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Etiological and demographic changes in the cancer patients treated in our palliative care department during the last 3 years: A retrospective study

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Abstract

Palliative care plays an important role in the management of patients with life-threatening illnesses. This study aimed to evaluate the demographic and clinical characteristics, hospitalization outcomes, and referral patterns of adult patients admitted to a palliative care unit between 2022 and 2024, with particular emphasis on malignancy-related admissions. The records of adult patients aged ≥ 18 years who were admitted to the palliative care department between 2022 and 2024 were retrospectively reviewed. Patients with a hospital stay longer than one year, patients transferred to another department, and patients who remained hospitalized in 2024 at the time of data collection were excluded because complete hospitalization outcome data were unavailable. A total of 439 patients were included in the study. Malignancy was present in 47.6% (n = 209) of the patients, and lung cancer was the most common malignancy type (n = 52, 24.9%). Comparison of demographic characteristics, length of hospital stays, malignancy status, and hospitalization outcomes according to year of hospitalization demonstrated no statistically significant differences in sex distribution or malignancy status between years. However, significant differences were observed in patient age, length of hospital stay, and hospitalization outcomes across the study years ($p < 0.05$). Among patients with malignancy, the home care unit was the most frequent referral source in all three years, followed by the internal medicine department and intensive care unit. This retrospective study demonstrated an increase in admissions to the palliative care unit over the study period, including malignancy-related admissions. These findings may reflect changing utilization and referral patterns in palliative care services. Further multicenter studies are needed to better evaluate factors associated with referral practices and hospitalization outcomes in palliative care populations.

Keywords: Palliative care; neoplasms; mortality; retrospective studies

Introduction

Palliative care aims to improve the quality of life of patients and their families facing problems associated with life-threatening illnesses through the prevention and relief of suffering [1]. Patients may be admitted to palliative care units for various reasons, including management of advanced wounds related to chronic diseases or immobility, nutritional support in malnourished patients, and symptom control in patients with advanced malignancy, particularly pain management [2-4]. In cases where curative or disease-directed cancer treatments are no longer appropriate, patients may be referred to outpatient palliative care clinics, home care services, or inpatient palliative care units [5]. Palliative care focuses on the assessment and management of physical, psychosocial, and spiritual problems in order to optimize patient comfort and supportive care needs [2,6].

The number of palliative care centers in Türkiye has increased in recent years in parallel with the growing need for supportive care services [6–8]. This increase may be associated with population aging, the rising prevalence of chronic diseases, and the growing burden of malignancy.

According to the GLOBOCAN 2022 report, approximately 19.98 million new cancer cases and 9.74 million cancer-related deaths were reported worldwide. Lung cancer was the most common

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malignancy, accounting for 12.4% of all cancer cases, followed by breast, colorectal, prostate, and stomach cancers [9]. Lung cancer was also the leading cause of cancer-related mortality, accounting for approximately 1.82 million deaths (18.7%) [9]. Furthermore, projections indicate substantial increases in both cancer incidence and cancer-related mortality by 2050 compared with 2022 levels [9].

In Türkiye, GLOBOCAN 2022 reported 240,013 newly diagnosed cancer cases and 129,672 cancer-related deaths. Lung, breast, and colorectal cancers were the most frequently diagnosed malignancies, whereas lung cancer represented the leading cause of cancer-related mortality [9]. These epidemiological trends may contribute to increasing demand for palliative care services and changes in referral patterns over time.

This study aimed to evaluate the demographic and clinical characteristics of patients admitted to the palliative care unit of our district state hospital between 2022 and 2024, with particular emphasis on malignancy-related admissions. In addition, trends in hospitalization characteristics, patient outcomes, and referral patterns over the study period were examined.

Material and Methods

This retrospective cross-sectional study was conducted in accordance with the principles of the Declaration of Helsinki and the Good Clinical Practice guidelines after obtaining approval from the Local Clinical Trials Ethics Committee of Kartal Koşuyolu High Specialization Training and Research Hospital (decision no. 2025/07/1098; date: 06.05.2025).

Demographic and clinical characteristics of the patients were evaluated, including age, sex, length of hospital stay, malignancy status, malignancy type, referral source, and hospitalization outcomes. Hospitalization outcomes were defined as discharge, in-hospital mortality, or transfer to another healthcare facility/service. Trends in these variables across the study years were also examined.

Inclusion and Exclusion Criteria

Records of adult patients aged 18 years and over who were admitted to the palliative care department between 2022 and 2024 were retrospectively reviewed. Patients with complete and accessible medical records were included in the study.

A total of 450 patient records were initially screened. Patients with a hospital stay longer than one year (n = 2) were excluded to minimize the potential influence of atypical prolonged hospitalization on the overall analysis. Patients transferred to another department (n = 5) and patients who remained hospitalized in 2024 at the time of data collection (n = 4) were also excluded because complete hospitalization outcome data were unavailable. After exclusions, the final study population consisted of 439 patients.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive data were presented as mean ± standard deviation, median (minimum–maximum), frequency, and percentage, as appropriate.

The distribution of continuous variables was evaluated using the Shapiro–Wilk test. Comparisons between two independent groups were performed using the independent samples t-test for normally distributed variables and the Mann–Whitney U test for non-normally distributed variables. For comparisons involving three or more groups, one-way analysis of variance (ANOVA) was used for normally distributed variables, whereas the Kruskal–Wallis test was applied when parametric assumptions were not met. Categorical variables were analyzed using the Chi-square test.

A p-value of less than 0.05 was considered statistically significant.

Results

The study flow chart is presented in Figure 1.

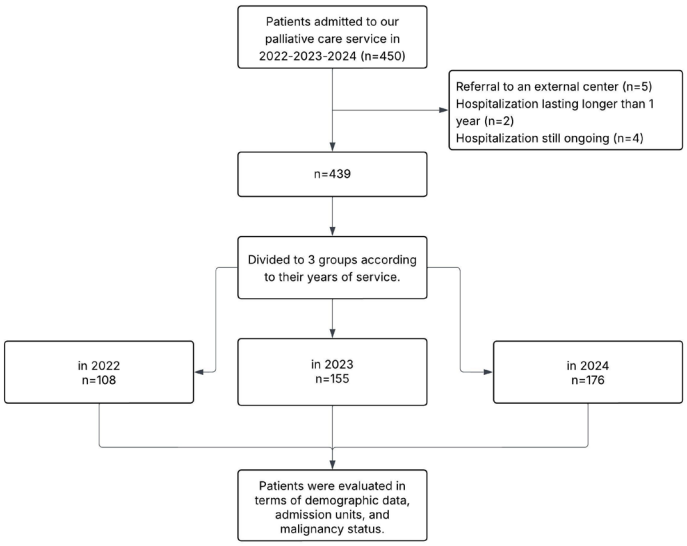


Figure 1. Flowchart of patient selection, exclusion criteria, and distribution by year of admission.

The demographic characteristics, length of hospital stay, hospitalization outcomes, and referral sources of the 439 patients included in the study are summarized in Table 1.

Malignancy was present in 47.6% (n = 209) of the patients. Lung cancer was the most common malignancy type, accounting for 24.9% (n = 52) of malignancy-related admissions (Table 2).

Evaluation of patient distribution by year demonstrated that 108 patients were admitted to the palliative care department in 2022, 155 in 2023, and 176 in 2024 When demographic characteristics, length of hospital stay, malignancy status, and hospitalization outcomes were compared according to year of admission, no significant differences were found in sex distribution or malignancy status. However, patient age, length of hospital stay, and hospitalization outcomes differed significantly across the study years ($p < 0.05$) (Table 3).

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Table 1. Examination of patients' demographic data, units referring them to palliative care, length of stay, years of admission, and outcomes

Age (median, min-max)	**Year**	75 (19-96)
Sex, n (%)	**Female**	232 (52.8)
	Male	207 (47.2)
Referring unit (n, %)	**Home care**	206 (46.9)
	Intensive care	104 (23.7)
	Internal medicine	86 (19.6)
	Neurosurgery	3 (0.7)
	Urology	2 (0.5)
	Plastic surgery	1 (0.2)
	Cardiology	2 (0.5)
	Neurology	13 (3.0)
	Orthopedics	5 (1.1)
	General surgery	11 (2.5)
	Infection diseases	2 (0.5)
	Chest diseases	4 (0.9)
Length of stay, Median (min-max)	**Days**	21 (0-364)
Year of admission (n, %)	**2022**	108 (24.6)
	2023	155 (35.3)
	2024	176 (40.1)
Outcomes (n, %)	**Discharged**	128 (29.2)
	Exitus	311 (70.8)

Table 2. The presence of malignancy in patients and the distribution of malignancy types

The presence of malignancy (n, %)	**Presence**	209 (47.6)
	Absence	230 (52.4)
Malignancy types (n, %)	**Lung**	52 (24.9)
	Colon	26 (12.4)
	Pancreatic	21 (10.0)
	Cranial	15 (7.2)
	Stomach	12 (5.7)
	Breast	12 (5.7)
	Bladder	12 (5.7)
	Rectum	7 (3.3)
	Prostate	8 (3.8)
	Endometrial	7 (3.3)
	Cervical	5 (2.4)
	Laryngeal	4 (1.9)
	Liver	4 (1.9)
	Kidney	3 (1.4)
	Gallbladder	2 (1.0)
	Malignant melanoma	3 (1.4)
	Over	3 (1.4)
	Nasopharyngeal	2 (1.0)
	Hypopharyngeal	2 (1.0)
	Unknown primary	2 (1.0)
	Peritoneal	1 (0.5)
	Malignant mesenchymal	2 (1.0)
	Multiple myeloma	1 (0.5)
	Maxillary sinus	1 (0.5)
	Chronic lymphocytic leukemia	1 (0.5)
	Duodenum	1 (0.5)

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Table 3. Examination of patients' demographic data, length of stay, malignancy status, and outcomes according to their admission years

Characteristics	2022	2023	2024	p value
Age (median, min-max)				
Years	78 (33-95)	76 (45-94)	72 (19-96)	**0.010*,a**
Sex (n,%)				
Female	55 (50.9)	85 (54.8)	92 (52.3)	0.807#
Male	53 (49.1)	70 (45.2)	84 (47.7)	
Length of stay (median, min-max)				
Days	15.5 (1-122)	20 (1-364)	23 (0-351)	**0.010*,b**
Presence of malignancy (n, %)				
Presence	43 (39.8)	73 (47.1)	93 (52.8)	0.101#
Absence	65 (60.2)	82 (52.9)	83 (47.2)	
Outcomes (n, %)				
Discharged	37 (34.3)	54 (34.8)	37 (21.0)	**0.009#,c**
Exitus	71 (65.7)	101 (65.2)	139 (79.0)	

*p value for Kruskal-Wallis Test, # p value for Chi-Square, [a] A statistically significant difference was found between 2024 and other years (Kruskal-Wallis Test), [b] A statistically significant difference was found between 2022 and 2024 (Kruskal-Wallis Test), [c]A statistically significant difference was found between 2024 and other years (Chi-Square Test).

Analysis of referral sources by year showed that the home care unit was the most common referral source in all three years. In 2022, most referrals originated from the home care unit (n = 47, 43.5%), followed by the intensive care unit (n = 29, 26.9%) and the internal medicine department (n = 25, 23.1%). Similarly, in 2023, the home care unit remained the leading referral source (n = 67, 43.2%), followed by the intensive care unit (n = 38, 24.5%) and the internal medicine department (n = 28, 18.1%). In 2024, referrals from the home care unit further increased (n = 92, 52.3%), while the intensive care unit (n = 37, 21.0%) and the internal medicine department (n = 33, 18.8%) remained the next most frequent referral sources. Referral source did not differ significantly according to year of hospitalization ($p > 0.05$).

The demographic characteristics, length of hospital stay, and hospitalization outcomes of patients with malignancy according to year of hospitalization are presented in Table 4.

Table 4. Distribution of demographic data, length of stay, and outcomes of patients with malignancy according to year of admission

Characteristics	2022	2023	2024	p value
Age (median, min-max)				
Years	68 (33-95)	73 (45-94)	67 (31-85)	**0.027*,a**
Sex (n, %)				
Female	17 (39.5)	33 (45.2)	42 (45.2)	0.802#
Male	26 (60.5)	40 (54.8)	51 (54.8)	
The length of stay (median, min-max)				
Day	14 (1-97)	17 (1-271)	18 (1-167)	0.363**
Outcomes (n, %)				
Discharged	7 (16.3)	13 (17.8)	11 (11.8)	0.536#
Exitus	36 (83.7)	60 (82.2)	82 (88.2)	

* p value for One-way ANOVA Test, # p value for Chi-Square, ** p value for Kruskal-Wallis Test, [a]A statistically significant difference was found between 2023 and 2024 (One-way ANOVA Test).

Among patients with malignancy, the home care unit was the most frequent referral source in each study year, followed by the internal medicine department and the intensive care unit. No statistically significant association was identified between year of hospitalization and referral source among patients with malignancy ($p > 0.05$).

When malignancy types were evaluated by year, lung cancer was the most common malignancy in all three years. In 2022, the most frequent malignancies were lung cancer (n = 12, 27.9%), breast cancer (n = 5, 11.6%), colon cancer (n = 5, 11.6%), pancreatic cancer (n = 4, 9.3%), and gastric cancer (n = 4, 9.3%). In 2023, lung cancer (n = 17, 23.3%), colon cancer (n = 10, 13.7%),

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and pancreatic cancer (n = 8, 11.0%) were the most common malignancies. Similarly, in 2024, lung cancer (n = 23, 24.7%), colon cancer (n = 11, 11.8%), and pancreatic cancer (n = 9, 9.7%) represented the leading malignancy types. No statistically significant association was found between year of hospitalization and malignancy type ($p > 0.05$).

The annual distribution of the number of patients with malignancy, the proportion of malignancy-related admissions, and the minimum age of patients with malignancy are presented in Figure 2.

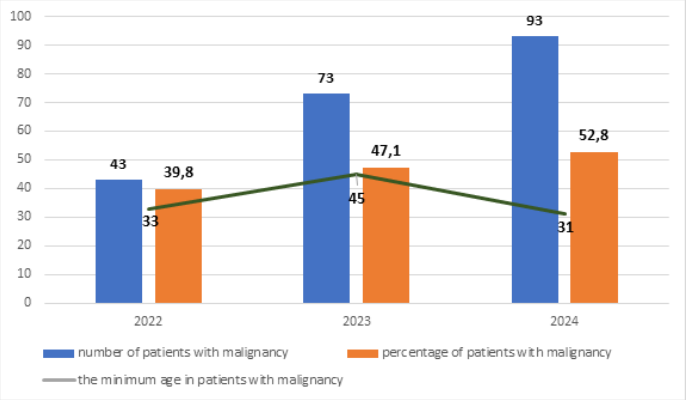


Figure 2. Annual distribution of the number, percentage, and minimum age of patients with malignancy.

Discussion

This retrospective single-center study evaluated the demographic and clinical characteristics of patients admitted to a palliative care unit between 2022 and 2024. The findings demonstrated a progressive increase in the number of hospitalizations over the study period. In addition, the mean age of hospitalized patients in 2024 was significantly lower than that in 2023. These findings may reflect changes in the utilization and referral patterns of palliative care services over time.

According to the Global Atlas of Palliative Care report published by the World Health Organization (WHO) and the Worldwide Hospice Palliative Care Alliance (WHPCA), most adults requiring palliative care die due to cardiovascular diseases and cancer [10]. The report also noted that Europe has high rates of both malignancy-related and non-malignant palliative care needs, and Türkiye is among the countries with increased risk in both groups [10]. In addition, the 2020 report showed that although the majority of patients requiring palliative care were older adults, younger age groups also accounted for a substantial proportion of admissions [11].

Previous studies of patients admitted to palliative care units have reported mean ages ranging from the late sixties to the mid-seventies [12-14]. In a retrospective study from Norway, Rostoft et al. reported a mean age of 75 years among patients with cancer and 69.1 years among patients receiving palliative care services [12]. Similarly, Parpucu et al. reported a mean age of 73 years in patients hospitalized in palliative care units [13]. In another study evaluating discharged palliative care patients, the mean age was reported as 68 years [14]. In the present study, the overall mean age of patients admitted to the palliative care department was 75 years, whereas the mean age of patients with malignancy ranged between 67 and 73 years across the study years. These findings are generally consistent with the existing literature.

Several studies have reported sex-related differences in palliative care utilization, with lower rates of palliative care admission among male patients [12,15-17]. In contrast, no significant sex-related difference was observed in the present study. This finding may be related to regional demographic or sociocultural factors; however, further multicenter studies are needed to clarify the factors influencing palliative care utilization patterns in Türkiye.

Studies evaluating preferred place of death have reported that many patients and family members prefer home-based end-of-life care [12,18-20]. However, data regarding these preferences in Türkiye remain limited. In the present study, both the number of admissions and mortality rates in the palliative care unit increased over the study period. These findings may indicate increased utilization of inpatient palliative care services over time. In addition, the home care unit represented the most common referral source during all three years, suggesting that home care services may play an important role in identifying and referring patients requiring inpatient palliative care support. Nevertheless, these observations should be interpreted cautiously, as patient preferences and referral motivations were not directly evaluated in the present study.

Among patients transferred from other hospital departments, referrals most frequently originated from intensive care units and internal medicine departments. This pattern may reflect the complex medical and supportive care needs of patients with advanced chronic illnesses, functional decline, or metabolic disorders requiring multidisciplinary management and symptom control.

Evaluation of malignancy types demonstrated that lung, colon, and pancreatic cancers were the most common malignancies among hospitalized patients, whereas hematological malignancies were less frequently represented. Previous studies have similarly reported lower palliative care utilization among patients with hematological malignancies compared with patients with solid tumors [12,21,22]. Several factors may contribute to this observation, including differences in disease trajectory, treatment approaches, and supportive care requirements such as transfusion dependency [23-25].

Data reported by Göksel et al. from 199 palliative care centers in Türkiye between 2015 and 2017 identified cancer as the most common indication for hospitalization [8]. Similarly, malignancy-related admissions represented a substantial proportion of hospitalizations in the present study. Although both the absolute number and proportion of malignancy-related admissions increased over time, no statistically significant

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difference was observed between years. In addition, the mean age of patients hospitalized due to malignancy was lower in 2024 compared with 2023, whereas no significant differences were observed between the other years.

The present study also demonstrated that both the highest number of hospitalizations and the highest mortality rates were observed in 2024. However, no statistically significant differences in mortality rates among patients with malignancy were identified across the study years. Furthermore, the mean length of hospital stay was significantly longer in 2024 compared with the previous years. These findings may reflect differences in patient characteristics, clinical complexity, supportive care requirements, or hospitalization practices over time. Because of the retrospective design of the study, direct causal relationships between mortality rates, hospitalization duration, and referral patterns cannot be established.

Limitations

This study has several limitations. First, it was conducted in a single district state hospital, which may limit the generalizability of the findings. Therefore, multicenter studies involving larger patient populations may provide more comprehensive data regarding palliative care utilization patterns.

Second, due to the retrospective design of the study, some clinical variables could not be evaluated in detail. In particular, data regarding cancer stage, metastatic status, and detailed oncological treatment history were not consistently available for all patients with malignancy.

In addition, the study did not include performance status scales or detailed clinical severity assessments that may influence hospitalization outcomes and mortality. Similarly, complications such as delirium, sepsis, or other acute clinical conditions developing during hospitalization were not systematically evaluated.

Conclusion

This retrospective single-center study demonstrated an increase in the number of admissions to the palliative care unit between 2022 and 2024. Malignancy-related admissions constituted a substantial proportion of hospitalizations, with lung cancer representing the most common malignancy type. In addition, changes in patient age, length of hospital stay, and hospitalization outcomes were observed across the study years.

The findings of this study may reflect evolving utilization and referral patterns in palliative care services. The high proportion of referrals originating from home care services also suggests the important role of multidisciplinary and coordinated care pathways in the management of patients requiring palliative support.

Given the increasing burden of chronic illnesses and malignancy, further multicenter studies with broader clinical data are needed to better evaluate patient characteristics, referral practices, and hospitalization outcomes in palliative care populations.

Ethical Approval
Local Clinical Trials Ethics Committee of Kartal Koşuyolu High Specialization Training and Research Hospital (decision no. 2025/07/1098 dated 06.05.2025).

Patient Consent
Individual informed consent was not obtained, as this retrospective observational study was conducted using previously recorded patient data without direct patient participation.

Conflict of Interest
The authors confirm the absence of any conflicts associated with this work.

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