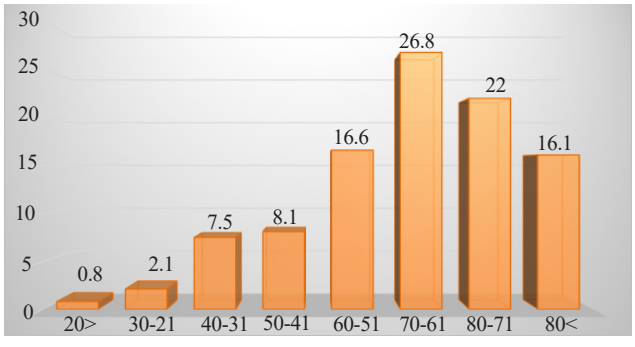

Figure 1. Percentage of patients with gastric and esophageal cancers by age group

The results show that the most common site of involvement in papillary esophageal cancer was squamous cell carcinoma (87.3%), and in gastric cancer was adenocarcinoma (81.3%). The least common type of cancer was reported in esophageal cancer as lymphoma and in gastric cancer as adenomatous polyps (Table 2, Figure2).

Table 2. Determining the incidence of different types of stomach and esophageal cancers in the studied patients

Types of cancer	Esophagus	Stomach
Neoplasm	(21.4)21	(78.6)77
Papillary squamous cell carcinoma	(87.3)69	(12.7)10
Adenoma carcinoma	(18.8)81	(81.3)351
Adenomatous polyp	0	(100)8
Lymphoma	(10)1	(90)9

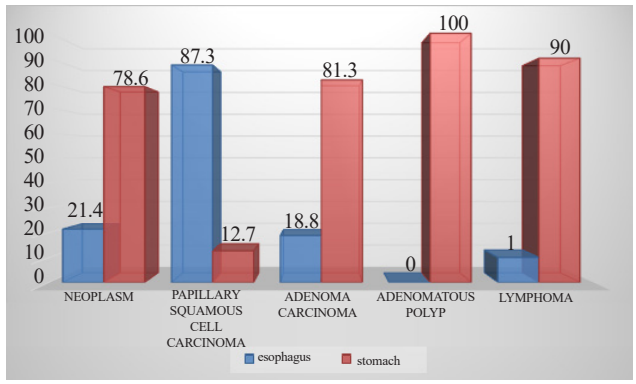

Figure 2. Incidence of different types of stomach and esophageal cancers in the studied patients

The results show that the most common type of cancer in patients was gastric cancer (72.6%) (Table 3, Figure 3).

Table 3. Determining the frequency distribution of gastric and esophageal cancer based on the sites of involvement in the studied patients

Types of cancer	Frequency	Percentage
oesophagus	172	27.4
Stomach	455	72.6

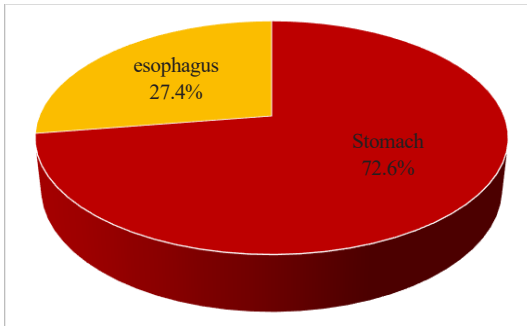

Figure 3. Percentage of incidence of gastric and esophageal cancer based on sites of involvement in the studied patients

The results show that the mean age of onset in patients with esophageal cancer was 65.42 years, and in patients with gastric cancer was 6.89 years(Table 4, Figure 4).

Table 4. Determining the average age based on the sites involved in the patients studied

Types of cancer	Age (Mean±SD)
Esophagus	15.04±65.42
Stomach	16.4±63.89

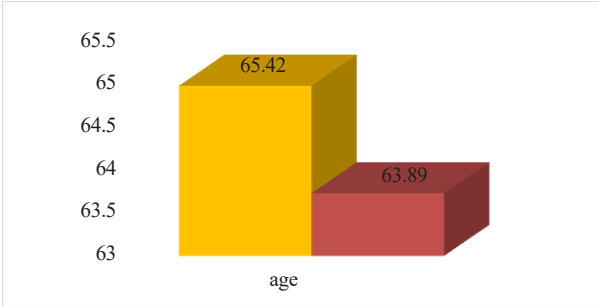

Figure 4. Average age based on the sites involved in the patients studied

Papillary vasculocele carcinoma and adenomatous polyp were more common in women than in men, adenocarcinoma was more common in men, and lymphoma was reported equally in both sexes. A statistically significant relationship was observed between sex and type of cancer (Table 5, Figure 5).

Table 5. Determining the incidence of gastric and esophageal cancer by sex in the studied patients

Types of cancer	Sex		
	male	female	
Neoplasm	47 (48)	51 (52)	P
Papillary vasculocellular carcinoma	33 (41.8)	45 (58.2)	
Adenocarcinoma	249 (57.6)	183 (42.4)	
Adenomatous polyp	3 (37.5)	5 (62.5)	0.052
Lymphoma	5 (50)	5 (50)	

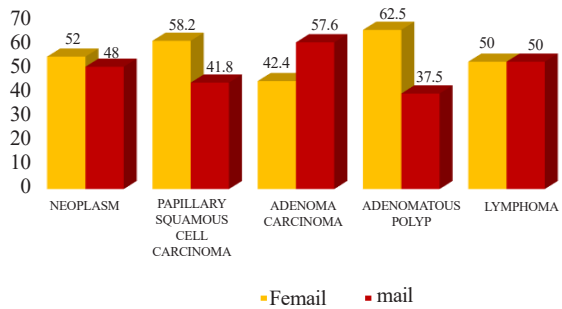

Figure 5. Incidence of gastric and esophageal cancer by sex in the studied patients

The results show that the prevalence of stomach and esophageal cancer was higher in Ilam than in other cities. After Ilam, the prevalence of stomach cancer was reported in Abdanan, Dehloran, and Shirvan. Esophageal cancer had the lowest prevalence in Malekshahi, Badreh, Sirvan, and Ivan, and stomach cancer had the lowest prevalence in Sirvan (Table 6, Figure 6).

Table 6. Determining the incidence of gastric and esophageal cancer according to place of residence in the studied patients

Location	Cancer incidence		
	Stomach	Esophagus	
Abdanan	37 (74)	13 (26)	P
Ilam	228 (70.4)	96 (29.6)	
Ayvan	28 (80)	7 (20)	
Badreh	14 (82.4)	3 (17.6)	0.62
Dareh shahr	28 (66.7)	14 (33.3)	
Dehloran	37 (77.1)	11 (22.9)	
Sirvan	2 (50)	2 (50)	

Table 6. Determining the incidence of gastric and esophageal cancer according to place of residence in the studied patients

Location	Cancer incidence		
	Stomach	Esophagus	
Shirvan	36 (75)	12 (25)	0.62
Malekshahi	21 (87.5)	3 (12.5)	
Mehran	19 (67.9)	9 (32.1)	
Unknown	19 (67.9)	2 (28.6)	

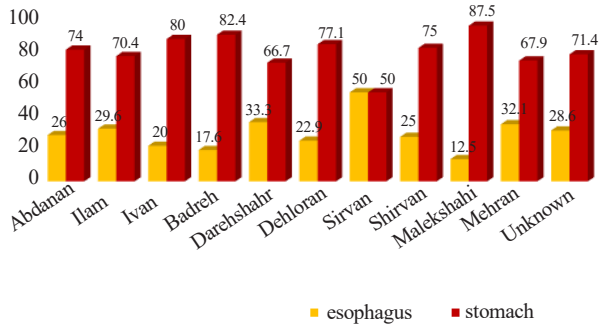

Figure 6. Incidence of gastric and esophageal cancer by place of residence in the studied patients

The results indicated that in more than half of the patients with gastric cancer and in less than 50% of the patients with esophageal cancer, the grade was unknown. 68.8% of the patients had grade 1 for gastric cancer and 31.3% for esophageal cancer. Grades 2 and 3 were reported more frequently in gastric cancer than in esophageal cancer (75 vs. 25 and 71.4 vs. 28.6, respectively) (Table 7, Figure 7).

Table 7. Determining the incidence of gastric and esophageal cancer by pathological grade

Grade	Cancer incidence		p
	Stomach	Esophagus	
1	11 (68.8)	5 (31.3)	0.97
2	12 (75)	4 (25)	
3	20 (71.4)	8 (28.6)	
4	1 (100)	0	
6	1 (100)	0	
7	1 (100)	0	
Uncertain	409 (72.5)	155 (27.5)	

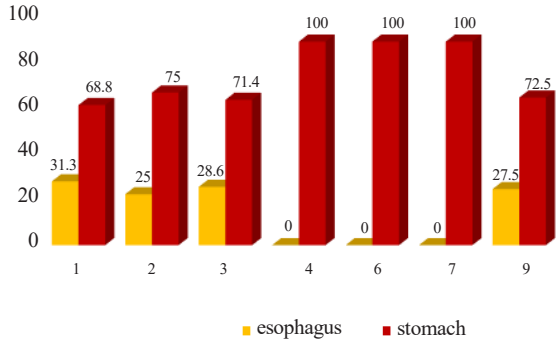

Figure 7. Incidence of gastric and esophageal cancer by pathology grade

DISCUSSION

Cancer is the second leading cause of death in the world, and its global burden has doubled in the last 30 years(8,9,10,11,12). The digestive system is the second most common non-cutaneous site of cancer, with significant morbidity in the United States and most parts of the world, and is the second leading cause of cancer death (2,18). This study was conducted on 627 patients with gastroesophageal cancer, with a mean age of 64.31 years, ranging from 1 to 95 years. Most patients were male and fell within the 61- to 70-year age group. In the age group under 20 years, stomach cancer was the most common type of cancer.

Gastric and esophageal cancers were most common in the age group 61-70 years, and the incidence of gastric and esophageal cancer increased with age. In the study by Yasemi and colleagues, the mean age of patients was 63.8±1.5 years. More than half of the participants in the study were men (58.3%) (14). In this study, the average age of patients with esophageal cancer was 65.42 years, and that of patients with gastric cancer was 6.89 years. The highest age prevalence of patients with gastric and esophageal cancer was in the sixth decade, and gastric cancer was more common in men and esophageal cancer in women. According to reports, this cancer is more common in women than men and generally appears after the age of 50 (18). The average age of onset of esophageal cancer was 67 years, which is roughly consistent with the findings of this study.

According to reports and studies conducted in northern Iran over the past three decades, the most common age group for esophageal cancer incidence is 45-55 years, which is not consistent with the findings of this study (18). The results of this study indicate that the average age of esophageal cancer incidence has increased by almost a decade. This increase is likely due to improvements in health status and changes in dietary behaviors, especially an increase in the consumption of fresh fruits and vegetables (19). According

to a report in 2001, the standardized rate of stomach cancer in men and women in Mazandaran and Tehran provinces was 17.31% and 5.9% per 100,000 people, respectively. Comparing the results of the study with previous research shows that the prevalence of stomach cancer in men and women is higher than in other parts of our country.

There are different statistics regarding stomach cancer across Iran (20). Semnan, Golestan, East Azerbaijan, and Tehran provinces are other areas with a high risk of stomach cancer. However, in a study conducted by Moosavi and others, the prevalence of stomach cancer in men and women is 15.21% and 8.89%, respectively(15). According to the present study, the most common gastrointestinal cancer in Ilam province is gastric cancer, which is more prevalent than esophageal cancer. In the study of Sajadi and colleagues, the incidence of esophageal cancer has decreased significantly, but gastric cancer has increased about twofold (20). In the study by Abdollahian and co-workers, the most common site of cancer among patients was esophageal cancer, with 216 patients (52.93%), followed by stomach and colon (21). Gastric cancer (72.6%), with a prevalence of 56.3% and 43.7% in men and women, respectively. Among all patients, the most common site of gastrointestinal cancer was adenocarcinoma (64.8%), followed by neoplasm, and the least common site was medullary carcinoma (0.8%). Esophageal cancer is more prevalent in some areas such as China, the northern coast of Iran, Central Asia, Turkey, Afghanistan, and North Africa than in other regions of the world, and in our country, esophageal cancer is more common than gastric cancer on the southern coast of the Caspian Sea, including Golestan (1,5).

According to the study by Abdollahian and others, all cancers were more common in men than in women (17). In the study of Yasemi and others, the prevalence of esophageal, gastric, small bowel, and colon cancer was significantly higher in men than in women (unlike liver cancer) ($P<0.001$)(18). In terms of type and location of digestive cancer, 172 (27.4%) of 627 patients with cancer had esophageal cancer, which is consistent with the percentage announced by the Iranian Cancer Center (11). The results show that the most common site of involvement in papillary esophageal cancer was squamous cell carcinoma (87.3%) and in gastric cancer was adenocarcinoma (81.3%). The least common type of cancer in esophageal cancer was lymphoma and in gastric cancer was adenomatous polyp. Esophageal adenocarcinoma was once an uncommon finding, but its prevalence has increased. This shift in the epidemiology of esophageal cancer from adenocarcinoma (in the context of Barrett's esophagus) is one of the most striking changes in the history of human neoplasia(22). In the study by Abdollahian and colleagues, the most common pathological form in esophageal cancer was squamous cell carcinoma (SCC), and in the stomach and colon, it was adenocarcinoma (21). In the study by Yasemi and others, the most common site of gastrointestinal cancer was the esophagus (38.1%) (18). The results show that the lowest mean age of patients with lymphoma was 58.1 years, and the highest mean ages in neoplasm and papillary were 67.56 and 66.63 years, respectively.

Gastric cancer was significantly more common in men, and esophageal cancer was significantly more common in women. Gastric cancer was reported more than esophageal cancer in patients by sex. Papillary cancer, squamous cell carcinoma, and adenomatous polyps were more common in women than men, adenocarcinoma was more common in men, and lymphoma was reported equally in both sexes. Statistically, a close-to-significant relationship was observed between sex and type of cancer. The results show that the prevalence of stomach and esophageal cancer in Ilam was higher than in other cities. The prevalence of stomach cancer in Ilam was higher than that of esophageal cancer. After Ilam, the prevalence of stomach cancer was reported in Abdanan, Dehloran, and Shirvan. Esophageal cancer has the lowest frequency in Malekshahi, Badreh, Sirvan, and Ivan, and stomach cancer has the lowest frequency in Sirvan. According to the study of Bagheri Lankarani and others in southern Iran, esophageal cancer is the third most common gastrointestinal cancer in this region after stomach and colon cancer, and esophageal cancer has decreased in this region(6,8). In the study by Yazdanband and co-workers in Ardabil in northwestern Iran and Malekzadeh and others, the most common gastrointestinal cancer was gastric cancer, followed by esophageal cancer, which is consistent with our study (9,10,11), The results indicate that in more than half of the patients with gastric cancer and less than 50% of the patients with esophageal cancer, the grade was reported as unknown. 68.8% of the patients had grade 1 for gastric cancer and 31.3% for esophageal cancer. Grade 2 and 3 were reported more frequently in gastric cancer than in esophageal cancer (75 vs. 25 and 71.4 vs. 28.6, respectively). According to a study by Bagheri Lankarani and colleagues in Fars, southern Iran esophageal cancer is the third most common gastrointestinal cancer in this region after stomach and colon cancer, and esophageal cancer has decreased in this region(8).

CONCLUSION

Today, many countries have been able to reduce the impact of these cancers on people's lives by launching cancer control programs. Esophageal adenocarcinoma accounts for most of the esophageal cancers in Ilam. Gastric cancer is one of the most dangerous and malignant diseases in

Ilam, with a higher prevalence in men than women. It was observed more in the sixth decade of life. The results of this study indicate that the incidence of various cancers increases with age, with more than half of the recorded cancers affecting individuals over 60 years of age.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare related to this work.

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