



PROFILE OF ESOPHAGEAL CANCER MANAGEMENT

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ABSTRACT

Esophageal cancer is one of the leading causes of cancer-related mortality worldwide, often diagnosed at an advanced stage with limited therapeutic options. In Indonesia, particularly at Dr. Soetomo General Hospital Surabaya, data regarding esophageal cancer treatment remain limited. A better understanding of treatment profiles and patient characteristics is essential to improve clinical outcomes and develop early detection strategies. To analyze the profile of esophageal cancer treatment at Dr. Soetomo General Hospital Surabaya during 2018–2023, including patient demographics, clinical manifestations, nutritional status, histopathological and anatomical characteristics of the tumor, TNM stage, metastasis, comorbidities, therapeutic modalities, serum albumin levels, and prognosis. This was a descriptive retrospective study using secondary data obtained from medical records of esophageal cancer patients at the Oncology Clinics of ENT-HN and Internal Medicine Departments, Dr. Soetomo General Hospital, from 2018 to 2023. Total sampling was applied, with 65 patients meeting the inclusion criteria out of 157 cases. Data analyzed included demographic characteristics, clinical symptoms, nutritional status, tumor type and location, TNM stage, presence of metastasis, comorbidities, therapy received, serum albumin levels, and treatment outcomes. The data were analyzed descriptively and presented as frequency distributions. The majority of patients were male and aged ≥ 60 years, presenting with dysphagia as the most common symptom. Most patients were diagnosed at advanced stages, with squamous cell carcinoma as the predominant histological type and the distal third of the esophagus as the most frequent tumor location. Common comorbidities included hypertension and diabetes mellitus. Many patients had hypoalbuminemia, reflecting poor nutritional status. Therapeutic modalities provided included gastrostomy, chemotherapy, radiotherapy, or their combination, although a substantial proportion received only supportive care. Mortality remained high, and curative outcomes were limited. Esophageal cancer cases at Dr. Soetomo General Hospital were predominantly diagnosed at advanced stages with poor nutritional status and multiple comorbidities, resulting in limited curative treatment options and poor prognosis. Strengthening early detection, nutritional optimization, and multidisciplinary care are crucial to improving outcomes in esophageal cancer patients.

Keywords: Dr. soetomo general hospital; esophageal cancer; nutritional status; prognosis; SGD 2; SDG 3; therapy; treatment

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INTRODUCTION

The incidence of esophageal cancer ranked seventh globally in 2020, with approximately 604,000 new cases, and sixth among cancer-related causes of death, accounting for 544,000 deaths worldwide. In Indonesia, the incidence of esophageal cancer reached 396,914 cases, comprising 183,369 women and 213,546 men. Nationally, it ranked 27th with 1,327 new cases and 22nd with 1,283 deaths (Globocan, 2021). Esophageal cancer originates from the inner lining of the esophageal wall and can progressively invade the outer layers (American Society of Clinical Oncology, 2022). There are two main histological types of esophageal cancer : squamous cell carcinoma and adenocarcinoma. Squamous cell carcinoma may occur along any part of the esophagus since squamous epithelium lines the entire structure, whereas adenocarcinoma typically arises from Barrett's esophagus, a condition in which the normal squamous epithelium is replaced by gastric-type columnar epithelium (Choksi et al., 2020). Clinical manifestations of esophageal cancer include throat pain, dysphagia, chronic cough, hematemesis, melena, and indigestion (Siloam Hospitals, 2023). Esophageal malignancy represents a serious condition with a high risk of complications, especially following surgical intervention. Postoperative complications may include

functional delayed gastric emptying (FDGE), severe diarrhea, reflux esophagitis, pulmonary infection, chylothorax, anastomotic fistula, and other adverse outcomes (Q. L. Xu et al., 2020).

Early diagnosis of esophageal cancer is difficult to establish because the symptoms are often nonspecific in the early stages and typically appear only when the disease has progressed (Huang & Yu, 2018). Establishing an early diagnosis can positively influence the prognosis and survival rate of patients (Mukkamalla et al., 2023). Most patients with esophageal malignancy seek medical treatment only after the disease has reached an advanced stage (Deng et al., 2020). This diagnostic delay contributes to poor outcomes, as advanced-stage disease is more difficult to treat and carries a worse prognosis for survival (Cavallin et al., 2018). For stage 0 disease, endoscopic therapy is recommended. Stage 1 disease is managed with chemotherapy and chemoradiation (Berry, 2014), stage 2 with chemoradiation followed by surgery (Mukkamalla et al., 2023), and stage 3 with chemotherapy or chemoradiation combined with surgery (American Cancer Society, 2020). For advanced or metastatic cases in which surgery is no longer feasible, treatment focuses on symptom control, improving quality of life, and prolonging survival through systemic therapy (Mukkamalla et al., 2023).

The novelty of this study lies in the presentation of comprehensive data on the clinical characteristics, diagnostic patterns, and management of esophageal cancer patients at Dr. Soetomo General Hospital in Surabaya, one of the largest referral hospitals in eastern Indonesia. To date, research on esophageal cancer in Indonesia has been very limited, especially in terms of comprehensive management and treatment. Most previous literature has focused on epidemiological data or treatment outcomes in developed countries, thus failing to reflect the actual conditions of medical services at the national level. This study provides new contributions by presenting local contextual data that can serve as a basis for evaluation by medical personnel in determining more appropriate diagnosis and treatment strategies. In addition, the results of this study are expected to serve as a reference in the development of national policies and clinical guidelines related to early detection, treatment standards, and improving the quality of life of esophageal cancer patients in Indonesia.

METHOD

This research employed a retrospective descriptive design using secondary data obtained from the medical records of esophageal cancer patients treated at the Oncology Clinic of the Department of Otorhinolaryngology–Head and Neck Surgery and the Department of Internal Medicine, Dr. Soetomo General Hospital, Surabaya, from 2018 to 2023. A total sampling technique was applied, resulting in 65 patients who met the inclusion criteria out of 157 identified cases. The variables analyzed included demographic characteristics, clinical symptoms, nutritional status, tumor type and location, TNM stage, presence of metastasis, comorbidities, therapies received, serum albumin levels, and treatment outcomes. Data were analyzed descriptively and presented in the form of frequency distributions. This study also considers the ethical aspects of medical research by ensuring that all patient data used is derived from hospital medical records and has been anonymized to protect patient confidentiality. This study has obtained ethical approval from the Health Research Ethics Committee of Dr. Soetomo General Hospital in Surabaya, in accordance with the principles of the Declaration of Helsinki regarding research involving human subjects. The use of secondary data was carried out without direct intervention on patients, thus posing no physical or psychological risks. All research procedures were carried out in compliance with biomedical research ethics standards, including the principles of beneficence, non-maleficence, respect for autonomy, and justice.

RESULT

The following are the frequency distributions of respondents according to demographic and clinical characteristics.

Table 1.
Distribution and Frequency of Demographic Aspects (n=65)

Variable	f	%
Gender		
Male	44	67.70
Female	21	32.30
Age		
21 - 30 years	2	3.10
31 - 40 years	8	12.30
41 - 50 years	11	16.90
51 - 59 years	14	21.50
≥60 years	30	46.20

Table 1, most patients were male (67.7%) and aged ≥60 years (46.2%). This finding aligns with the global epidemiological trend showing that esophageal cancer predominantly affects elderly males, which may be related to risk factors such as smoking, alcohol consumption, dietary habits, and age-related physiological changes in esophageal tissue.

Table 2
Distribution and Frequency of Early Symptoms (n=65)

Early Symptoms	f	%
Difficulty Swallowing		
Partial Obstruction	39	60.00
Total Obstruction	16	24.60
None	10	15.40
Nutritional Status		
Underweight	42	64.60
Normal Nutrition	19	29.20
Overweight	2	3.10
Obesity	2	3.10
Vomiting		
Present	32	49.20
Absent	33	50.80
Neck Tumor		
Present	10	15.40
Absent	55	84.60

Table 2, most patients presented with partial dysphagia (60.0%), indicating that swallowing difficulties were not yet complete but significant enough to affect nutritional intake. The majority of patients were underweight (64.6%), likely due to reduced oral intake and increased metabolic demand related to the disease process. Vomiting was absent in more than half of the patients (50.8%), suggesting that obstruction had not yet caused food reflux or upper gastrointestinal tract dysfunction. Neck masses were uncommon, with only 15.4% of patients presenting with palpable tumors, indicating that cervical lymphadenopathy or external masses were not predominant features in most cases.

Table 1
Distribution and Frequency of Other Symptoms (n=65)

Other Symptoms	f	%
Chest Pain		
Present	11	16.90
No	54	83.10
Cough		
Yes	18	27.70
No	47	72.30
Hoarseness		
Yes	14	21.50
No	51	78.50

Table 3, most patients did not present with additional symptoms such as chest pain (83.1%), cough (72.3%), or hoarseness (78.5%). This suggests that esophageal cancer often progresses without prominent secondary symptoms, making early detection difficult and emphasizing the importance of endoscopic and radiologic evaluation for timely diagnosis.

Table 2
Distribution and Frequency of Malignancy Types and Locations (n=65)

	Distribution	f	%
Malignancy Location	Distal Esophagus 1/3	55	84.60
	Proximal Esophagus 1/3	10	15.40
Type of Malignancy	adenocarcinoma	40	61.50
	squamous cell carcinoma	25	38.50

Table 4, the majority of malignancies were located in the distal third of the esophagus (84.6%), while only 15.4% occurred in the proximal third. Adenocarcinoma was the predominant histological type (61.5%), followed by squamous cell carcinoma (38.5%). These findings align with global epidemiological patterns, where adenocarcinoma more frequently involves the distal esophagus, particularly among patients with chronic gastroesophageal reflux disease and obesity.

Table 5
Relationship between Stage and Prognosis

Stage	Prognosis		Total	P-value	Correlation coefficient
	Alive	Deceased			
1	f	1	1	0.511	-0.083
	%	1.50%	1.50%		
2	f	2	3		
	%	3.10%	4.60%		
3	f	15	16		
	%	23.10%	24.60%		
4	f	37	45		
	%	56.90%	69.20%		

Table 5, most patients were diagnosed at stage IV. The overall survival rate was 84.6% (55 out of 65 patients), while 15.4% (10 patients) died. Although a higher mortality rate was observed in advanced stages, statistical analysis using Spearman's correlation revealed no significant association between stage and prognosis ($p = 0.511$; $r = -0.083$). This lack of significance may be attributed to limited sample size and the influence of confounding factors such as nutritional status, comorbidities, and therapeutic interventions.

Table 6
Relationship between Albumin Levels and Prognosis

Albumin Levels	Prognosis		Total	P-value	Correlation Coefficient
	Alive	Deceased			
Low	f	32	42	0.010	0.316
	%	49.20%	64.60%		
Normal	f	23	23		
	%	35.40%	35.40%		

Table 6, all patients with normal albumin levels (23 patients; 35.4%) survived, whereas among those with low albumin levels, 32 patients (49.2%) survived and 10 patients (15.4%) died. Statistical analysis demonstrated a significant association between albumin levels and prognosis ($p = 0.010$) with a moderate positive correlation ($r = 0.316$). These results indicate that serum albumin is a key prognostic biomarker in esophageal cancer. Normal albumin levels reflect adequate nutritional and systemic conditions, supporting better treatment tolerance and improved survival, while hypoalbuminemia is linked to reduced metabolic reserves, impaired immune function, and poorer therapeutic response, leading to an increased risk of mortality. Table 7, most patients were classified as underweight (42 patients; 64.6%), of whom 38 (58.5%) survived and 4 (6.2%) died. Among patients with normal nutritional status (19 patients; 29.2%), 14 (21.5%) survived and 5

(7.7%) died. In the overweight and obese groups (2 patients each; 3.1%), all obese patients survived, while outcomes in the overweight group were evenly distributed between survival and death. Although descriptive analysis showed some variation in survival across nutritional categories, statistical testing revealed no significant association between nutritional status and prognosis ($p = 0.134$) with a weak negative correlation ($r = -0.188$). This suggests that prognosis in esophageal cancer patients is more strongly influenced by other clinical factors, such as disease stage, comorbidities, and treatment modality, rather than nutritional status alone.

Table 7
Relationship between Nutritional Status and Prognosis

Nutritional Status	Prognosis		Total	<i>P-value</i>	Correlation Coefficient
	Alive	Deceased			
Underweight	f	38	42	0.134	-0.188
	%	58.50%	64.60%		
Normal Nutrition	f	14	19		
	%	21.50%	29.20%		
Overweight	f	1	2		
	%	1.50%	3.10%		
Obesity	f	2	2		
	%	3.10%	3.10%		

Table 8
Relationship between Stage and Type of Malignancy

Stage	Type of Malignancy		Total	<i>P-value</i>	Correlation Coefficient
	adenocarcinoma	squamous cell carcinoma			
1	f	0	1	0.680	0.052
	%	0.00%	1.50%		
2	f	3	3		
	%	4.60%	4.60%		
3	f	10	16		
	%	15.40%	24.60%		
4	f	27	45		
	%	41.50%	69.20%		

Table 8, adenocarcinoma was most frequently observed in stage IV (27 patients; 41.5%), followed by stage III (10 patients; 15.4%) and stage II (3 patients; 4.6%), with no cases in stage I. Similarly, squamous cell carcinoma was predominantly found in stage IV (18 patients; 27.7%), followed by stage III (6 patients; 9.2%) and stage I (1 patient; 1.5%), with no cases in stage II. Statistical analysis showed no significant association between stage and type of malignancy ($p = 0.680$) with a weak positive correlation ($r = 0.052$). This suggests that both adenocarcinoma and squamous cell carcinoma tend to be diagnosed at advanced stages, reflecting the generally late presentation of esophageal cancer regardless of histological subtype.

Table 9
Relationship Between Stage and Type of Malignancy

Type of Malignancy	Prognosis		Total	<i>P-value</i>	Correlation Coefficient
	Alive	Deceased			
Adenocarcinoma	f	7	40	0.557	0,074
	%	10.80%	61.50%		
Squamous Cell Carcinoma	f	3	25		
	%	4.60%	38.50%		

Based on Table 9, the analysis of the relationship between cancer type and prognosis showed that most patients were diagnosed with adenocarcinoma (61.5%), of which 33 patients (50.8%) survived. Meanwhile, 22 patients (33.8%) with squamous cell carcinoma survived. The statistical test yielded a p -value of 0.557 ($p > 0.05$), indicating no significant relationship between the type of malignancy and patient prognosis. The correlation coefficient of 0.074 suggests a very weak positive correlation, implying that the type of malignancy does not have a meaningful effect on the

survival or mortality outcome of patients with esophageal cancer.

DISCUSSION

Demographics

The results showed that esophageal malignancy was more prevalent in males, accounting for 44 patients (67.7%). This finding is consistent with previous studies reporting that the global incidence of esophageal malignancy is predominantly observed in males, with an estimated male-to-female ratio of approximately 3:1 (Xie & Lagergren, 2016). This difference is not solely attributed to environmental factors such as smoking, obesity, or acid reflux, as exposure to these risk factors is relatively similar between men and women. Instead, the role of sex hormones, particularly testosterone and estrogen as well as genetic and biological differences, has been suggested as key mechanisms underlying the higher susceptibility in males. According to data from Seidman University Hospital, approximately 76% of esophageal cancer cases occur in men, with adenocarcinoma being more prevalent in males, while squamous cell carcinoma (SCC) tends to occur more frequently in females (Stabellini et al., 2022). The results of the present study also demonstrated that the majority of patients were within the ≥ 60 years age group. This finding aligns with data from the 2021 *Global Burden of Disease Study*, which reported that the highest incidence of esophageal malignancy occurs among individuals aged 85–89 years, with a notable increase in incidence in those aged >75 years. Biologically, the aging process contributes to an increased risk of malignancy through a decline in immune surveillance, cumulative genetic mutations due to chronic exposure to carcinogens, and the accumulation of risk factors such as smoking, alcohol consumption, and gastroesophageal reflux disease (GERD). These processes collectively increase the vulnerability of esophageal epithelial cells to malignant transformation (Li et al., 2021).

Early Symptoms

The results of this study showed that the majority of patients presented with difficulty swallowing due to partial obstruction, observed in 39 patients (60.0%). This finding aligns with the characteristic clinical presentation of esophageal malignancy, in which progressive tumor growth gradually narrows the esophageal lumen. In the early stages of tumor development, patients typically experience dysphagia for solid foods, while liquids can still pass through the remaining lumen, a condition described as partial obstruction. Progressive dysphagia with solids is a hallmark of organic structural abnormalities such as carcinoma or esophageal strictures and differs from motility disorders, which generally cause dysphagia with both solids and liquids. This mechanical obstruction often worsens over time and may progress to total obstruction if left untreated (Birla et al., 2020). The study also found that most patients were underweight, with 42 patients (64.6%) meeting the criteria for low body mass index ($\text{BMI} < 18.5 \text{ kg/m}^2$). Chronic malnutrition is a common comorbidity among patients with esophageal cancer, primarily due to a combination of dysphagia, luminal narrowing, and elevated metabolic demands induced by cancer-related inflammation (Lu et al., 2023). Previous studies have reported that patients with low BMI exhibit poorer survival outcomes, higher treatment-related toxicity, and lower response rates to radiotherapy, as well as a greater risk of treatment complications (J. Y. Lee & Choi, 2023). Although a small proportion of patients appeared overweight or obese, the overall prevalence of malnutrition remained higher. Clinically, overweight or obese patients can still be classified as malnourished, particularly if they develop cachexia, a complex metabolic syndrome characterized by loss of skeletal muscle and adipose tissue, anorexia, and resistance to conventional nutritional interventions. In such cases, increased body weight does not accurately represent functional energy reserves. This observation is also relevant within the Indonesian population, where a relatively high prevalence of overweight individuals may obscure the presence of underlying malnutrition among cancer patients (Van et al., 2021). The findings also showed that most patients did not experience vomiting (33 patients; 50.8%). In esophageal malignancy, vomiting usually results from progressive luminal obstruction rather than gastric pathology. Characteristically, patients initially vomit undigested solid food, which later progresses to liquids as the tumor further narrows the esophagus. Pathophysiologically,

vomiting is typically triggered by gastric distension or stimulation of the chemoreceptor trigger zone (CTZ). However, in esophageal carcinoma, the primary manifestation is dysphagia and food retention in the esophagus, which may not adequately activate the vomiting reflex. This is consistent with previous studies reporting that dysphagia and anorexia are the predominant symptoms in esophageal cancer, while vomiting occurs less frequently (Wang et al., 2022). Furthermore, this study found that the majority of patients did not exhibit regional cervical lymph node metastasis (55 patients; 84.6%). This pattern is consistent with the lymphatic dissemination characteristics of esophageal cancer, wherein tumors located in the thoracic segment particularly the middle and lower esophagus tend to metastasize to the mediastinal and abdominal lymph nodes rather than to the cervical region. A retrospective study of patients with intrathoracic squamous cell carcinoma reported an incidence of occult cervical metastasis of approximately 14.3%, which generally occurs in advanced stages (high T and N classification) or following neoadjuvant chemoradiotherapy (D. H. Lee et al., 2024).

Relationship between Stage and Prognosis

The results of this study indicate that there was no statistically significant relationship between disease stage and prognosis in patients with esophageal cancer ($p > 0.05$). This finding is noteworthy, as theoretically, a higher stage is expected to be associated with poorer outcomes. However, in this study, despite the majority of patients being diagnosed at stage IV, the survival rate remained relatively high at 84.6%, with a mortality rate of only 15.4%. This suggests that an advanced stage does not always correspond to a markedly worse prognosis. Several factors may explain this observation. First, the limited sample size and uneven distribution of patients across stages likely reduced the statistical power of the analysis, leading to the absence of a significant association. Second, the prognosis of esophageal cancer is multifactorial and cannot be solely determined by TNM staging. Factors such as nutritional status (particularly albumin levels), comorbidities (e.g., diabetes mellitus and hypertension), and treatment response play crucial roles in influencing patient outcomes. In this study, a large proportion of patients presented with hypoalbuminemia and comorbid conditions, both of which may adversely affect general health and survival regardless of disease stage. Furthermore, the results still demonstrated a parallel tendency, in which patients with more advanced stages tended to exhibit poorer outcomes, even though this trend did not reach statistical significance. This finding aligns with previous studies suggesting that prognostic prediction in esophageal cancer is more accurate when incorporating additional variables beyond TNM staging such as radiomic tumor characteristics, systemic inflammatory indices, nutritional parameters, and treatment responsiveness (Du et al., 2023). A key limitation of this study lies in the use of secondary data from medical records, which may be incomplete and lack relevant clinical or biochemical parameters that could further refine prognostic assessment. Future prospective studies with larger sample sizes and comprehensive data collection are warranted to better elucidate the relationship between stage and prognosis in esophageal malignancy.

The Relationship Between Albumin Levels and Prognosis

The results of this study demonstrated that all patients with normal albumin levels (35.40%) survived, whereas among those with low albumin levels, 49.20% survived and 15.40% died. Statistical analysis revealed a significant association between albumin levels and prognosis ($p = 0.010$) with a moderate positive correlation ($r = 0.316$). These findings are consistent with previous studies showing that hypoalbuminemia in cancer patients is linked to higher risks of disease progression and mortality, as albumin serves as a marker of both nutritional and inflammatory status in advanced malignancies (Guven et al., 2022). Moreover, the fibrinogen-to-albumin ratio (FAR) has also been identified as a clinically valuable prognostic index in esophageal cancer, where lower albumin and higher fibrinogen levels correlate with poorer survival outcomes (Liu, 2025). Thus, albumin concentration reflects not only nutritional status but also the degree of systemic inflammation and the body's physiological capacity to cope with cancer-related stress. In patients with esophageal malignancy, hypoalbuminemia typically results from a combination of decreased

oral intake due to dysphagia, increased protein catabolism secondary to chronic inflammation, and reduced hepatic albumin synthesis under the influence of proinflammatory cytokines such as IL-6 and TNF- α . These pathophysiological processes lead to decreased plasma oncotic pressure, impaired fluid balance, and reduced transport capacity for essential molecules involved in wound healing and drug metabolism. Consequently, patients with low albumin levels exhibit weakened immune function, diminished therapeutic response, and a higher risk of treatment-related complications and mortality compared to those with normal albumin levels. Therefore, serum albumin represents a simple yet reliable prognostic biomarker for assessing the general condition and predicting survival outcomes in patients with esophageal cancer. Routine evaluation of albumin levels may provide valuable information for risk stratification and individualized management strategies.

Relationship between Nutritional Status and Prognosis

The findings of this study showed that the majority of patients had poor nutritional status (64.60%); however, most of them survived. Interestingly, patients with normal or higher body weight exhibited relatively lower survival rates, whereas all obese patients survived. Despite these descriptive variations, statistical analysis revealed no significant relationship between nutritional status and prognosis ($p = 0.134$; $r = -0.188$). This lack of significance may be attributed to the limited sample size, uneven group distribution, and the influence of confounding variables such as disease stage, comorbidities, and treatment modalities. Previous research has demonstrated that pre-treatment albumin and body mass index (BMI) are significantly correlated with overall survival (OS) in esophageal cancer patients. However, in multivariate analysis, only albumin remained an independent prognostic factor (Chen et al., 2024). Furthermore, weight loss exceeding 10% during the perioperative period was associated with worse survival outcomes, underscoring the importance of maintaining adequate nutritional reserves. These findings emphasize that while BMI provides a general overview of nutritional status, serum albumin more accurately reflects the metabolic and inflammatory conditions that influence treatment tolerance and survival. Therefore, the evaluation of nutritional status should not rely solely on BMI, but should also incorporate biochemical parameters such as albumin, prealbumin, and inflammatory markers. Optimizing nutrition through early dietary intervention and metabolic support may improve treatment response and overall prognosis in patients with esophageal malignancy.

Relationship between Stage and Type of Malignancy

Adenocarcinoma was most frequently observed in stage IV (41.5%), followed by stage III (15.4%) and stage II (4.6%). Squamous cell carcinoma was also predominant in stage IV (27.7%), followed by stage III (9.2%) and stage I (1.5%). Statistical analysis revealed no significant relationship between stage and type of malignancy ($p = 0.317$), although a weak positive correlation ($r = 0.23$) suggested a tendency for both histological types to occur more often at advanced stages. These findings are consistent with SEER data indicating that adenocarcinoma and squamous cell carcinoma exhibit similar stage distributions at initial diagnosis (Bangolo et al., 2024). Epidemiologically, this aligns with the understanding that both subtypes, despite differing in anatomical location and risk factors, are frequently detected at advanced stages, with regional variations influenced by diagnostic and referral patterns (Sheikh et al., 2023).

Relationship Between Cancer Type and Prognosis

The results showed that there was no significant relationship between cancer type and patient prognosis. Although some previous studies have reported that certain malignancy types may have poorer outcomes, this relationship often becomes insignificant after adjusting for disease stage, tumor location, and overall clinical condition (Claps et al., 2024). Other studies have also found that the impact of cancer type on survival can vary depending on stage and treatment. One study reported that squamous cell carcinoma tends to have worse outcomes at certain stages, while another study showed that after considering disease stage, treatment modality, and patient

condition, the difference in prognosis between adenocarcinoma and squamous cell carcinoma becomes minimal and may not be statistically significant (J. Xu *et al.*, 2024).

CONCLUSION

Based on the analysis of esophageal cancer patients at Dr. Soetomo General Hospital from 2018 to 2023, the majority of patients were males aged ≥ 60 years, presenting predominantly with partial dysphagia and poor nutritional status. Adenocarcinoma was identified as the most common histopathological type, primarily located in the distal third of the esophagus, with most cases diagnosed at stage IV and exhibiting distant metastasis. The majority of patients underwent gastrostomy as a palliative intervention. Statistical analysis revealed a significant relationship between albumin levels and patient prognosis, whereas nutritional status and disease stage showed no significant associations. The five-year survival rate was relatively high, with the main causes of mortality being infection and disease progression. Kaplan–Meier survival curve analysis demonstrated no significant difference in survival between patients with squamous cell carcinoma and adenocarcinoma, suggesting that histopathological type does not substantially influence overall survival in esophageal cancer patients. This study acknowledges several limitations. As a retrospective study, the findings rely on medical record data that may be incomplete, potentially affecting the accuracy of the associations observed. Moreover, since the study was conducted at a single tertiary healthcare center, the results may not be fully generalizable to the broader population of esophageal cancer patients in other settings or regions.

REFERENCES

- American Cancer Society. (2020). Treating Esophagus Cancer. American Cancer Society.
- American Society of Clinical Oncology. (2022). Kanker Esofagus : Pendahuluan Mencari Lebih Banyak Pendahuluan ? American Cancer Society.
- Bangolo, A., Nagesh, V. K., Simonson, G., Thapa, A., Ram, A., Santhakumari, N. J., Chamroukh, R., Varughese, V. J., Nareeba, S., Menon, A., Sridharan, K., Chacko, A. A., Mansour, C., Elias, D., Singh, G. R., Rambaransingh, A., Mendez, L. R., Levy, C., Kianifar Aguilar, I., ... Weissman, S. (2024). The Impact of Tumor Stage and Histopathology on Survival Outcomes in Esophageal Cancer Patients over the Past Decade. *Medical Sciences (Basel, Switzerland)*, 12(4), 1–14. <https://doi.org/10.3390/medsci12040070>
- Berry, M. F. (2014). Esophageal cancer: Staging system and guidelines for staging and treatment. *Journal of Thoracic Disease*, 6(SUPPL.3), 289–297. <https://doi.org/10.3978/j.issn.2072-1439.2014.03.11>
- Birla, R., Achim, F., Marica, C., & Constantinoiu, S. (2020). Palliation of dysphagia in patients with unresectable oesophageal tumours—current methods and indications—a review. *Digestive Medicine Research*, 3(6), 26–26. <https://doi.org/10.21037/dmr-20-67>
- Cavallin, F., Scarpa, M., Cagol, M., Alfieri, R., Ruol, A., Chiarion Sileni, V., Rugge, M., Ancona, E., & Castoro, C. (2018). Time to diagnosis in esophageal cancer: a cohort study. *Acta Oncologica*, 57(9), 1179–1184. <https://doi.org/10.1080/0284186X.2018.1457224>
- Chen, N., Yu, Y., Shen, W., Xu, X., & Fan, Y. (2024). Nutritional status as prognostic factor of advanced oesophageal cancer patients treated with immune checkpoint inhibitors. *Clinical Nutrition*, 43(1), 142–153. <https://doi.org/10.1016/j.clnu.2023.11.030>
- Choksi, D., Kolhe, K. M., Ingle, M., Rath, C., Khairnar, H., Chauhan, S. G., Chaudhary, V., Shukla, A., & Pandey, V. (2020). Universal health coverage - There is more to it than meets the eye. *Journal of Family Medicine and Primary Care*, 9(3), 1695–1699. https://doi.org/10.4103/jfmpc.jfmpc_1111_19
- Deng, J., Chu, X., Ren, Z., & Wang, B. (2020). Relationship between T stage and survival in distantly metastatic esophageal cancer: A STROBE-compliant study. *Medicine (United States)*, 99(19), E20064. <https://doi.org/10.1097/MD.00000000000020064>
- Du, Q., Wu, X., Zhang, K., Cao, F., Zhao, G., Wei, X., Guo, Z., Li, Y., Dong, J., Zhang, T., Zhang, W., Wang, P., Chen, X., & Pang, Q. (2023). Predictive and prognostic markers from

- endoscopic ultrasound with biopsies during definitive chemoradiation therapy in esophageal squamous cell carcinoma. *BMC Cancer*, 23(1), 1–9. <https://doi.org/10.1186/s12885-023-10803-8>
- Globocan. (2021). Kanker Esofagus. Indonesia Cancer Care Community.
- Guven, D. C., Sahin, T. K., Erul, E., Rizzo, A., Ricci, A. D., Aksoy, S., & Yalcin, S. (2022). The association between albumin levels and survival in patients treated with immune checkpoint inhibitors: A systematic review and meta-analysis. *Frontiers in Molecular Biosciences*, 9(December). <https://doi.org/10.3389/fmolb.2022.1039121>
- Huang, F. L., & Yu, S. J. (2018). Esophageal cancer: Risk factors, genetic association, and treatment. *Asian Journal of Surgery*, 41(3), 210–215. <https://doi.org/10.1016/j.asjsur.2016.10.005>
- Lee, D. H., Lee, D. N., Jang, H. Bin, Lee, J. K., Lim, S. C., Yun, J. S., & Na, K. J. (2024). Treatment outcomes of elective neck dissection in intrathoracic esophageal carcinoma. *Oncology Letters*, 28(2), 2–6. <https://doi.org/10.3892/ol.2024.14519>
- Lee, J. Y., & Choi, Y. (2023). Low body mass index is associated with poor treatment outcome following radiotherapy in esophageal squamous cell carcinoma. *Radiation Oncology Journal*, 41(1), 40–47. <https://doi.org/10.3857/roj.2022.00640>
- Li, B., Liu, Y., Peng, J., Sun, C., & Rang, W. (2021). Trends of esophageal cancer incidence and mortality and its influencing factors in china. *Risk Management and Healthcare Policy*, 14, 4809–4821. <https://doi.org/10.2147/RMHP.S312790>
- Liu, Y. (2025). Prognostic and clinicopathological value of C-reactive protein in patients with bladder cancer: a meta-analysis. *Annals of Medicine*, 57(1). <https://doi.org/10.1080/07853890.2024.2445781>
- Lu, S. W., Pai, C. P., Yang, T. H., Lu, J. X., Hsiao, C. H., & Yen, C. C. (2023). Clinical characteristics and risk factors for 30-day mortality in esophageal cancer patients with upper gastrointestinal bleeding: a multicenter study. *Frontiers in Oncology*, 13(May), 1–13. <https://doi.org/10.3389/fonc.2023.1184710>
- Mukkamalla, S. K. R., Wang, Y., Lyons, S., & Babiker, H. M. (2023). Kanker Kerongkongan. *StatPearls*.
- Sheikh, M., Roshandel, G., McCormack, V., & Malekzadeh, R. (2023). Current Status and Future Prospects for Esophageal Cancer. *Cancers*, 15(3). <https://doi.org/10.3390/cancers15030765>
- Siloam Hospitals. (2023). Apa itu Kanker Esofagus? Penyebab Kanker Esofagus Faktor Risiko Kanker Esofagus. Siloam Hospitals.
- Stabellini, N., Chandar, A. K., Chak, A., Barda, A. J., Dmukauskas, M., Waite, K., & Barnholtz-Sloan, J. S. (2022). Sex differences in esophageal cancer overall and by histological subtype. *Scientific Reports*, 12(1), 1–13. <https://doi.org/10.1038/s41598-022-09193-x>
- Van, B. P., Thanh, H. N. T., Thi, H. Le, Tuan, A. N. Le, Thu, H. D. T., & Viet, D. D. (2021). Nutritional status and feeding regimen of patients with esophagus cancer—a study from vietnam. *Healthcare (Switzerland)*, 9(3), 1–16. <https://doi.org/10.3390/healthcare9030289>
- Wang, Y., Xie, Z., Liu, Y., Wang, J., Liu, Z., & Li, S. (2022). Symptom clusters and impact on quality of life in esophageal cancer patients. *Health and Quality of Life Outcomes*, 20(1), 1–8. <https://doi.org/10.1186/s12955-022-02084-9>
- Xie, S. H., & Lagergren, J. (2016). The Male Predominance in Esophageal Adenocarcinoma. *Clinical Gastroenterology and Hepatology*, 14(3), 338–347.e1. <https://doi.org/10.1016/j.cgh.2015.10.005>
- Xu, J., Zhang, K., Chen, H., Wu, W., Li, X., Huang, Y., Wu, Y., & Zhang, J. (2024). Squamous cell carcinoma predicts worse prognosis in stage IA (≤ 2 cm) non-small cell lung cancer patients following sublobectomy: a population-based study. *Scientific Reports*, 14(1), 1–7. <https://doi.org/10.1038/s41598-024-81965-z>
- Xu, Q. L., Li, H., Zhu, Y. J., & Xu, G. (2020). The treatments and postoperative complications of esophageal cancer: A review. *Journal of Cardiothoracic Surgery*, 15(1), 1–10. <https://doi.org/10.1186/s13019-020-01202-2>