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Sumatera Medical Journal
Journal homepage: https://talenta.usu.ac.id/smj

Research Article

Cancer-Related Visits to the Emergency Department: Trends and Patient Characteristics at Adam Malik General Hospital, Medan

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Abstract

Background: The prevalence of cancer cases globally is increasing rapidly, especially in emergency department (ED) visits. Usually, cancer patients come for acute signs and symptoms of a still undiagnosed malignancy, management of treatment-related side effects, co-morbidities, and palliative care. **Objective:** To identify the demographic characteristics of cancer patients, reasons for ED visits, and associated factors of oncologic patients. **Methods:** A prospective cross-sectional study was conducted from July 2022 - June 2023 at the ED of H. Adam Malik Hospital Medan with 392 oncologic patients. Data were collected using the Integrated System Application of Hospital (STARS) database. **Results:** The percentage of women (69%) was two times higher than men (31%), with 82% being 18- 64 years old. Breast was the most common location of malignancy for 21.4%, followed by gastrointestinal malignancy for 20.1%. The most common reason for ED visits was pain, followed by gastrointestinal symptoms. The ratio of patients who were discharged and hospitalized was 50:50, while the mortality rate was none. **Conclusion:** The most common primary diagnosis was breast malignancy in women and gastrointestinal malignancy in men. The majority of ED visits were for the management of treatment-related side effects and palliative care.

Keywords: cancer patient, characteristics, emergency, malignancy

Received: 10 July 2023 | Revised: 31 August 2023 | Accepted: 01 September 2023

1. Introduction

The global prevalence of cancer is rapidly increasing and will increase the acute care needs among patients with cancer. Worldwide, the prevalence of cancer over five years reaches 50 million people, and 19 million new cases occur over a year. It is estimated that 17% of cancer patients visit the emergency department (ED) annually. Usually, patients come to ED care for problems both related and not related to their cancer or cancer treatments. Of whom, more than half of the patients were admitted to inpatient service for further management [1, 2, 3].

Cancer is a severe disease presenting a physical, social, economic, and mental burden [3, 4]. The overall burden of cancer worldwide is projected to continue to rise, particularly in developing countries. An estimated 23% of all ED visits by cancer patients could be avoided, such as commonly anticipated series of complaints (nausea/vomiting/dehydration, pain, shortness of breath/cough, and fever) with appropriate referral and management [5, 6, 7]. Proper referral to alternative care settings, such as one-day clinics, chemotherapy care units or palliative care centres, can decrease the frequency of emergency services and significantly reduce the cost for the health system [8, 9, 10].

Patients with oncological diseases are admitted to the ED primarily due to the course of their existing malignancies (pressure symptoms, pain, bleeding, respiratory distress, etc.), indirect causes of the diseases

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 ISSN: 2622-9234, e-ISSN: 2622-1357. Journal Homepage: https://talenta.usu.ac.id/smj/. DOI: https://doi.org/10.32734/sumej.v6i3.12830.

(metabolic, endocrine, hematological, infectious, etc.), adverse effects of antitumor treatment (such as febrile neutropenia), or several acute problems caused by the patient's social conditions (such as lack of care and nutrition) [11, 12]. Patients with cancer often visit hospitals after cancer treatments, such as chemotherapy and radiation therapy, and various problems that occur during treatment [13]. If symptoms worsen suddenly or side effects of cancer treatment after inpatient treatment ends, cancer patients are unavoidable to visit the emergency department [14]. Therefore, it is necessary to monitor the characteristics of patients visiting the ED so that the ED can function appropriately for patients with emergency conditions.

Even though some studies were conducted related to ED visits of cancer patients and their outcomes, there is no exact data in Indonesia, especially in North Sumatra. Thus, we conduct this research solely to identify the demographic characteristics of cancer patients, reasons for ED visits, and associated factors of oncologic patients, which will be used for further appropriate care and to improve the quality of clinicians and policymakers provided for the patients. A better understanding of such trends and the factors associated with minimizing potentially preventable visits among patients with cancer and using emergency resources more effectively.

2. Methods

2.1. Study Design and Data Sources

A cross-sectional study was conducted with the Integrated System Application of Hospital (STARS) database. STARS is a database built by the Ministry of Health of the Republic of Indonesia in 2020 and operated by H. Adam Malik Hospital Medan. STARS collects clinical and administrative information among patients who came to H. Adam Malik Hospital Medan. All databases had basic demographic and clinical information for every ED visit patient, including age, sex, and clinical profile (chief complaint, location of malignancy, tumour status, and metastasis) and disposition (admitted, discharged, died, or other).

2.2. Study Population

A prospective cross-sectional study was conducted from July 2022 to June 2023 at the Emergency Department of H. Adam Malik General Hospital Medan. The population in this study consisted of all cancer patients who visited the ED during the study period. A total of 392 oncologic patients were included. Data were collected using the hospital's Integrated System Application (STARS) database and analyzed descriptively to identify patient characteristics, clinical presentations, and visit outcomes.

2.3. Eligibility Criteria

Cancer patients of all ages who visited the ED due to cancer-related causes were included in the study. Oncologic patients who seek care for another disease other than cancer, such as cancer patients who presented to the ED due to trauma or poisoning, were excluded from the study.

2.4. Sample Size Determination and Sampling Procedure

Patients presenting to the ED with a cancer-related complaint from July 2022 to June 2023 were triaged. Emergency applications of 392 patients who met the inclusion criteria were examined.

2.5. Statistical Analysis

Patients' characteristics were summarized using descriptive statistics. Descriptive statistics, both counts and percentages, were calculated for symptom categories and patient and visit characteristics for all cancers combined.

3. Results

Table 1. Socio-Demographic Characteristics of Patients with Cancer in the ED of HAM Hospital

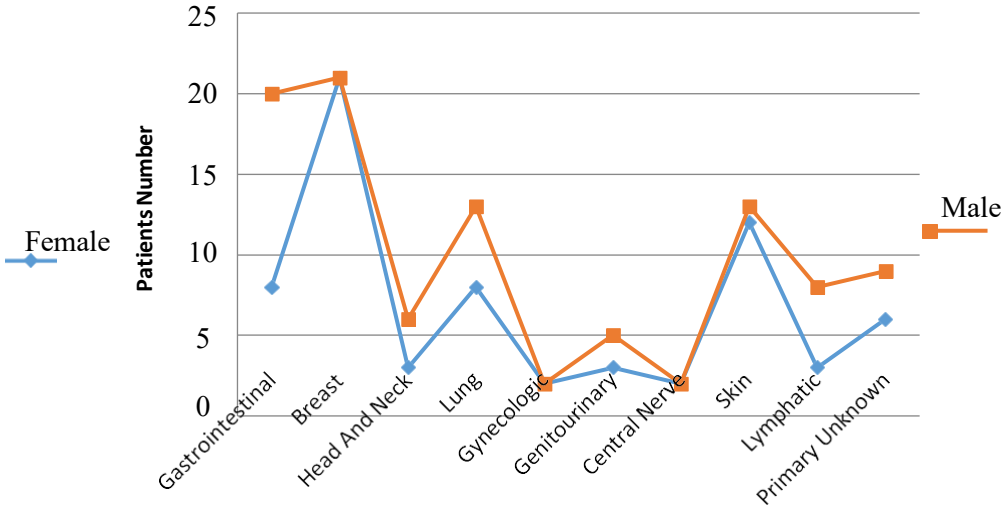
Variable (n=392)		Frequency	Percentage
Gender	Male	122	31
	Female	270	69
Age	≤18	9	2
	18-64	321	82
	≥64	62	16

Based on a study conducted from July 2022 to June 2023, 392 cancer patients came to the Emergency Room. Based on the gender of the patient, there were 270 female patients, with a percentage of 69%, and 122 male patients, with a percentage of 31%, with the most frequent age category being 18-64 years old for 321 patients (82%), followed by ≥64 years old for 62 patients (16%), and the category of ≤18 years old for nine patients (2%).

Table 2. Clinical characteristics of cancer patients in the ED of HAM hospital

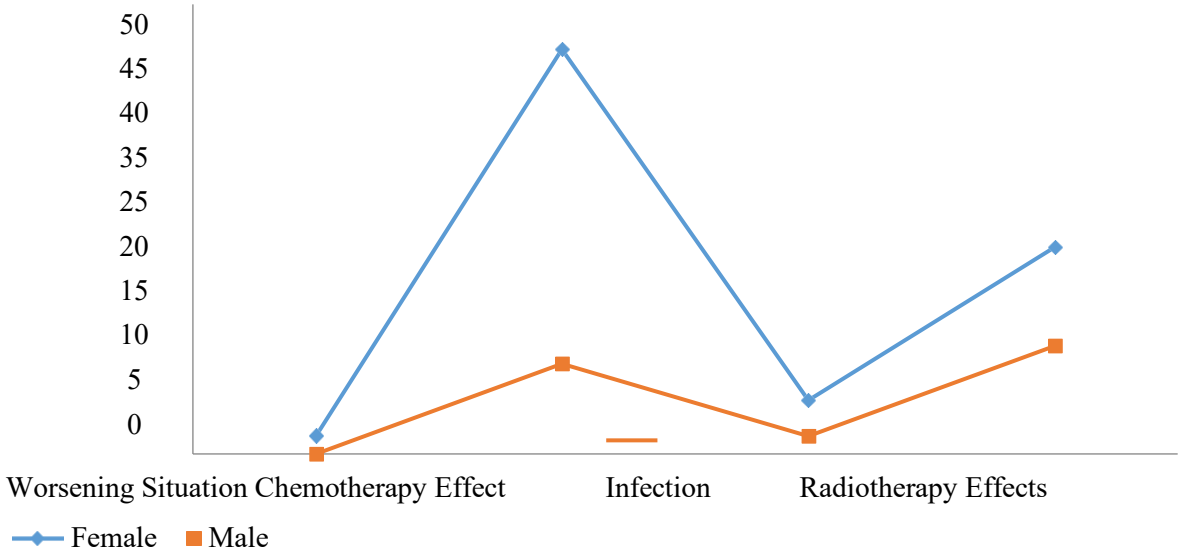
Subjects	Female		Male		Total
	n	%	n	%	
Chief complaint					
Fever	3	0	2	0	5
Change in Mental Status	6	1	3	0	9
Fatigue	45	12	23	7	68
Shortness of breath	25	6	5	1	30
Vomiting	15	3	7	2	22
Pain	131	34	42	12	173
Bleeding	23	6	8	3	31
Difficulty of Swallowing	3	0	5	1	8
Unable to defecate	9	2	22	6	31
Other	10	3	5	1	15
Localization of malignancy					
Gastrointestinal	32	8	47	12	79
Breasts	84	21	0	0	84
Head and neck	12	3	10	3	22
Lung	33	8	21	5	54
Gynecologic	7	2	0	0	7
Genitourinary	12	3	8	2	20
Central nerve	6	2	1	0	7
Skin	48	12	4	1	52
Lymphatic	13	3	19	6	32
Primary unknown	23	6	12	3	35
Metastasis					
Yes	187	48	58	15	245
No	83	21	64	16	147
Cancer treatments					
First time visit	25	6	30	8	55
Chemotherapy	80	20	35	9	115
Radiotherapy	47	12	35	9	82
Chemotherapy and Radiotherapy	118	30	22	6	140
Reasons to visit the ed					
Worsening situation	6	2	0	0	6
Chemotherapy effects	178	45	38	10	216
Infection	22	6	9	2	31
Radiotherapy effects	92	23	47	12	139
ER visit results					
Discharged	136	35	64	16	200
Hospitalized	134	34	58	15	192
Died	0	0	0	0	0

The most major complaint of the oncologic patients was pain (173; 44.1%) followed by quick fatigue (68; 17.3%) respectively. Concerning the location of malignancy, a quarter (84; 21.4%) accounted for breast malignancy, followed by gastrointestinal malignancy (79; 20.1%) and lung malignancy (54; 13.7%), respectively. More than half of the patients who visited ED (245; 62.5%) had metastasis, while the rest had no metastasis. Regarding the outcomes of patients at the ED, 200 (51.1%) of them were discharged with improvement, and 192 (48.9%) were admitted to the ward.



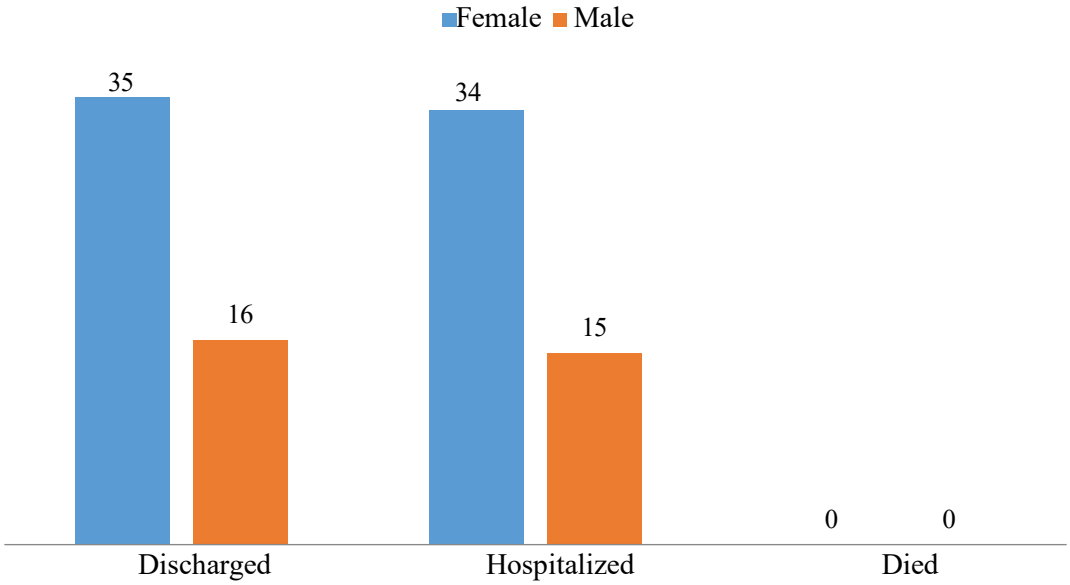
Graph 1. Trend of Characteristics of Cancer Patients in the ED of HAM Hospital Based on Localization of Malignancy

Based on Graph 1, Considering the distribution by gender, the most common primary diagnosis was breast malignancy in women (21%, n=84) and gastrointestinal malignancy (12%, n=47) in men.



Graph 2. Trend of Characteristics of Cancer Patients in the ED of HAM Hospital Based on Reasons for Visiting the ER

Based on Graph 2, the patients who visited the ED, primarily because of the effects of chemotherapy, 216 patients, 178 (45%) patients were female, followed by as many as 139 (35.4%) patients.



Graph 3. Trend of Characteristics of Cancer Patients in the ED of HAM Hospital Based on the Results of the ER Visit

When the frequency of admission of patients to the emergency department was evaluated, it was observed that 51.1% (n=200) of the patients were discharged.

4. Discussion

One of the most significant challenges to providing high-quality cancer care worldwide is managing unplanned acute care during cancer treatment. Due to the increasing prevalence of cancer alongside cancer survival rates, the number of oncologic patients visiting ED may increase. The need for well-coordinated end-of-life and palliative care is well established, but acute care, ED visits, and hospitalizations still increase towards the end of life. These oncologic patients may visit the ED because of signs and symptoms of the disease itself, treatment complications and palliative care services [15, 16].

This study showed that the most common reason for oncologic ED visits was pain (173; 44.1%), followed by easy fatigue (68; 17.3%). This study finding was consistent with a previous study that reviewed an inpatient hospitalization for cancer patients due to pain. However, the other study revealed the opposite among cancer patients who visited the emergency room due to infection (22.8%) neutropenic fever. Although pain was the most common complaint in cancer patients in several other ED studies and the most common symptom in our study, most visitors were released from the ED without hospitalization. This suggests that many patients with cancer may be able to avoid an ED visit if they can find efficient pain management in outpatient clinics or if better home- care education is given before the patients are discharged from the hospital [17, 18].

Previous studies indicated lung, colorectal, and breast cancers were the most common in general ED. According to 2018 data from GLOBOCAN, the three most common cancer types in men worldwide are lung cancer (31.5%), prostate cancer (29.3%), and colorectal cancers (23.6%); in women, they are breast cancer (46.3%), colorectal cancers (16.3%), and lung cancer (14.6%) [19]. Similar to the literature, in our study, we found that the most commonly seen malignancy in women was breast malignancy, while contrary in men, we mainly found a gastrointestinal malignancy.

Based on our study, 45% of all admission was due to the side effects of the chemotherapy treatments. Optimization of outpatient units that will be established in chemotherapy units can help patients with pain management and provide symptomatic therapy. The registration of cancer patients to a palliative care unit and follow-up of these patients by the palliative care team also might reduce ED admission. Also, the emergency department's intensity can be minimised by using emergency resources more effectively [20].

Regarding the outcomes of patients at the ED, 200 (51.1%) of them were discharged, and 192 (48.9%) were admitted to the ward. This study finding was contrary to the study conducted in Turkey and Korea which showed 39% (40) of oncologic patients were hospitalized, and 54.8% of cancer-related ED visits were hospitalized. His dissimilarity might be due to patients presenting in ED with varying signs and symptoms

severity. While cancer patients have a higher risk of hospital admission and death, other important ED-specific outcomes could be explored, considering treatment regimens, specific symptoms, and patient experiences [21].

5. Conclusion

We found that the most common primary diagnosis was breast malignancy in women and gastrointestinal malignancy in men. Most oncologic patients visit the ED due to pain and fatigue and mainly after patients getting chemotherapy treatments. Among oncologic patients who visited the ED, most of them were discharged. The majority of ED visits were for the management of treatment-related side effects and palliative care. The role of chemotherapy units or palliative care centres may contribute to the decrease in the frequency of emergency services. Even though this study finding can be used as a baseline, especially from low-income countries, further multicenter study is needed.

6. Data Availability Statement

The datasets generated and analyzed during the current study are not publicly available due to privacy and ethical considerations but are available from the corresponding author upon reasonable request.

7. Ethical Statement

This study was approved by the Research Ethics Committee of Universitas Sumatera Utara.

8. Author Contributions

All authors contributed to the design and implementation of the research, data analysis, and finalizing the manuscript.

9. Funding

No funding.

10. Conflict of Interest

Authors declares no conflict of interest.

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