

Evaluation of Patient Numbers and Hospital Dynamics After The Establishment of The Oncology Follow-Up Unit

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ABSTRACT

Introduction: This retrospective study aimed to evaluate the contribution of the oncology follow-up unit to the follow-up of cancer patients and its impact on hospital treatment rates and overall survival (OS).

Methods: This study was conducted on 5,042 patients diagnosed with any kind of cancer via pathology between January 2022 and February 2025. Data were compared between the before establishment period (January 2022-July 2023) and the after establishment period (August 2023-February 2025) of the oncology follow-up unit. The patient characteristics and follow-up data were obtained from patients' database.

Results: A total of 5042 cancer patients were included in this study. After the unit's establishment, the number of patients receiving treatment at our hospital increased from 2,053 to 2,989 ($p=0.001$). The rate of patients lost to follow-up or went to other oncology centers for treatment decreased from 18.99% to 11.43% ($p=0.001$). Furthermore, comparison of OS before and after the establishment of the oncology follow-up unit showed a significant increase in median OS from 12 months to 14 months ($p=0.002$).

Conclusion: The establishment of an oncology follow-up unit has made the follow-up process more patient-centred and appropriate in terms of preventing patients' loss from follow up. This was associated with significantly improved patient retention, reduced loss to follow-up, and improved OS.

Keywords: Hospital administration, cancer, survival

Introduction

Ischemic heart disease is the leading cause of death worldwide, accounting for approximately 13% of global deaths. Oncological diseases rank second and are responsible for 12% of global mortality. According to the Global Cancer Incidence, Mortality and Prevalence report, 20 million new cancer cases worldwide and 10 million cancer deaths globally, in 2022 (1). With rising cancer rates and continuously evolving cancer treatment methods in recent years, the need for structured follow-up and treatment care has increased significantly in recent decades (2). Research in this field examines various aspects such as how oncology clinics are organized and staffed, how they inform and manage treatment methods for patients diagnosed with cancer, the impact on patients' quality of life and satisfaction, and cost-effectiveness compared to traditional follow-up approaches (3). Therefore, making

appropriate decisions regarding treatment and follow-up after a cancer diagnosis is essential.

The initiation of the Healthcare Information and Management Systems Society (<https://www.himss.org/maturity-models/>) process at İstanbul Training and Research Hospital in 2022 revealed a lack of guidance regarding the department to which cancer patients should be referred and the factors influencing treatment and follow-up decisions. This process enabled analysis of the reasons these patients dropped out of follow-up. This process has enabled improved monitoring and evaluation of care pathways for patients diagnosed with cancer.

Our study aimed to ensure continuity in the post-diagnosis treatment planning, implementation, and follow-up for patients diagnosed with cancer.



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Methods

A total of 5,042 patients who received a cancer diagnosis from the pathology department between January 1, 2022, and February 28, 2025 were included in the study. The timeline for data comparison was set based on the implementation of the Oncology Follow-up Unit, with January 2022 to July 2023 defined as the pre-implementation period and August 2023 to February 2025 as the post-implementation period (Figure 1). The numbers of patients on follow-up and those lost to follow-up were compared across these periods. Patients' data obtained from the Probel Data Analysis Application (Hospital Data Software System) were recorded in Microsoft Excel.

The oncology follow-up unit consists of three physicians (one oncological surgeon and two clinical radiation oncologists) and one nurse. Throughout this process, the nurse plays a key role in communicating treatment decisions to patients and their relatives and in accompanying patients during the relevant stages of care. Every patient diagnosed with cancer is assessed by the oncology follow-up unit, whose responsibilities include referring patients to multidisciplinary tumor boards and informing them about treatment decisions. Based on the oncology board's decisions, patients are referred to the relevant clinical departments.

The inclusion criteria of the study were (1) presence of histopathological proven cancer (2) patient diagnosed at the age of ≥ 18 years (3) presence of hospital records including treatment parameters and follow-up information. The exclusion criterion of the study was the presence of inconclusive histopathological results. The study was approved by the Ethics Committee of University of Health Sciences Türkiye, İstanbul Training and Research Hospital, (approval number: 216, approval date: 26.06.2026). Informed consent was not obtained because of the retrospective nature of the study.

Outcomes and Follow-up

For the purposes of this study, loss to follow-up was defined as patients with a pathologically confirmed primary cancer diagnosed at our hospital who declined all oncological treatment (surgery, radiotherapy, or chemotherapy) and did not attend subsequent oncology follow-up visits at our hospital, excluding patients whose follow-up was interrupted due to death. The expected primary endpoint of this study was to ensure that, with the establishment of the oncology follow-up unit, cancer patients could continue their entire treatment at our hospital. The secondary endpoint was improvement in survival. Overall survival (OS) was defined as the time from cancer diagnosis to death.

Statistical Analysis

Normality of the variables was examined using the Kolmogorov-Smirnov test. Mean, standard deviation, and median values were used to present descriptive analyses. Categorical variables were compared using the Pearson chi-square test. Age was compared between the groups using the independent-samples student's t-test. The OS was examined by Kaplan-Meier analysis. All analyses were performed a 95% confidence level and a 0.05 significance level using SPSS 26.0 (SPSS Inc., Chicago, IL, USA) for Windows.

Results

A total of 5042 cancer patients were included in the study. The baseline clinicopathological characteristics of the patients before and after the establishment of the oncology follow-up unit are summarized in Table 1.

The number of patients who received treatment and follow-up care at our hospital increased significantly, from 2,053 before to 2,989 after the establishment of the oncology follow-up unit ($p=0.001$).

The median age at the time of cancer diagnosis was 63.43 ± 14.17 year before, while it was found to be 62.80 ± 13.73 year after the establishment of oncology follow-up unit ($p=0.001$).

Comparative analyses showed that the sex distribution was similar before and after the establishment of the oncology follow-up unit. Female patients accounted for 44.7% (917/2,053) and 45.3% (1,353/2,989) of the cohorts before and after the unit was established, respectively, while male patients accounted for 55.3% (1,136/2,053) and 54.7% (1,636/2,989). The difference was not statistically significant ($p \geq 0.05$).

Comparing all cancer types (including head and neck, upper gastrointestinal, lower gastrointestinal, gynecological, urological, skin, soft tissue, and breast cancers) before and after the establishment of the Oncology Follow-up Unit revealed an increase in patient numbers for all cancer types. This increase was statistically significant ($p=0.001$).

During the 18-month period before the establishment of the oncology follow-up unit, 1,356 (66.3%) patients were alive, while 688 (33.7%) had died. After the unit was established, 2,269 (76.1%) patients were alive and 711 (23.9%) were deceased. Compared with the pre-establishment period, the post-establishment period showed a significantly higher proportion of surviving patients and a lower proportion of deaths ($p=0.001$).

We also compared the proportion of patients who were lost to follow-up or who sought treatment at other oncology centers. Before the establishment of the oncology follow-up unit, 18.99% of patients were

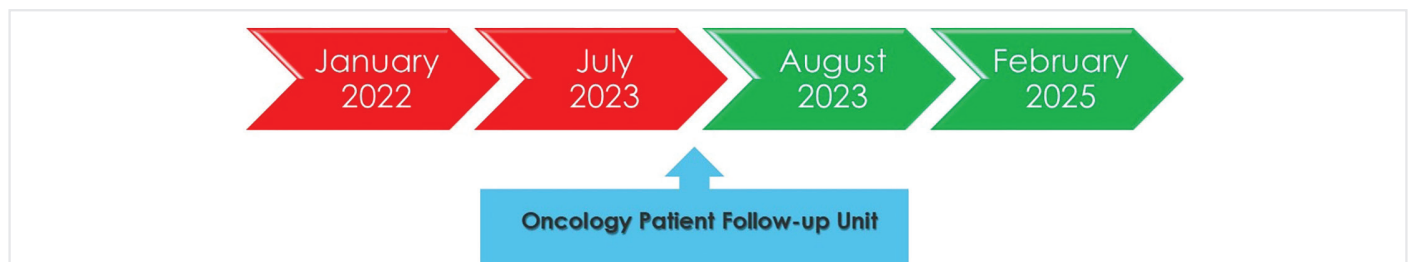


Figure 1. Time to set up the oncology follow-up unit (missing data n=9 for each group)

lost to follow-up or were transferred to other oncology centers for treatment. After the unit was established, this proportion decreased significantly to 11.43% (Table 2, $p=0.001$).

OS was evaluated using Kaplan-Meier analysis (Figure 2). A statistically significant difference in OS was observed between the two groups (log-rank $p=0.002$). Patients treated after establishment of the oncology follow-up unit had significantly longer OS than those treated before its establishment. The median OS increased from 12 months before the unit's establishment to 14 months afterward.

Discussion

In this study, we evaluated the impact of establishing an oncology follow-up unit on patient volume, clinicopathological characteristics, follow-up outcomes, and survival. We also investigated whether the implementation of the unit reduced the number of patients who were lost to follow-up or who sought treatment at other oncology centers.

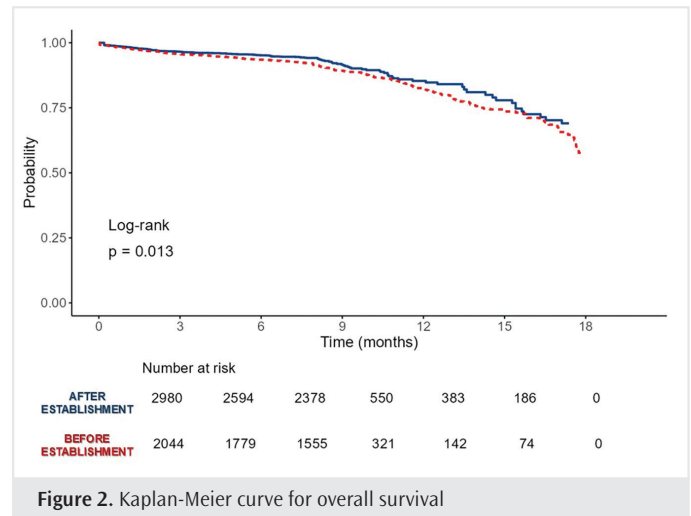


Figure 2. Kaplan-Meier curve for overall survival

Table 1. The baseline clinicopathological parameters of patients

	Before establishment of unit n=2053 n (%)	After establishment of unit n=2989 n (%)	p value	Change
Age (years)	63.43±14.17	62.80±13.73	0.001**	↓ Decreased
Sex				
• Female	917 (44.67%)	1353 (45.29%)	N.S.*	↑ Increased
• Male	1136 (55.33%)	1636 (54.71%)		↓ Decreased
Location of cancer			0.001*	
• Urinary system	478 (23.29%)	666 (22.29%)		↓ Decreased
• Breast	400 (19.50%)	605 (20.24%)		↑ Increased
• Lower GIS	233 (11.35%)	360 (12.06%)		↑ Increased
• Upper GIS	191 (9.30%)	302 (10.11%)		↑ Increased
• Skin	128 (6.23%)	201 (6.73%)		↑ Increased
• Hematological	230 (11.20%)	192 (6.42%)		↓ Decreased
• Head and neck	88 (4.29%)	147 (4.92%)		↑ Increased
• Thyroid	98 (2.44%)	133 (4.42%)		↑ Increased
• Gynecological	50 (4.77%)	132 (4.45%)		↓ Decreased
• Lung	31 (1.51%)	100 (3.35%)		↑ Increased
• Brain	54 (2.63%)	49 (1.64%)		↓ Decreased
• Soft Tissue	11 (33.3%)	22 (66.7%)		↑ Increased
• Multiple focus	16 (0.54%)	15 (0.74%)		↓ Decreased
• Unknown	45 (2.19%)	65 (2.18%)		↓ Decreased
Alive	1356 (66.34%)	2269 (76.14%)	0.001*	↑ Increased
Exitus	688 (33.65%)	711 (23.86%)		↓ Decreased

*chi-square test, **student-t test. GIS: Gastrointestinal system, N.S.: Not significant

Table 2. Comparison of the number of patients under follow-up and those lost to follow-up before and after the establishment of the oncology follow-up unit, including monthly median loss-to-follow-up rates

	Number of patients remained on follow-up	Number of patients lost to follow-up	Median rate of loss per month*
Before establishment of the unit January 2022-July 2023	2053	717	18.99%
After establishment of the unit August 2023-February 2025	2989	555	11.43%

*Mann-Whitney U test $p=0.001$

We found that both the number of patients receiving cancer treatment and the duration of follow-up increased in the 18 months after the unit's establishment compared with the preceding 18 months. By contrast, the proportion of patients lost to follow-up or transferred to other oncology centers for treatment decreased significantly. These findings suggest that the oncology follow-up unit improved continuity of care by facilitating timely access to oncology services, enhancing patient retention, and ensuring that patients receive appropriate treatment and follow-up at the right time.

In the literature, the median age at cancer diagnosis globally is around 65-67 years, with incidence rising sharply after age 50 (4). In our study, the age at diagnosis before and after establishment was in accordance with the literature.

One of the most important indicators of the effectiveness of an oncology follow-up unit is its ability to improve continuity of care by increasing the number of patients who remain under regular follow-up. In our study, patient retention improved significantly following the establishment of the oncology follow-up unit. The number of patients receiving treatment and follow-up at our institution increased from 2,053 to 2,989, while the proportion of patients who were lost to follow-up or transferred to other oncology centers for treatment decreased significantly from 18.99% to 11.43%.

Treatment decisions and monitoring of cancer patients have traditionally been carried out by cancer specialists (i.e., medical oncologists, surgical oncologists, radiation oncologists, and hematologists) (5). In addition, a nurse has been added to our oncology follow-up unit as a "clinical anchor" between patients and their families for treatment and follow-up. Oncology follow-up units and oncology nurses, by streamlining the transition from the pathology department to multidisciplinary tumor boards, function as "clinical anchors," ensuring that the hospital's diagnostic capabilities are matched by its therapeutic retention. The pivotal role of the oncology nurse within this unit cannot be overstated. Literature consistently shows that patient-centered communication reduces "decisional conflict" in oncology. The pivotal role of the oncology nurse as a consistent liaison likely contributed to this improvement, consistent with reports that navigation and nurse-led coordination reduce treatment defaulter rates and improve continuity (6,7). Literature supports oncology follow-up systems effect: structured follow-up and rapid-access oncology services divert care away from emergency departments and inpatient wards, improving throughput and preserving capacity (8,9).

The improvement in OS in our cohort—from 12 to 14 months—could be explained by a reduction in time to treatment, a factor frequently highlighted as influencing oncology outcomes. While delays in initiating chemotherapy, radiotherapy, or surgery have been reported as independent risk factors for mortality, it remains possible that timely follow up contributed to fewer readmissions and more efficient use of bed capacity, as suggested in the literature (10-13). Our study demonstrated that effective patient follow-up was associated with improved prognostic outcomes, as reflected by an increase in the proportion of surviving patients from 66.3% to 76.1% and a corresponding decrease in mortality. Furthermore, the median

OS improved from 12 months before the establishment of the oncology follow-up unit to 14 months after its implementation.

Comparative study designs are recommended to strengthen the assessment (12,14). Our single-center study provides direct evidence of improved patient retention and survival; future studies should extend the assessment to include long-term quality of life and economic sustainability.

Study Limitations

Despite the positive outcomes, this study has several limitations. First, the 18-month pre- and post-establishment follow-up periods may be insufficient to provide reliable long-term survival estimates. Longer follow-up periods, such as 3-, 5-, and 10-year assessments, are more clinically meaningful for oncology patients. Second, the patient population evaluated by the oncology follow-up unit was heterogeneous, including patients with diverse cancer types (e.g., solid tumors and hematological malignancies), which could have introduced variability in clinical outcomes. Third, the retrospective design of the study and the absence of key prognostic factors, particularly disease stage, limited the ability to conduct more accurate prognostic evaluations and may have affected the interpretation of survival outcomes, precluding causal inference.

Conclusion

According to the study findings and the most recent available data, the implementation of an oncology follow-up unit was associated with a significant increase in the number of patients maintained under oncological surveillance, prolonged survival, and a reduction in loss-to-follow-up rates. As cancer incidence continues to rise and therapeutic approaches become increasingly complex, the role of dedicated oncology follow-up units has gained substantial importance in recent decades. These units address the growing need for personalized, structured, and continuous care throughout the cancer treatment trajectory.

The establishment of the oncology follow-up unit represents a valuable healthcare intervention that effectively addresses the "guidance gap" frequently encountered after a cancer diagnosis. By enhancing continuity of care, improving patient retention, reducing loss to follow-up, and contributing to improved OS, this model provides a potential framework for secondary and tertiary healthcare institutions seeking to optimize oncology care delivery.

Ethics

Ethics Committee Approval: The study was approved by the Ethics Committee of University of Health Sciences Türkiye, İstanbul Training and Research Hospital, (approval number: 216, approval date: 26.06.2026).

Informed Consent: Informed consent was not obtained because of the retrospective nature of the study.

Footnotes

Authorship Contributions: Surgical and Medical Practices - M.Ş., G.Ü.; Concept - Y.Ö.K., M.Ş., G.Ü., M.T.; Design - B.Y., Ç.U.A., G.Ü., M.T.; Data Collection or Processing - Y.Ö.K., M.Ş., S.Z.S.; Analysis or Interpretation

- B.Y., Ç.U.A., S.Z.S., M.T.; Literature Search - B.Y., Ç.U.A., Y.Ö.K., S.Z.S.; Writing - B.Y.

Conflict of Interest: No conflict of interest was declared by the authors.

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