

# CLINICOPATHOLOGICAL PATTERNS OF OESOPHAGEAL CANCER PATIENTS ATTENDING THORACIC SURGERY DEPARTMENT OF DHAKA MEDICAL COLLEGE HOSPITAL

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## Abstract

**Background:** Esophageal cancer is one of the most serious gastrointestinal cancer worldwide, owing to its rapid development and fatal prognoses in most cases. There is a paucity of published data regarding esophageal cancer the study area in particular. This study was conducted to describe the endoscopic and clinicopathological patterns of esophageal cancer in this part of the world. The study provides baseline local data for future comparison.

**Objectives:** The present study is done to highlight the increasing incidence of oesophageal cancer in the population.

**Methods:** Detailed informations were obtained in each cases according to protocol. Complete history was taken either from patient or accompanying attendants. Thorough clinical examination was done. Relevant investigation reports were collected. All the informations were recorded according to fixed protocol. Collected data were classified, edited, coded and entered into the computer for statistical analysis by using SPSS version 19.

**Results:** Among the 50 cases, mean age was 52.92(±10.60) years, minimum age was 30 years and maximum age was 80 years. Maximum 76% were male and 24% were female, male: female ratio was 3.17:1. Socio-economic status of the study population, majority 48% were of lower middle class and 40% were of lower class. Common clinical presentations were dysphagia, regurgitation, significant weight loss and nausea and vomiting which were 100%, 96%, 80% and 14% respectively. Common personal history were smoking, white tobacco chewing, betel nut, betel leaf and alcohol consumption which were 66%, 20%, 92%, 92% and 10% respectively. Anatomical site of oesophageal cancer, 48% were middle and lower third oesophageal cancer each. Histopathological type of oesophageal cancer, majority 56% were squamous cell carcinoma of different grades and 40% were adenocarcinoma of different grades. Common clinical staging (TNM) of the oesophageal cancer, T2 disease was 58% followed by T3, 26% and T1, 6%. Considering nodal status most of the cases were NO, 60% with Ni, 24% and N2, 16%. Regarding metastasis, only 18% cases had evidence of metastasis. Regarding treatment options of the esophageal cancer, majority 76% were selected for operative procedure, 10% for chemotherapy, 2% for radiotherapy and the rest of 12% for palliation.

**Conclusion:** In conclusion, common clinical presentations of oesophageal cancer were dysphagia, regurgitation, significant weight loss and nausea and vomiting. Predominant personal history were smoking, white tobacco chewing, betel nut, betel leaf and alcohol consumption. Most of the oesophageal cancers were middle and lower third. Majority of oesophageal cancers were squamous cell carcinoma of different grades. Regarding TNM staging most of the oesophageal cancers were T2 disease.

**Key words:** Oesophageal cancer, endoscopy, clinicopathological patterns.

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**Introduction:**

Esophageal cancer is the 8<sup>th</sup> most common cancer worldwide with 4,82,000 new cases in 2008 and the 6<sup>th</sup> most common cause of death from cancer, 4,06,000 deaths.<sup>1</sup> It is characterized by rapid development and fatal prognosis in most cases. The occurrence increases with age with the highest incidence in the age group 50-70 years.<sup>2</sup> The epidemiology of esophageal cancer differs markedly from other epithelial cancers. There is huge variation in incidence worldwide with greater than 100 fold differences observed between high incidence areas such as China and Iran and low incidence areas of western Africa.<sup>3</sup> These wide variations in incidence are often observed in close geographical proximity<sup>4-8</sup>. Male to female incidence rate ratios also varies widely with ratios greater than 20:1 in France to near equality or even excess female cases in high incidence areas of Iran.<sup>4-7</sup> Worldwide, a higher incidence of esophageal cancer is seen in men with an average 3-4 fold increases rate for squamous cell carcinoma and a 7-10 fold increased rate for adenocarcinoma compared to women.<sup>8</sup> There are some changeable and unchangeable risk factors for esophageal cancer. Unchangeable risk factors include age, sex and hereditary factors such as Tylosis and Plummer Vinson syndrome.<sup>9,10</sup> Development of esophageal cancer is frequently associated with changeable risk factors such as chronic exposure to stimulants, hot beverages, alcohol, and smoking with higher incidence in societies of low socioeconomic status, severe malnutrition, low vitamin, fruit and vegetable intake.<sup>11</sup> The peak age of incidence of squamous cell carcinoma is in the sixth decade although adenocarcinoma appears to be commoner in males under 40.<sup>12</sup> There is racial variation in the histological types with predominance of squamous cell carcinoma in black, which is over 90% of all esophageal cancers in Africa. The middle third is the commonest site for squamous cell carcinoma and the lower third is the commonest site for adenocarcinoma.<sup>13-15</sup> Adenocarcinoma is predominant in western

countries.<sup>16</sup> Over the past 25 years, the incidence of adenocarcinoma has shown a dramatic increment in western population. The highest increment is 10% per annum from USA.<sup>17,18</sup> But in other parts of the world including Pakistan and India, squamous cell carcinoma is predominant.<sup>19,20</sup>

The esophagus is a muscular tube measuring 20-25 cm long and 2-3 cm wide. After traversing the diaphragm at the hiatus, it extends through the gastro-esophageal junction to end at the gastric cardia.<sup>21</sup> Significantly the esophagus is inaccessible to clinical examination. Clinical diagnosis of an esophageal lesion is thus based on symptoms and imaging studies. It starts innocuously in the mucosa as a painless lesion and progresses to advanced lesion before symptoms are apparent. The most common presentation is progressive dysphagia. The esophagus is capable of accommodating the initial obstruction because it lacks a serosal layer which allows the smooth muscle to stretch. As a result when patient presents, there is almost 50 -60% luminal obstruction.<sup>22</sup> As most patients present at advanced stage, mortality is very high and even with operable tumours, postoperative mortality is 50%.<sup>23</sup> The symptoms usually appear 3 to 4 months prior to diagnosis and vary on the segment initially involved. Dysphagia is the most common in more than 90% cases and weight loss in over 5-10% cases.<sup>24</sup> Less common symptoms such as hoarseness, cough and progressive lesions with invasion to other organs result in haematemesis, hemoptysis, dyspnea and cough secondary to bronchoesophageal and tracheoesophageal fistula.<sup>24</sup>

The clinical stage of the disease at presentation is important for the outcome. However, outcome has been poor in our environment because of late presentation with advanced disease when only palliation is possible.

The aim of this study is to describe the clinicopathological pattern of esophageal cancer to aware community of the importance of early reporting to hospital for early diagnosis and

treatment to improve patient survival and morbidity.

### Objectives:

The present study is done to highlight the increasing incidence of oesophageal cancer in the population; to identify the high risk groups of oesophageal cancer and to describe clinicopathological patterns of oesophageal cancer.

### Materials and Methods

It was a descriptive-longitudinal study carried out in the Department of Thoracic Surgery, Dhaka Medical College Hospital, Dhaka from August' 2015 to February' 2016. Fifty patients attending with oesophageal cancer in the Thoracic Surgery department of Dhaka Medical College Hospital during the study period were included. Sample selection by purposive sampling method interview- taking consent - result collection -preparing for tabulation.

The patients were interviewed face to face by researcher of this study for the purpose of collection of data. Then the patients were examined by the researcher for certain signs and those were recorded in the check-list. The investigations used for collecting data were endoscopy with endoscopic biopsy, barium swallow x-ray of oesophagus, CT scan of chest and upper abdomen, chest x-ray, Ultrasonogram of whole abdomen etc.

**Data analysis:** After collection, data editing and clearing will be done manually and prepared for data entry and analysis by using SPSS version 19.

**Ethical implications :** The aims and objectives of the study along with its procedure, methods, risks and benefits of this study were explained to the patients in easily understandable local language and then informed consent was taken from the patient or his/her legal guardian (in case of unconscious patients). It was assured that all information and records was kept confidential and the procedure was helpful for both the physicians and the patients in making rational approach of the case management

## Results

**Table 1**  
*Demographic characteristics of the study patients (n=50)*

Variables	Number	Percent (%)
<b>Age (years)</b>		
30-39	05	10.0
40-49	07	14.0
50-59	25	50.0
60-69	09	18.0
> 70	04	08.0
Total	50	100.0
Mean $\pm$ SD	52.92 $\pm$ 10.60	Range 30-80 years
<b>Sex</b>		
Male	38	76.0
Female	12	24.0
Male : Female ratio	3.17:1	
<b>Socioeconomic status</b>		
Lower class	20	40.0
Lower middle class	24	48.0
Upper middle class	6	12.0

Table 1 showed that the mean age was 52.92( $\pm$ 10.60) years, minimum age was 30 years and maximum age was 80 years. 76% were male and 24% were female , male: female ratio was 3.17:1. Majority 48% were of lower middle class and 40% were of lower class.

**Table II**  
*Clinical symptoms and personal history of the study population (n=50)*

Variables	Number	Percent (%)
<b>Clinical presentation</b>		
Dysphagia	50	100
Regurgitation	48	96
Significant weight loss	40	80
Nausea and vomiting	07	14
Cough during swallowing	02	04
<b>Personal history</b>		
Smoking	33	66
White tobacco	10	20
Betel Nut	46	92
Betel Leaf	46	92
Alcohol consumption	05	10

Table II shows common clinical presentations were dysphagia, regurgitation, significant weight loss and nausea and vomiting with percentages of 100%, 96%, 80% and 14% respectively. Common personal histories were smoking, white tobacco chewing, betel nut, betel leaf and alcohol consumption which were 66%, 20%, 92%,92% and 10% respectively.

**Table III**

*Comorbidities, anatomical site (oesophagus) family history of oesophageal cancer of the study population (n=50)*

Variables	Number	Percent (%)
COPD	18	36
IHD	15	30
HTN	14	28
DM	02	04
Asthma	01	02
Positive family history	36	72.0
Anatomical site (Oesophagus)		
Upper third	02	04.0
Middle third	24	48.0
Lower third	24	48.0

Table III shows comorbidities, COPD were 36%, IHD were 30%, 28% were HTN. Majority, 72% of the patients had family history of oesophageal cancer Anatomical site of oesophageal cancer, 48% were middle and lower third oesophageal cancer each.

**Table-IV**

*Histological type of oesophageal cancer of the study population (n=50)*

Histopathological type of malignancy	Number	Percentage
Squamous cell carcinoma grade-I	04	08.0
Squamous cell carcinoma grade-II	20	40.0
Squamous cell carcinoma grade-III	04	08.0
Adenocarcinoma grade-I	02	04.0
Adenocarcinoma grade-II	12	24.0
Adenocarcinoma grade-III	06	12.0
Papillary adenocarcinoma	01	02.0
Carcinoma in situ	01	02.0
Total	50	100.0

Table IV shows histopathological type of oesophageal cancer, majority 56% were squamous cell carcinoma of different grades and 40% were adenocarcinoma of different grades.

**Table V**

*Clinical staging (TNM) of the oesophageal cancer of the study population (n=50)*

TNM staging	Number	Percentage	
T	T1	03	06.0
	T2	29	58.0
	T3	13	26.0
	T4a	02	04.0
	T4b	03	06.0
N	N0	30	60.0
	N1	12	24.0
	N2	08	16.0
M	M0	41	82.0
	M1	09	18.0

Table V shows common clinical staging (TNM) of the oesophageal cancer , T2 disease was 58% followed by T3, 26% and T1, 6%. Considering nodal status most of the cases were NO, 60% with Ni, 24% and N2, 16%. Regarding metastasis only 18% cases had evidence of metastasis.

**Table VI**

*Evidence of metastasis of oesophageal cancer of the study population (n=50)*

Evidence of metastasis	Number	Percentage
Absent	41	82.0
Present	09	18.0
Total	50	100.0

Table VI shows regarding metastasis, 18% cases had evidence of metastasis.

**Table VII**

*Treatment options of the oesophageal cancer of the study population (n=50)*

Treatment options	Number	Percentage
Operative	38	76.0
Chemotherapy	05	10.0
Radiotherapy	01	02.0
Palliation	06	12.0
Total	50	100.0

Table VII shows treatment options of the oesophageal cancer, majority 76% were selected for operative procedure, 10% for chemotherapy, 2% for radiotherapy and the rest of 12% for palliation.

### Discussion

This study was held in the Department of Thoracic surgery of Dhaka Medical College Hospital, Dhaka and after approval of protocol. This is a descriptive-longitudinal study of the patients attending with history of carcinoma of the esophagus. The cases were referred to thoracic surgery department from several departments of the same institute and also from other institutes. The departments from which the patients were referred are radiotherapy, gastroenterology, medicine, surgery etc.

In present study mean age was 52.92(±10.60) years, minimum age was 30 years and maximum age was 80 years. Maximum 76% were male and 24% were female, male: female ratio was 3.17:1. Similar finding was found in several studies. In study of Al-Samawi AS and Aulqi SM study<sup>25</sup> showed the mean age for SCC was 60 years with range from 23 to 100 years; while the mean age for ADC was 65 years; age range being 27 - 90 years. In study of Mchembe et al.<sup>26</sup> the age of patients at presentation ranged from 24 to 78 years with a median age of 47 years. The modal age group was 41 to 50 years; 158 (48.2%) patients were aged 50 years or below. There were 226 (68.9%) men and 102 (31.1%) women with a male to female ratio of 2.2:1. The male to female ratio of EC was slightly similar to that reported in several literatures.<sup>27,28</sup> Some reports documented high male prevalence with male to female ratio 3:1 and 4:1.7,<sup>29</sup> This study shows that EC was exceedingly rare before the age of 30 and the mean age was around 62 in both males and females. Ali *et al.* from Pakistan reported early mean age of 42 years in males and 53 years in females.<sup>32</sup>

Current study showed socio-economic status of the study population, majority 48% were of lower middle class and 40% were of lower class. Mchembe et al.<sup>26</sup> showed globally, esophageal cancer has been reported to be more prevalent in people with low socioeconomic status.<sup>31</sup>

Socioeconomic class appears to be an independent risk factor in the development of esophageal cancer.<sup>31,32</sup>

In this study showed common clinical presentations were dysphagia, regurgitation, significant weight loss and nausea and vomiting which were 100%, 96%, 80% and 14% respectively. Mchembe et al.<sup>26</sup> study supported our result, they showed all the patients presented with progressive dysphagia (graded) and weight loss (100%); 249 patients (75.9%) presented with regurgitation.

Present study shows common personal history were smoking, white tobacco chewing, betel nut, betel leaf and alcohol consumption which were 66%, 20%, 92%, 92% and 10% respectively. Like tobacco consumption, alcohol use is a major cause of ESCC in western countries,<sup>33,34</sup> but not in Linxian<sup>35</sup> or Iran.<sup>33</sup> In the West, alcohol intake is associated with a dose-response increase in ESCC risk, and heavy consumption increases risk by 5-15 fold.<sup>36</sup> In Linxian, alcohol consumption is associated with a mild decrease in ESCC risk,<sup>35</sup> possibly due to the fact that alcohol consumption in Linxian is very limited and it may be associated with higher socioeconomic status. In Golestan Province, alcohol consumption is rare, especially among rural residents, and it is unlikely to be a major cause of ESCC.<sup>37</sup>

This study showed anatomical site of oesophageal cancer, 48% were middle and lower third oesophageal cancer each. The location of the tumor within the length of the esophagus varies with the histological type. Squamous cell carcinoma is commonly found in the middle and distal third of the esophagus while adenocarcinoma is more commonly located in the distal third. In this study, the middle third of the esophagus was the most frequent anatomical site for esophageal cancer in over 50% of cases, which is consistent with previous studies.<sup>38,39</sup> Our finding is at variant with other studies, which reported the distal third of the esophagus as the most common site for esophageal cancer.<sup>40,41</sup>

Present study showed histopathological type of oesophageal cancer, majority 56% were squamous cell carcinoma of different grades and

40% were adenocarcinoma of different grades. Similar findings were found in other studies Al-Samawi AS and Aulqi SM<sup>25</sup> study their finding showed that SCC accounted for 50.2% followed by ADC (48.6%). Comparing these results with that found in high risk countries (esophageal cancer belt), by Ali et al. from Pakistan,<sup>30</sup> Cherian *et al.* from India<sup>42</sup> and Khan *et al.* from Kashmir,<sup>43</sup> the SCC was 92%, 92.5%, 92.51% and ADC was 8%, 7.5% and 7.35% respectively. Study conducted by Froutan *et al.*<sup>44</sup> in Iran that consider as high risk area revealed 67% SCC and 22% ADC. However, report from USA by Schlansky *et al.*<sup>45</sup> showed high frequency of ADC 81% and low frequency of SCC 17%. Squamous cell carcinoma was the predominant histological type of esophageal cancer in this study, accounting for 96% of cases. This is similar to reports from other parts of Africa and India in which over 90% of esophageal cancer are squamous cell carcinomas.<sup>46</sup> This contrasts with studies from the US in which adenocarcinoma accounted for 81% and squamous cell carcinoma for 17%.<sup>12</sup> In another study among Asian/Pacific Islanders in the US, the rate of esophageal squamous cell carcinoma was 81% higher than in white populations.<sup>20</sup>

Present study showed common clinical staging (TNM) of the oesophageal cancer, T2 disease was 58% followed by T3, 26% and T1, 6%. Considering nodal status most of the cases were NO, 60% with N1, 24% and N2, 16%.

Regarding metastasis only 18% cases had evidence of metastasis. Compared to the Mchembe et al.<sup>26</sup> study showed TNM staging was documented in only 104 (31.7%) patients. Of these, 102 (98.1%) patients were diagnosed with advanced esophageal cancer (stages III and IV). According to tumor grading, most of tumors were moderately differentiated, accounting for 56.1% of cases.

In this study regarding metastasis 18% cases had evidence of metastasis. In the Mchembe et al.<sup>26</sup> study, distant metastasis was documented in 43.3% of cases. A similar distant metastatic pattern was reported in other studies.<sup>12,13</sup> Late presentation in our area in the majority of patients may also be responsible for the high distant metastatic rate of esophageal cancer in most developing countries.

In our study treatment options of the oesophageal cancer, majority 76% were selected for operative procedure, 10% for chemotherapy, 2% for radiotherapy and the rest of 12% for palliation.

### Conclusion

In conclusion, oesophageal cancer is one of the most serious gastrointestinal cancer worldwide, owing to its rapid development and fatal prognoses in most cases. The present study is done to highlight the increasing incidence of oesophageal cancer in the population. Detailed informations were obtained in each cases according to protocol. Complete history was taken either from patient or accompanying attendants. Thorough clinical examination was done. Relevant investigation reports were collected. All the informations were recorded according to fixed protocol. Collected data were classified, edited, coded and entered into the computer for statistical analysis by using SPSS version 19. Common clinical presentations of oesophageal cancer were dysphagia, regurgitation, significant weight loss and nausea and vomiting. Predominant personal history were smoking followed by white tobacco chewing, betel nut, betel leaf and alcohol consumption. Most of the oesophageal cancers were in the middle and lower third of oesophagus. Majority of the oesophageal cancers were squamous cell carcinoma of different grades. Regarding TNM staging, most of them cancer were T2 disease. Large scale, multicentre study should be under taken.

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