British Journal of Global Ecology and Sustainable Development
Volume-27, April - 2024
ISSN (E): 2754-9291

THE PREVALENCE OF ESOPHAGEAL CANCER IN PATIENTS REFERRED TO JAMHURIAT HOSPITAL IN KABUL, AFGHANISTAN: A CROSS SECTIONAL STUDY 2023

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Abstract

Background: Esophageal cancer (EC) is the 7th most common cancer in the world and the 6th cancer in terms of patient mortality. This cancer is caused by the abnormal growth of the tissues of the esophageal tube and is generally divided into two types: EAC and ESCC. Drinking alcohol, and smoking are the main risk factors for this cancer.

Aim and method: This study aims to investigate the prevalence of EC in the patients of the Oncology Department of Jamhuriat Hospital in Kabul during 2023. This study is a retrospective cross-sectional descriptive study in which the required information was collected from the register of cancer patients in the Oncology Department of Jamhuriat Hospital in Kabul in 2023.

Results: 82 EC patients were diagnosed in the Oncology Department of Jamhuriat Hospital in 2023. The prevalence of EC in patients referred to the Jamhuriat hospital was (1.82%). The majority of EC patients are between 41-60 years old (52.4%), male (82.9%), married (87.8%), Pashtun (46.3%), self-employed (78.8%), illiterate (43.9%), living in rural areas with low-income. The BMI of the majority of patients was normal, and (56.1%) of patients were treated with chemotherapy. (20.7%) patients had a family history of cancer, (57.3%) of patients were smokers, and the prevalence of EAC was higher than ESCC.

Conclusion: EC is one of the most common cancers among those who refer to Jamhurit Hospital, the age of the patients is lower than in other countries, and the prevalence of this cancer is higher in rural areas. Public awareness and identification of aggravating factors of this cancer are the main necessary measures to prevent the further spread of this cancer.

Keywords: Esophageal cancer, Prevalence, and Kabul

INTRODUCTION

Like other cancers, Esophageal cancer (EC) is caused by the growth disorder of cells and tissues of the esophagus. According to the prevalence of cancer in the world, EC is the 7th most common cancer and the 6th deadliest cancer in the world(1). EC is usually caused by chronic inflammation and the destruction of cells and tissues of the esophagus. In this case, the order of cellular messaging is disturbed and the cells grow more than normal(2). Considering the histological structure of EC tissues and cells, this cancer is divided into two categories: Esophageal Squamous Cell Carcinoma (ESCC), and Esophageal Adenocarcinoma (EAC). The geographical distribution of the prevalence of these two subcategories of EC is also different in the world, for example, ESCC is usually more common in the US and EAC is more common in Western countries(3,4). In a study conducted in India, the rate of incidence of ESCC was (90%), and the rate of EAC was reported to be (5%)(5). EC prevalence has different geographical distribution in the world. In South America, Asia, and South Africa, it is more common than in other countries of the world(1). More than (75%) of new cases of EC occur in Asian countries. In 2012, 337,698 new cases of EC were registered in Asia, of which (70.33%) were men. Countries such as China 223,306 cases, India 41,774 cases, Japan 19,683 cases, Bangladesh 13,909 cases, and Iran 5,343 cases are the 5 countries with the highest prevalence of EC in Asia. Countries like Turkmenistan (19.7), Mongolia (17.6), Tajikistan (14.7), Bangladesh (12.7), and China (12.5) have the highest Standardized Incidence Rates (SRI) per 100,000 people. Countries such as Georgia, Lebanon, Brunei, and Kuwait have recorded the lowest amount of SRI, respectively(6). In 2020 481,552 new cases of EC were registered in Asia. Of these324,422 new cases of EC have been registered in China, 63,180 new cases in India, and 10,117 new cases in Pakistan. The prevalence of EC is higher among men than among women in China, India, and Pakistan. EC prevalence is recorded in other countries such as Africa 27,546 cases, Latin America19,011 cases, Europe 52,993 cases, and North America 20,806 cases. The number of EC patients is also higher in Asia and Asian countries than in other regions of the world. In Asia, 434,363 cases, Africa 26,097 cases, Latin America 17,799 cases, Europe 45,551 cases, and in North America 18,480 cases, deaths of EC patients have been reported. Among Asian countries, deaths of EC patients have been recorded in China at 301,135 cases, India at 58,342 cases, and Pakistan at 9,443 cases Considering the mortality statistics of EC patients, mortality is higher among men than among women (7). In 2012, 1326 new cases of EC were registered in Afghanistan, of which 801 cases occurred in men and 525 cases in women(6). Considering the prevalence of EC in the world, there is a possibility of increasing the prevalence and mortality of EC patients in the years 2030 and 2040. It is possible that in 2030, 739,666 new cases of EC and 723,466 deaths of EC patients will be registered in the world, and these statistics will increase in 2040 so that in 2040, there will be 987,723 new cases of EC and 914,304 deaths. In 2030, the highest prevalence of EC will increase in Africa (40.3%), Asia (33.3%), and Europe (12.5%). These figures will increase significantly in 2040, such that they will increase in Africa (97.9%), in Asia (66.9%), and in Europe (22.1%)(7).

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Considering the increase in the number and prevalence of EC, the risk factors of this disease should be known and its spread should be prevented by identifying these factors. The most important risk factor for EC is smoking, especially cigarettes and tobacco. The increasing age and gender of the man, genetics and family history of cancer, obesity, alcohol consumption, non-observance of a healthy diet, insufficient consumption of fruits and vegetables, and consumption of hot drinks are among the most important risk factors for EC. Age and gender: Age and gender are among the factors that predispose a patient to EC. In the US, the average age of EC patients is 68 years, and the most common age of EC patients is 55 years (88%). In the UK, the average age of EC patients is 65 years for men and 74 years for women. The average age of EC patients in Malaysia and China is 63 and 61 years, respectively. The prevalence of EC in men is 2 to 8 times higher than in women. Abdominal obesity, gastroesophageal reflux diseases, and the effect of testosterone hormones can be considered as the causes of the higher prevalence of EC in men. In contrast, estrogen and breastfeeding prevent the spread of EC in women. Genetics and family history: studies in the US, the Netherlands, and Italy state that there is no relationship between genetics and EC. However, in the studies conducted in China, it is stated that a family history of cancer increases the risk of EC by 2 times. Multiple mutations play an important role in the development of EC. Mutations in Tp53, EGFR, CCND1, CDK4/CDK6, and MDM2 genes have been observed in ESCC patients, and mutations in CCNE1, cyclin E, and MGST1 genes in EAC patients. Also, mutations in the ALDH2 gene prevent the spread of EC patients. Although this mutation is not directly related to preventing the spread of EC, by inhibiting the enzyme, it inhibits the metabolism of alcohol, and hence the side effects caused by alcohol consumption and the carcinogenicity of alcohol are also eliminated. Obesity: Obesity and overweight are also known as one of the major and most common predisposing factors for EC. According to the studies conducted, with every 5kg/m2 increase in patients' BMI, the risk of EC increases among these patients. A BMI greater than 40 increases the incidence of EC 2 times. Tobacco, and alcohol consumption: Smoking and alcohol consumption also play an important role in aggravating EC. The presence of carcinogens in cigarettes and carcinogen metabolites of alcohol causes EC to intensify. The amount of alcohol consumption is different in EC patients considering its geographical location. In the US (72.4%) and in China (10.9%) EC patients consume alcohol. Simultaneous consumption of alcohol and tobacco synergistically increases EC in patients. In Australia, (75%) of EC patients use tobacco and alcohol at the same time. Diet: daily consumption of non-starchy vegetables and fresh fruits prevents the occurrence of EC. According to studies, daily consumption of 160 grams of fresh non-starchy vegetables and 20 grams of fresh fruit prevents the occurrence of EC in patients. The presence of antioxidants in fresh fruits and vegetables reduces oxidative stress and inflammation. Vitamin C and folate are among the most important anti-cancer components in fresh fruits and vegetables, whose consumption prevents the occurrence of EC. Consuming hot foods and drinks is one of the major risk factors for EC. As a result of consuming hot foods, the possibility of EC increases 2 times. Consumption of salty,

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red, and processed meats also causes EC. The use of these foods increases the possibility of EC by 57%. Medicines: Some drugs reduce the risk of EC. Non-steroidal anti-inflammatory drugs, having anti-inflammatory effects, prevent the occurrence and severity of EC. The use of statins also reduces the risk of EC. These drugs play a role in inhibiting the cell cycle and preventing the proliferation of cancer cells. The use of proton pump inhibitor drugs also reduces the possibility of EC (71%) percent(2). Diagnosing the disease is one of the most important measures to prevent its deterioration, and with a timely diagnosis of EC, its deterioration and spread can be prevented. Dysphagia, weight loss, anorexia, abdominal pain, and odynophagia are among the main symptoms of EC. EC can be diagnosed by endoscopic tests, biopsy, and X-ray barium. The main treatment methods for EC are esophagectomy, chemotherapy, and radiation therapy. These methods are used alone or in combination(8). In the study conducted by Roohullah et al. from Pakistan, between 1991 to 2001, 832 EC patients were diagnosed at CENAR Hospital in Quetta. Among (90%) of patients with SCC (90%), mostly in the age group of 41 to 50 years (40%), the location of the tumor is mostly in the lower region (60%) and the main risk factor for esophageal cancer is lack of proper nutrition (56%) have reported(9). In the study by Cavallin et al. from Italy, between 1980 to 2011, there were 3613 EC patients, the highest prevalence of ESCC subcategory (2660 cases), most of the patients were over 70 years old (2824 cases) and most of them were male (2938), Item has been registered(10). In a similar study conducted by Gasmelseed and colleagues from Sudan, 488 patients were diagnosed with EC between 1999 to 2012. (90%) of ESCC patients, (18.1%) are farmers, (42.2%) belong to the Guhaina tribe, (19.9%) are tobacco users, and (6.7%) patients also smoke. Dysphagia (93.3%) has been reported as the most common symptom in EC patients, and the most common location of the tumor is in the middle third area (56.8%)(11). In the next similar study conducted by Moradzadeh et al. from Iran between 2001 to 2015, with 1362 EC patients, the prevalence of this cancer was higher in men than in women, the average age of male patients in this study was 69 and the average age 65 years old women have been reported(12).

AIM AND METHOD

This study aims to investigate the prevalence of EC among the patients referred to the Oncology Department of Jamhuriat Hospital, during 2023. This study is a retrospective descriptive cross-sectional study, the required information was collected from the patient information register of the Oncology Department of Jamhuriat Hospital in 2023. At first, a questionnaire was prepared with demographic and clinical information of the patient, and the desired data was collected by it. After collecting the required data, it was analyzed by Excel and SPSS 27.0 programs and the analysis results are presented in the relevant tables.

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RESULTS

Gender: According to EC patients, 68 patients (82.9%) were men and 14 patients (17.1%) were women. Age: The average age of the patients in this research was 58.89 years, and most of the studied patients were in the age group of 41-60. The relative frequency distribution of the studied subjects based on age group is given in Table (1).

Marital status: 4 patients (4.9%) were single, 72 patients (87.8%) were married, and 6 patients (7.3%) were widows. Ethnicity: 38 patients (46.3%) were of Pashton, 23 patients (28%) were Tajik, 13 patients (15.9%) were Hazara, and 8 patients (9.8%) were from other ethnic groups. Occupation: 63 patients (78.8%) were self-employed, 5 patients (6.1%) were employees, and 14 patients (17.1%) of them were housewives. Economic level: 66 patients (80.5%) were considered poor and 16 patients (19.5%) were considered rich. Education level: 36 patients (43.9 %) were illiterate, 35 patients (42.7 %) had primary literacy, 10 patients (12.2 %) had secondary literacy, and just 1 patient (1.2 %) had university literacy. Residence: 9 patients (11%) were from Kabul, 73 patients were from the provinces, 58 patients (70.73%) were from the districts, and 15 patients (18.29%) were from the center of the provinces. BMI: 13 patients (15.9%) have a BMI less than 18.5, and 51 patients (62.2%) have a BMI between 18.6-24.9, and 13 patients (15.9%) have a BMI between 25-29.9, and 5 patients (6.1%) of them, their BMI was above 30. Parity: 5 patients (6.1%) had no children, 31 patients (38.7%) had one to three children, and 46 patients (56.1%) had more than three children. Chemotherapy: 46 patients (56.1%) have used chemotherapy, and 36 patients (43.9%) of them have not used chemotherapy. Family history:17 patients (20.7%) had a family history of cancer and 65 patients (79.3%) did not have a family history of cancer. Smoking: 47 patients (57.3%) were smokers, and 35 patients (42.7%) had not used cigarettes. Types of EC: 71 patients (86.6%) had EAC, 8 patients (9.8%) had ESCC, and 3 patients (3.2%) of them had small cell carcinoma (SCC). The relative frequency distribution of the EC patient's information is given in Table (2).

Table (1): Frequency distribution of EC patients based on age

Age (year)	Male		Female	
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
Less than 20	0	0.00	0	0.00
21-40	4	80.00	1	20.00
41-60	35	81.40	8	18.60
61-80	29	85.29	5	14.70
Up 80	0	0.00	0	0.00

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Table (2): Demographic information of all 82 EC patients

Variables		Frequency (n)	Percent (%)
Gender	Male	68	82.9
	Female	14	17.1
Age	Less than 20	0	0.00
	21-40	5	6.1
	41-60	43	52.4
	61-80	34	41.5
	Up 80	0	0.00
Marital status	Single	4	4.9
	Married	72	87.8
	Widow	6	7.3
Ethnicity	Pashton	38	46.3
	Tajik	23	28
	Hazara	13	15.9
	Others	8	9.8
Occupation	Self-employed	63	78.8
	Employee	5	6.1
	Hose wife	14	17.1
Economic level	Poor	66	80.5
	Rich	16	19.5
Education level	Illiterate	36	43.9
	Primary	35	42.7
	Secondary	10	12.2
	High	1	1.2
Residence	Kabul	9	11
	Other provinces	73	89
BMI	Less than 18.5	13	15.9
	18.6- 24.9	51	62.2
	25- 29.9	13	15.9
	Up 30	5	6.1
Parity	None	5	6.1
	1-3	31	37.8
	Up 3	46	56.1
Chemotherapy	Yes	46	56.1
	No	36	43.9
Family history	Yes	17	20.7
	No	65	79.3
Smoking	Yes	47	57.3
	No	35	42.7
Types of EC	EAC	71	86.6
	ESCC	8	9.8
	SCC	3	3.2

DISCUSSION

According to the results obtained from this study, the prevalence of EC was observed mostly between the ages of 41 to 60 years (52.4%) with an average age of 58.89 years. The average age of EC patients in this study was lower than the average age of EC

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patients in the US, UK, Malaysia, China(2), and Iran (13). The reason for this difference can be considered the lack of knowledge about the risk factors of EC and the lack of access to medical services. Considering the gender of EC patients in this study, it can be seen that the prevalence of EC is higher in men than in women. The prevalence of EC in men is almost 5 times higher than in women. In India, Pakistan, China(7), and Iran(14), the prevalence of EC is higher among men than among women. In this study (82.9%) of EC patients were men, which is similar to the statistics obtained from Italy(10). The reason for the higher prevalence of EC in men can be attributed to men being exposed to EC risk factors. Also, in some studies, the prevalence of EC was higher among women than among men. In the studies conducted in Iran(15)and India(16), the prevalence of EC was higher among women than among men. Although the reason for the differences is not clear yet, being at risk is the main reason for the prevalence of EC. The prevalence of EC is higher among married patients than other patients. The reason for this difference can be seen as social conditions. The prevalence of EC has also been different in ethnic groups. In this study, the majority of EC patients were Pashton (46.3%). In the studies conducted in Afghanistan(17) and Iran(15), the prevalence of EC has been different in different ethnic groups. In Iran, the Fars race (62.9%) and in Afghanistan, the Pashton race (31.8%) make up EC patients. The main causes of this difference can be considered population and genetic factors. The majority of EC patients in this study are self-employed (78.8%). Among the EC patients, (6.1%) were employees and (17.1%) were housewives. In the study conducted in Afghanistan, the majority of EC patients had self-employed, and (6.1%) of EC patients were employees(17). Most EC patients in this study were illiterate (43.9%) and only (1.2%) patients had higher education. In the study conducted in Iran(13), the majority of EC patients were illiterate (54.8%), and only (1.8%) patients had higher education. The reason for the similarity of these results can be considered cultural and social factors. The prevalence of EC is higher among low-income patients, in this study (80.5%) EC patients had low income. The poor economy is known to be one of the major factors aggravating EC. Patients are more exposed to the risk of EC due to their low economic level and lack of access to better diet and medical services. The prevalence of EC is higher among patients who live in rural areas than among urban residents. In the studies conducted in Iran (13,15)and Afghanistan(17), the prevalence of EC was higher in rural areas compared to city areas. The main causes of this difference can be seen as a lack of access to medical services and a lack of public awareness about EC. The majority of EC patients have a suitable BMI and the prevalence of EC has nothing to do with weight gain. The reason for this action can be considered diet and physical activities. The prevalence of EC is higher among patients who have multiple children, and this difference is related to social conditions. The majority of EC patients have received chemotherapy. (56.1%) EC patients have used medicine to treat EC. In a study conducted in Iran(14), the most common treatment for EC was combined treatment (surgery, chemotherapy, and radiation therapy). Chemotherapy has been used only (13%) to treat EC patients. The reason for this difference can be seen as the difference in treatment criteria and the lack of choices for

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cancer treatment. The majority of EC patients in this study did not have a family history of EC, and only (20.6%) of EC patients had a family history of EC. The majority of EC patients in this study used cigarettes and tobacco (57.3%), but the consumption of cigarettes and tobacco among EC patients in Iran was (39.2%) and (19.7%) in the studies(13,15). One of the main reasons for the high prevalence of EC in this study was the use of tobacco and cigarettes. EAC has the highest prevalence in EC patients (86.6%). In contrast, ESCC has a lower prevalence (9.8%). The prevalence of EAC in the UK is higher than that of ESCC(18), but the prevalence of ESCC is higher in Iran and Italy(10,15). The different geographic distribution of EC is the main reason for these differences.

CONCLUSION

EC is one of the most common cancers in the world. The prevalence of EC in patients referred to the Jamhuriat Hospital in 2023 was (1.82%). The prevalence of this cancer is higher in men than in women, and the majority of EC patients are old. Poor economic status, level of education, and place of residence play a role in the prevalence of EC. The prevalence of EAC compared to other types of EC in the patients of the Oncology Department was higher than other types of EC. To prevent the spread of this cancer, public awareness about the risk factors of the disease should be made.

Declaration Of Competing Interest: The authors declare that there is no conflict of interest.

Acknowledgment:

The researchers are grateful to all the patients, and staff of Jamhuriat hospital.

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