

First-line FOLFOX versus carboplatin–paclitaxel in advanced esophageal squamous cell carcinoma: A retrospective comparative study from a tertiary hospital in Ethiopia.

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Abstract

Background

Esophageal squamous cell carcinoma (ESCC) is a common malignancy in Sub-Saharan Africa, with most patients presenting with unresectable or metastatic disease. International guidelines recommend FOLFOX or carboplatin–paclitaxel as first-line palliative systemic therapy for advanced ESCC, although comparative data are limited. This study compared the outcomes of these regimens in patients with advanced ESCC.

Methods

We conducted a retrospective study on patient with stage IV esophageal squamous cell carcinoma treated between February 2023 and February 2025. Descriptive statistics and Kaplan-Meier survival analysis were used to analyze the data.

Results

In this cohort, a total of 55 patients with stage IV esophageal squamous cell carcinoma were analyzed. Among 55 patient 54.5% received carboplatin–paclitaxel and 45.5% received FOLFOX. Overall response rate was 74.4% (Complete responses 11.6% and partial responses 62.8%). Disease progression occurred in 7.0% of patients. Patients receiving carboplatin–paclitaxel had higher complete responses (16.0% versus 0%) and lower disease progression (4.0% versus 11.8%) compared to FOLFOX (Fisher's exact test, $p = 0.347$).

The median overall survival was nine months, with a 1-year OS of 30%. Patients receiving carboplatin-paclitaxel had a numerically longer median survival than those receiving FOLFOX (9.0 verses 8.0 months), although this difference was not statistically significant ($p = 0.286$). Multivariable Cox regression identified treatment delay (HR = 2.60, $p = 0.004$) and ECOG PS II (HR = 3.57, $p = 0.017$) as independent predictors of worse survival, whereas treatment arm was not significantly associated with survival.

Conclusion

Survival outcomes for advanced ESCC at TASH remain poor. Treatment delay and poor ECOG performance status (PS II) were independent predictors of worse survival, highlighting the prognostic importance of timely chemotherapy administration and baseline functional status. Carboplatin-paclitaxel and FOLFOX showed similar survival, though carboplatin-paclitaxel may be preferred due to its higher response rate and convenient 3-week schedule. Proactive supportive care to minimize treatment delays and optimize performance status is warranted. Prospective studies are needed to validate these findings.

Introduction

Esophageal cancer is among the most common malignancy worldwide. It ranks as the eleventh most frequent malignancy and the seventh leading cause of cancer related death world [1]. The two major primary histological subtypes of esophageal cancer are squamous cell carcinoma (SCC) and adenocarcinoma. The distribution of these histological subtypes varies geographically. Adenocarcinoma predominates in Western countries, including North America and Europe, where it accounting for more than 50% of cases. In contrast, SCC is the predominant subtype in Asia and Africa, representing approximately 90% of cases in these regions [2–4].

Esophageal squamous cell carcinoma (SCC) is typically diagnosed at advanced stages worldwide due to nonspecific symptoms. This advanced stage at diagnosis is a particularly common problem In Sub-Saharan Africa, where SCC accounts for about 90% of cases [5–8].

For patients with advanced, unresectable esophageal squamous cell carcinoma (ESCC), systemic therapy remains the mainstay of treatment. Current guidelines from the National Comprehensive Cancer Network (NCCN) recommend platinum-fluoropyrimidine based chemotherapy with or without immunotherapy as first-line treatment. Commonly used regimens are FOLFOX (5-fluorouracil, leucovorin, and oxaliplatin) or CAPOX/CAPEOX (capecitabine plus oxaliplatin). These oxaliplatin-based combinations are widely adopted in clinical practice because of their tolerability and convenience [9]. However, data informing guideline recommendations are extrapolated from studies conducted in esophageal or gastroesophageal adenocarcinoma, which predominates in Western populations, whereas squamous cell carcinoma accounts for the majority of esophageal cancers in Asia and Africa.

Data from Asia and Sub-Saharan Africa comparing carboplatin–paclitaxel with oxaliplatin-containing chemotherapy are limited, if present at all, despite the high burden of squamous cell carcinoma (SCC) in these regions.

Therefore, the aim of this study is to evaluate the comparative efficacy of first-line FOLFOX versus Carboplatin-Paclitaxel for advanced ESCC in an Ethiopian cohort, with the goal of generating context-specific evidence to guide treatment selection and improve patient outcomes in the region.

Methods

Study design and setting

This retrospective cohort study was conducted at Tikur Anbessa Specialized Hospital (TASH), Addis Ababa University, Addise Abab, Ethiopia, which is largest tertiary referral center and the country's leading facility for comprehensive cancer care, including chemotherapy, radiotherapy, surgery, and palliative care. The study included patients diagnosed with stage 4A or stage 4B esophageal squamous cell carcinoma (ESCC) based on AJCC Version 8 staging criteria between 2023 and 2025, who met the predefined inclusion criteria and were treated with first-line FOLFOX or carboplatin–paclitaxel chemotherapy.

Study population, sample size and eligibility criteria

Due to the small total study population (n = 55), all consecutive patients diagnosed with stage 4A or stage 4B esophageal squamous cell carcinoma (ESCC) and treated with first-line FOLFOX or carboplatin–paclitaxel at Tikur Anbessa Specialized Hospital between February 2023 and February 2025, who met the inclusion and exclusion criteria were included. Patients were excluded if they had missing data on key variables to estimate survival such as no date of diagnosis, if they had prior chemotherapy for esophageal cancer, had poor performance status (Eastern Cooperative Oncology Group ≥ 3), or had inadequate liver or renal function. Patients treated with radical intent radiotherapy or radical intent surgery was also excluded.

Diagnosis, baseline staging, treatment, and Outcome assessment

Diagnosis

The histopathological diagnosis was confirmed by upper gastrointestinal endoscopy with biopsy.

Baseline staging

Clinical staging was based on the 8th edition of the American Joint Committee on Cancer (AJCC) staging system. Baseline staging was established through contrast-enhanced computed tomography (CT) of the chest and abdomen, in combination with endoscopic evaluation. PET-CT was not required for staging due to the unavailability of this imaging modality.

Treatment and definition

Patients received first-line systemic chemotherapy with either the FOLFOX regimen (oxaliplatin, leucovorin, and 5-fluorouracil) or carboplatin–paclitaxel. Regimen selection was based on treating physician. Chemotherapy was administered in repeated cycles until disease progression, unacceptable toxicity, or clinician decision.

Treatment completion status was defined as the number of chemotherapy cycles a patient received before treatment discontinuation. In this study, patients received a planned 6 cycles of first-line chemotherapy, after which treatment was discontinued and patients were observed for disease progression. Completion of all 6 cycles was considered full treatment completion.

Treatment delay was defined as any postponement of a scheduled chemotherapy cycle beyond the planned treatment date during the course of chemotherapy.

Treatment modification was defined as any change to the planned chemotherapy regimen, including dose reduction or switching to an alternative regimen during treatment.

Outcome assessment

Tumor response and disease progression were evaluated on follow-up contrast-enhanced chest CT imaging according to RECIST 1.1 criteria. In most patients included in this study, tumor response evaluation was performed at two predefined time points, including mid-cycle and end-cycle assessments. Mid-cycle assessment was typically conducted after completion of three to four cycles of chemotherapy, while end-cycle assessment was performed after completion of five or six cycles or at the time the treating physician decided to discontinue treatment. Repeat endoscopic evaluation was performed when clinically indicated to assess local tumor response, residual disease, or progression. Response was defined as a binary variable for logistic regression: responders achieved complete response (CR) and partial response, whereas non-c responders comprised stable disease (SD) or progressive disease (PD).

The primary outcome of this study was overall survival (OS), defined as the time from diagnosis to death from any cause or last follow-up. The date of diagnosis was considered as the date of biopsy.

Statistical analysis

All analyses were performed using IBM SPSS Statistics (Version 25). Descriptive statistics was used to summarize patient demographics, clinical characteristics, and response rate. Binary logistic regression was used to evaluate factors associated with non-response (stable or progressive disease). Due to the small number of non-responders ($n = 11$), only univariable analyses were performed for treatment arm and treatment delay, which were selected based on their relevance to the study objective. OS were estimated using Kaplan-Meier method and compared between groups with the log-rank test. Due to small sample size ($N = 55$; 44 events), both univariable and multivariable Cox regression analysis were restricted to three prespecified clinically relevant variables based on study objectives: treatment delay, treatment arm, and ECOG PS. The events-per-variable ratio was 14.7 ($44 \div 3$). Results are reported as HR with 95% CI. Statistical significance was set at $p < 0.05$. Missing data was minimal ($< 2\%$), Therefore, descriptive and primary analyses were based on complete cases.

Result

Between February 1, 2023, and February 1, 2025, the medical records of 61 patients with stage IVA or stage IVB esophageal squamous cell carcinoma (ESCC) treated with first-line FOLFOX or carboplatin–paclitaxel at Tikur Anbessa Specialized Hospital were reviewed. Of these, six patients were excluded: two had no date of diagnosis or biopsy, three were treated with upfront chemoradiotherapy, and two had curative surgery after chemotherapy. After applying these exclusion criteria, 55 patients met the inclusion criteria and were included in the final analysis.

Baseline patient and disease characteristics

In this cohort of 55 patients, 65.5% of patients were female. With regard to residence, majority of patients resided in Oromia (34%) or Addis Ababa (29%). Most patients had good performance status, with 90.0% classified as Eastern Cooperative Oncology Group (ECOG) I or II and 10.0% was ECOG II (Table 1).

Table 1
Baseline patient and disease characteristics

Patient characteristics		Frequency (n)	Percent (%)
Age range in years	≤ 60 years	37	67.3
	> 60 years	18	32.7
Alcohol consumption	Yes	7	12.7
	No or not documented	47	85.5
Smoking cigarettes	Yes	12	21.8
	No	43	78.2
Comorbidity	No-comorbidity	36	65.5
	HIV	3	5.5
	HTN (Hypertension)	7	12.7
	Diabetes-mellitus (DM)	5	9.1
	HTN plus DM	4	7.3
Dysphagia grade at presentation	Grade I	15	27.3
	Grade II	19	34.5
	Grade III	15	27.3
	Grade IV	6	10.9
Location of tumor	Cervical	1	1.8
	Upper thoracic	18	32.7
	Middle thoracic	22	40.0
	Lower thoracic	14	25.5
Stages	Metastatic	8	14.54
	Non-metastatic	47	85.45
Site of metastasis	Lung	6	75.5
	Live	1	12.5
	Multi-site metastasis	1	12.5

Treatment administered, modifications, and delays

Chemotherapy regimens and palliative radiotherapy delivered

Among the 55 participants, 54.5% received carboplatin-paclitaxel, where as 45.5% were treated with FOLFOX. Most patients (84.8%) received carboplatin–paclitaxel every 3 weeks, while nearly all FOLFOX patients (95.5%) were treated every 2 weeks, reflecting their respective standard administration schedules. Among the 55 patients, three received palliative radiotherapy: two with 30 Gy in 10 fractions and one with 20 Gy in 5 fractions.

Treatment completion status and dose modification

The number of chemotherapy cycles administered ranged from 2 to 6 cycles. The majority of patients (63.6%) received 6 cycles and 20.0% received 3 or fewer cycles. The proportion completing 6 cycles was similar between FOLFOX (60.0%) and carboplatin-paclitaxel (66.7%) group. Treatment modification (dose reduction, or regimen change) occurred infrequently in this cohort. Only 8.0% of FOLFOX and 6.7% of carboplatin-paclitaxel patients were required dose modification ($p = 1.00$, Fisher's exact test).

Treatment delay during chemotherapy treatment

Treatment delays during chemotherapy treatment occurred in half of the cohort (50.9%). Among the 28 patients who experienced treatment delays, the median delay was 8–14 days (39.3%) followed by < 7 days in 25.0%, and 10.7% experienced delays of 22–30 days. Among patients who experienced delays, hematologic toxicity was the predominant reason, accounting for 81.5% of delays. Specifically, neutropenia ($ANC < 1000/\mu L$) caused 59.2% of delays, while concurrent anemia and neutropenia accounted for 22.2%. Non-hematologic causes included electrolyte imbalance (7.4%) and poor performance status (ECOG 3–4, 3.7%).

Treatment delays occurred with similar frequency in both treatment arms. 48.0% of FOLFOX patients experienced delays, compared to 53.3% of carboplatin-paclitaxel patients.

Response assessment

Mid-cycle response assessments

Among the 51 patients who had mid-cycle evaluation (at 3–4 cycle of chemotherapy treatment), the partial response rate was 58.8% with an additional 23.5% achieving stable disease and 17.7% had progressive disease. The tumor response differed substantially between treatment arms. Carboplatin-paclitaxel demonstrated superior antitumor activity, with 67.9% of patients achieving a partial response compared to 47.8% with FOLFOX. Correspondingly, treatment failure with progressive disease was more than twice as frequent in the FOLFOX arm (26.1% vs. 10.7%), though these differences did not reach statistical significance in this sample ($p = 0.293$ by Fisher's exact test)

End-cycle response assessment

Among 43 patients who had end-cycle evaluation, Overall response rate was 74.4% (Complete responses 11.6% and partial responses 62.8%). Only 7.0% of evaluated patients had progressive disease at treatment completion. Carboplatin-paclitaxel was associated with a high complete responses rate compared to FOLFOX (16.0% vs. 0%), though the overall distribution of response categories did not differ significantly between arms ($p = 0.347$ by Fisher's exact test). Progressive disease was also less frequent with carboplatin-paclitaxel compared to FOLFOX (4.0% vs. 11.8%).

At the end-cycle evaluation, patients experienced a mean tumor size reduction of 56.1%, with a median reduction of 66.3%, indicating that most patients achieved substantial tumor shrinkage. Patients treated with carboplatin/paclitaxel achieved a greater mean reduction compared with those receiving FOLFOX (approximately 66.3% vs 49.4%, respectively).

Univariable binary logistic regression revealed no significant association with non-response for either treatment arm or treatment delay. For treatment arm, carboplatin–paclitaxel was associated with lower odds of non-response compared with FOLFOX (OR = 0.72, 95% CI: 0.18–2.88, $p = 0.642$; Nagelkerke $R^2 = 0.007$). For treatment delay, any delay was associated with higher odds of non-response compared with no delay, though this did not reach statistical significance (OR = 3.90, 95% CI: 0.87–17.52, $p = 0.076$; Nagelkerke $R^2 = 0.114$).

Toxicity

Among the 55 evaluated patients, treatment-related grade 3 toxicities were observed in 40% of patients. The most frequent adverse events were hematologic. Neutropenia was the predominant toxicity, occurring for 30.9% of patients, with grade 3–4 neutropenia (< 500 cells/ μ L) observed in 10.9%. Other hematologic toxicities included anemia with neutropenia (7.3%) and thrombocytopenia (1.8%, $n = 1$). Non-hematologic toxicities were less common, with peripheral neuropathy and electrolyte imbalance each reported in 3.6% of patients. None of the patients experienced renal toxicity (Table 2).

Table 2
Overall toxicity profile observed in the study cohort (n = 55)

Toxicity profile	Type of toxicity	Frequency (N)	Percent (%)
No toxicity	-	26	47.3
Hematologic toxicities	Neutropenia (500–1000 cells/ μ L)	11	20.0
	Neutropenia (< 500 cells/ μ L)	6	10.9
	Anaemia plus neutropenia	4	7.3
	Thrombocytopenia(< 50,000cells/ μ L)	1	1.8
Non-Hematologic toxicities	Peripheral neuropathy	2	3.6
	Electrolyte imbalance	2	3.6
Mixed hematologic plus non-hematologic	-	2	3.6

Comparison of toxicity profiles between treatment arms revealed clinically distinct patterns, though the overall distribution did not differ statistically (Fisher- exact test, $p = 0.176$. The carboplatin-paclitaxel arm demonstrated higher rates of severe hematologic toxicities 16.7% versus 4.0%). In contrast, peripheral neuropathy was 8.0% in FOFOX vs zero percent in carboplatin/ paclitaxel.

Survival outcome

At median follow-up time of 18 months (95% CI of 13–22 months), the median overall survival for the entire cohort was 9 months (95% CI: 7.2–10.3) and Kaplan–Meier estimated 1-year overall survival rate was 30% (Fig. 1).

When stratified by treatment regimen, the median overall survival (OS) was 8.0 months (95% CI, 6.6 to 9.4) in FOLFOX treatment groups and 9.0 months (95% CI, 6.3 to 11.7) in carboplatin-paclitaxel treatment group. Comparison of the survival distributions using the log-rank test showed no statistically significant difference between the two treatment groups ($p = 0.286$).

The occurrence of any chemotherapy cycle delay was significantly associated with reduced overall survival. Patients who experienced any delay had a median survival of 7.0 months (95% CI: 5.3 to 8.7), compared to 11.0 months (95% CI: 6.3 to 15.7) for patients with no delays (log-rank test, $p = 0.003$). The KM estimated 1-year overall survival rates were 16% for patients with delays and 45% for patients without delays (Fig. 2).

Prognostic factors for overall survival

Univariable Cox regression showed that treatment delay was associated with significantly worse survival (HR = 2.44, 95% CI: 1.29–4.63, $p = 0.006$), as was ECOG PS II (HR = 3.40, 95% CI: 1.30–8.90, $p = 0.01$). Treatment arm was not significant (HR = 0.73, 95% CI: 0.40–1.30, $p = 0.315$). In multivariable analysis, both treatment delay (HR = 2.60, 95% CI: 1.36–4.97, $p = 0.004$) and ECOG PS II (HR = 3.57, 95% CI: 1.26–10.14, $p = 0.017$) remained independent predictors of worse survival, while treatment arm did not (HR = 0.84, $p = 0.599$) (Table 3).

Table 3
Univariable and Multivariable Cox regression analysis for survival

Variable	Category	n (%)	Events (n)	Univariable HR (95% CI)	p-value	Multivariable HR (95% CI)	p-value
Treatment delay	No delay (Ref)	27 (49.1)	19	1.00	–	1.00	–
	Delay	28 (50.9)	25	2.44 (1.29–4.63)	0.006	2.60 (1.36–4.97)	0.004
Treatment arm or group	FOLFOX (Ref)	25 (45.5)	21	1.00	–	1.00	–
	Carboplatin–paclitaxel	30 (54.5)	23	0.73 (0.40–1.30)	0.315	0.84 (0.44–1.61)	0.599
ECOG PS	ECOG I (Ref)	50 (90.9)	39	1.00	–	1.00	–
	ECOG II	5 (9.1)	5	3.40 (1.30–8.90)	0.010	3.57 (1.26–10.14)	0.017
Note: HR = hazard ratio; CI = confidence interval; Ref = reference category. Statistical significance at $p < 0.05$.							

Discussion

This retrospective study evaluated tumor response and survival among patients with stage IV esophageal squamous cell carcinoma (ESCC) treated with carboplatin–paclitaxel or FOLFOX at Tikur Anbessa Specialized Hospital (TASH). To our knowledge, this is among the few studies (if not the first study) from Sub-Saharan Africa, particularly in Ethiopia directly comparing these two commonly used regimens in a real-world clinical setting.

Majority of patients in this study (65.5%) were female, which is not consistent with many global studies, which report ESCC to be more prevalent in males. Nonetheless, some studies in East Africa reported similar patterns, indicating regional variations of risk factors and distribution of the disease [10–12].

Despite National Comprehensive Cancer Network (NCCN) guidelines favoring oxaliplatin-based regimens, in our cohort, both treatments were used proportionally. This may reflect drug availability and

affordability, patient tolerance to treatment, and clinician preference rather than clear evidence of superiority of one regimen over the other [9].

In this study, both mid-cycle and end-cycle response assessments demonstrated meaningful antitumor activity with both regimen. Among the 51 evaluated patients at mid cycle, 58.8% achieved partial response, while 23.5% had stable disease and 17.7% showed progressive disease. Among those with progression, the majority had locoregional progression (55.6%), followed by distant metastasis (33.3%), and combined progression (11.1%). Carboplatin-paclitaxel showed better tumor response rate compared to FOLFOX, with higher partial response rates (67.9% vs. 47.8%) and lower rates of progressive disease (10.7% vs. 26.1%). However, these differences were not statistically significant ($p = 0.293$). This pattern persisted at end-cycle evaluation, where overall response rates remained high, and progressive disease was uncommon.

By treatment completion, tumor shrinkage was substantial with a median of 66.3% decrease. Complete response was also observed in 11.6% and partial response in 62.8%, while only 7.0% had progressive disease. Carboplatin–paclitaxel associated with higher complete response rates (16.0% vs. 0%) and lower progression rates (4.0% vs. 11.8%), although the overall response distribution between treatment arms was not statistically significant ($p = 0.347$).

To our knowledge, there are no prior studies directly comparing carboplatin–paclitaxel and FOLFOX in a head-to-head manner for this patient population. However, the response rates observed in both treatment arms are broadly consistent with previously reported outcomes for platinum-based doublets in advanced ESCC. One retrospective study done by Rayas et.al (2004) in Wayne State University, USA, evaluate the efficacy and toxicity of combination carboplatin and paclitaxel in patients with esophageal cancer, reported partial response rate of 45%. In this study 37% of patient was SCC [13]. Other study done in Japan by Shiraishi et.al (2025), to evaluate the efficacy and safety of FOLFOX regimen in first-line settings with advanced ESCC, reported ORR of 35% with CR of 2% [14].

Univariable binary logistic regression (multivariable not feasible due to 11 non-responders) showed no significant association for treatment arm (OR = 0.72, 95% CI: 0.18–2.88, $p = 0.642$) or treatment delay (OR = 3.90, 95% CI: 0.87–17.52, $p = 0.076$). Wide confidence intervals and low explanatory power (Nagelkerke $R^2 = 0.007$ –0.114) preclude definitive conclusions. Therefore, these findings are exploratory and require validation in larger cohorts.

Treatment-related toxicities were common in our cohort, affecting more than half of patients, with hematologic adverse events being the most frequent. Neutropenia was the predominant toxicity, consistent with previous reports for both regimens. Severe hematologic toxicity was more frequent in the carboplatin–paclitaxel arm, whereas peripheral neuropathy occurred more commonly in patients receiving FOLFOX, reflecting the known neurotoxicity associated with oxaliplatin.

In our study, the median overall survival was nine months, with a 1-year OS of 30%. Although there was no statistically significant difference between treatment arms, patients receiving carboplatin–paclitaxel

had a numerically longer median OS (9.0 vs. 8.0 months), suggesting a potential trend toward better outcomes.

Restricted to three prespecified variables due to small sample size, both univariable and multivariable analyses identified treatment delay (HR = 2.60, $p = 0.004$) and ECOG PS II (HR = 3.57, $p = 0.017$) as independent predictors of worse survival, while treatment arm was not significant ($p = 0.599$). The EPV of 14.7 indicates adequate model stability. However, the small ECOG II subgroup ($n = 5$) warrants cautious interpretation. Findings require validation in larger cohorts.

To our knowledge, no studies have directly compared carboplatin–paclitaxel and FOLFOX in the chemotherapy alone setting for advanced ESCC. However, our findings are broadly consistent with previous reports from separate retrospective studies. One retrospective study on carboplatin–paclitaxel reported a median OS of approximately nine months and a 1-year survival of 43%, whereas other retrospective cohorts on FOLFOX has been reported a slightly longer median OS of 13.9 months [13, 14].

Conclusion

In conclusion, survival outcomes for patients with advanced ESCC treated at TASH remain poor but comparable to previous retrospective studies. No significant survival difference was observed between carboplatin–paclitaxel and FOLFOX. Treatment delays and ECOG performance status emerged as the most clinically relevant factor influencing survival, highlighting the importance of treatment adherence and supportive care. In general both carboplatin-paclitaxel and FOLFOX appear to be reasonable first-line options, however based on higher tumor response rate and every three-week administration of carboplatin-paclitaxel can be preferred over FOLFOX. However, interventions aimed at reducing treatment delays such as proactive toxicity management and improved supportive care may have a greater impact on survival than regimen selection alone. Prospective large studies are needed to define optimal, context-appropriate treatment strategies for ESCC in Ethiopia.

Limitations of the study

Several limitations of this study warrant consideration

First, this was a retrospective, single-center study, which is subject to selection bias and unmeasured confounding. Causal inferences cannot be drawn from the observed associations.

Second, the small sample size ($N = 55$) limited statistical power, particularly for logistic regression analysis of treatment response, which had only 11 non-responders. Although the events-per-variable ratio for the Cox regression was adequate (14.7), the small number of patients with ECOG PS II ($n = 5$) resulted in wide confidence intervals for this estimate.

Third, unmeasured confounders (e.g., comorbidity burden, nutritional status, disease stage) may have biased the survival analysis, but adjustment was not feasible due to the small sample size.

Fourth, quality of life data were not collected, preventing assessment of patient-reported outcomes and functional well-being during treatment.

Fifth, the generalizability of findings is limited by the single-center design and the specific patient population.

Declarations

Author contributions

Conception/design: Ikram Musa, Sonia worku, Halid Worku and Mathewos Assefa

Provision of study material or patients: Ikram Musa, Birhanu Tesfaye, Sonia worku and Mathewos Assefa and Munir Awol

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Data analysis and interpretation: Ikram Musa, Birhanu Tesfaye, Sonia worku and Mathewos Assefa, Halid Worku and Munir Awol

Manuscript writing: Ikram Musa, Birhanu Tesfaye, Sonia worku, Halid Worku and Munir Awol

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Final approval of manuscript: All authors

Accountable for all aspects of the work: All authors

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Conflicts of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be imposed as a potential conflict of interest

Ethics approval and consent to participate

Ethical approval was obtained from Research and Ethics Committee of Addis Ababa University, College of Health Sciences, Ethiopia before initiating the study. The study was conducted in accordance with the principles of 1964 Helsinki declaration and its later amendments. Due to the retrospective nature of the study and the use of anonymized patient records, the requirement for informed consent to participate

was waived by Research and Ethics Committee of Addis Ababa University, College of Health Sciences. The authors ensure that the rights of the patients are not violated in any manner.

Consent for publication

Not applicable

Data availability statement

The datasets analyzed during the current study are available from the corresponding author on request.

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Figures

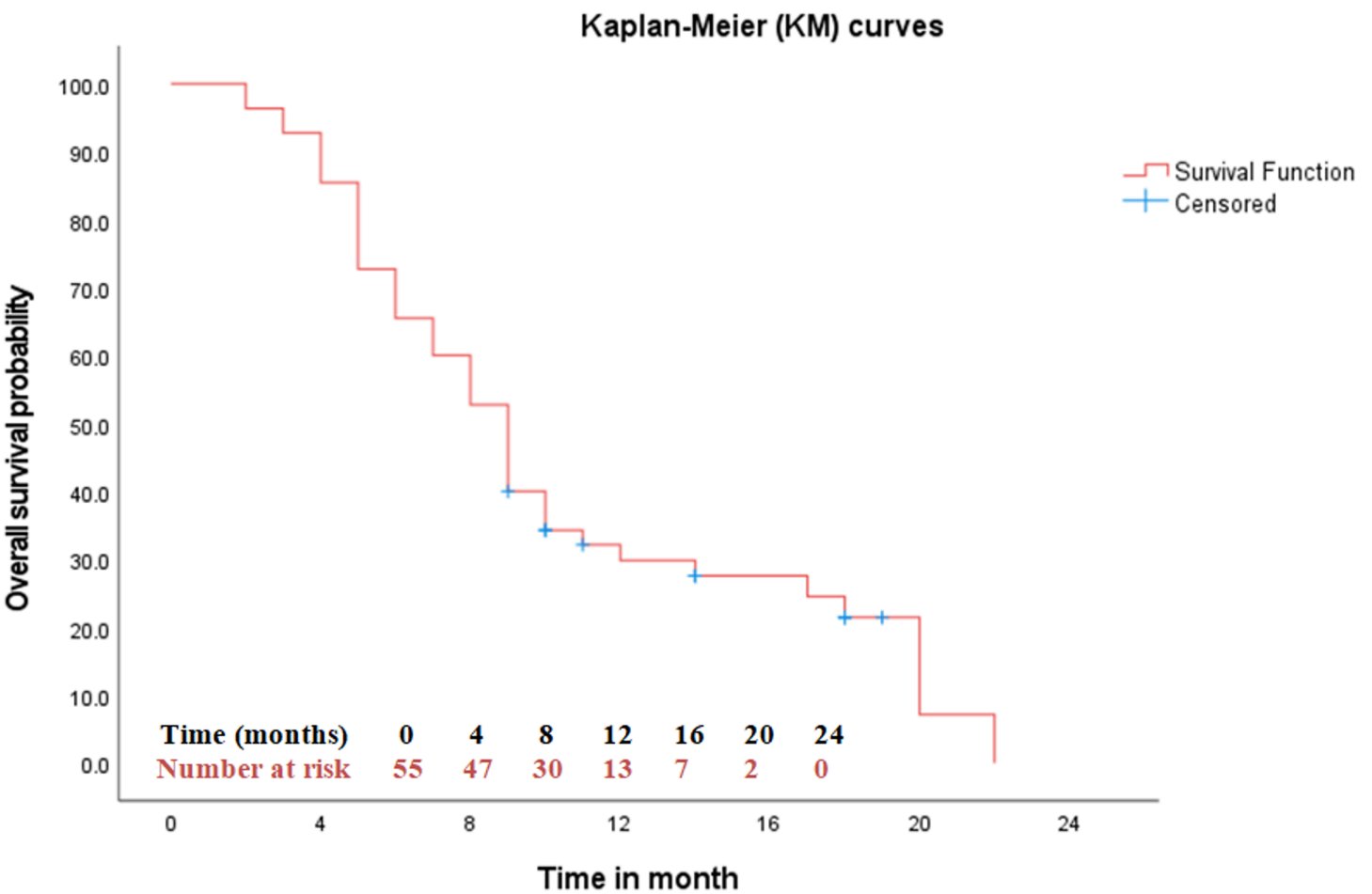


Figure 1

Kaplan–Meier survival curves showing overall survival for the entire cohort of patients with advanced ESCC. The estimated 1-year overall survival rate was 30%.

Kaplan-Meier curve

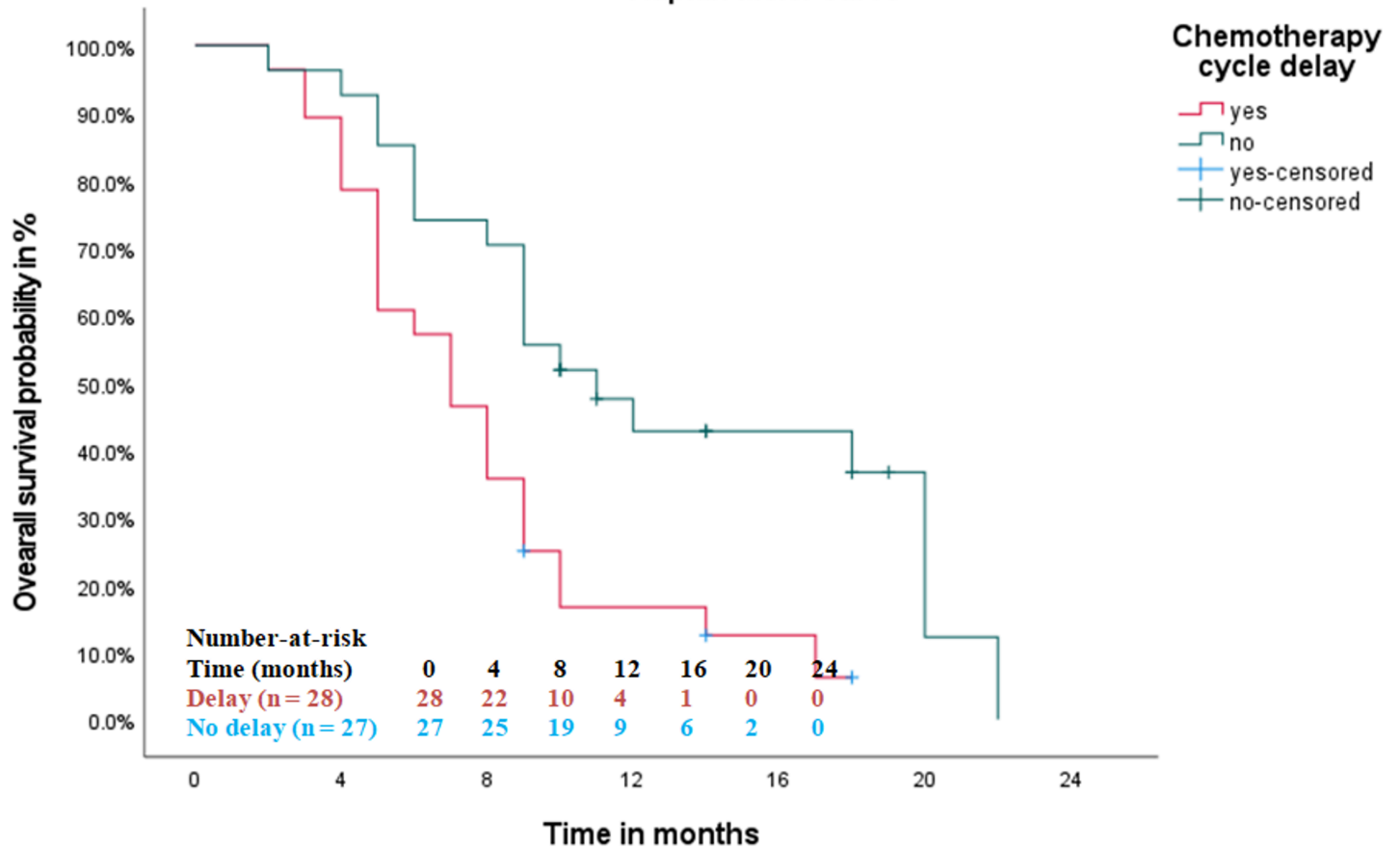


Figure 2

Kaplan–Meier overall survival curves stratified by occurrence of chemotherapy cycle delays. KM estimated 1-year overall survival rates were 16% for patients with delays and 45% for patients without delays