Profiles of Cancer Patients at Surgical Oncology Outpatient Clinic at Dharmais Cancer Hospital as National Referral Hospital in Indonesia from 2017 to 2021

Department of Surgical Oncology, Dharmais Cancer Hospital – National Cancer Center, Jakarta, Indonesia

**INTRODUCTION**

Cancer is one of the leading causes of death in the world. According to the World Health Organization (WHO) in 2019, over three-quarters of 20.4 million premature deaths were caused by non-communicable diseases (NCD) led by cardiovascular diseases followed by cancer [1]. Cancer is in first or second place out of 112 from 183 countries and placed third or fourth in 23 other countries. According to GLOBOCAN 2020, there are an estimated 19.3 million new cancer cases and 10 million deaths caused by cancer all over the world [2]. The cancer burden could be decreased by understanding the risk factors and early detection by screening [3]. Many variables such as demographic factors, risk factors, cancer stage when first diagnosed, biological features, and patient’s condition could determine the condition, possible treatment, and prognosis for the patient [4].

As the leading cause of death at an early age, cancer is closely related to socioeconomic status. Countries with...
a high Human Development Index (HDI) have a high prevalence of cancer death compared to countries with a low HDI [3]. Cancer profiles can differ in each country because the HDI reflects the lifestyle, environment, and availability of early detection in that country. In Indonesia, the burden of cancer in the total population is more than 348,809 cases with a total death due to cancer of 207,210 in 2018. In 2018, the highest incidence was breast cancer at 16.7% and the highest mortality was caused by lung cancer at 12.6%. The addition of new cases of cancer continues to increase gradually every year. It is estimated that the addition of new cases of cancer in Indonesia in 2040 will reach 89,512 cases of breast cancer and 54,983 cases of lung cancer [1].

Referring to the Health Minister's Decision Number HK.01.07/Menkes/531/2017, Dharmais Cancer Hospital is set to be the National Cancer Center with an obligation to support all hospitals throughout the country that specialize in cancer [5]. Surgical Oncology is one of the departments that handles the most cases in Dharmais National Cancer Center. The types of cancers that are handled in Surgical Oncology Department are breast cancer, head and neck cancer, thyroid cancer, skin cancer, and soft tissue cancer.

While there are a lot of cases being handled by the Surgical Oncology department, there is still limited data being presented. The purpose of this paper is to find the newly diagnosed cancer patients' characteristics and socioeconomic features in Dharmais National Cancer Center from the year 2017 to 2021.

METHODS

The study was a cross-sectional descriptive using the medical record database of outpatients at Dharmais Cancer Hospital as a data collection method from 2017 until 2021. The sample size includes all newly diagnosed cancer patients in Dharmais Cancer Hospital that have been recorded. Patients who meet the inclusion criteria are the ones who have recently been diagnosed with cancer, as demonstrated by the results of anatomic pathology investigations or supportive examinations such as computed tomography (CT) scans. From the total number of new patient data collected, patients will be categorized into patients with solid and non-solid tumors. Patients admitted to departments dealing with solid cancers, such as surgical oncology, digestive surgery, plastic surgery, thoracic surgery, orthopedic surgery, urology, neurosurgery, ophthalmology, ear, nose, and throat (ENT), skin, lung, gastroenterology, and obstetric gynecology, and patients who are admitted to hematology and paediatry were included in non-solid tumors. Some patients who were not included in both categories were categorized in others. Patients with solid tumors will be categorized according to the department in charge. Patients with breast cancer, thyroid cancer, head and neck cancer, sarcomas, and skin cancer were included in the inclusion criteria. Patients who met the inclusion criteria were evaluated for sociodemographic characteristics such as age, gender, education, and marital status.

The technique of sampling size is total sampling where all patients that fulfilled the inclusion criteria are included in this study. The data is presented in a descriptive method. The presented data shows the number of patients with the type of cancer corresponding to age, gender, education, and marital status.

RESULT

The data were collected from the medical record between 2017 to 2021, which shows that the number of visiting patients in Dharmais Cancer Hospital was 502,386 visits with roughly around over 100,000 patients visiting per year (Figure 1). Over 60% of visiting patients were dominated by patients with solid tumors, while the others were patients with non-solid tumors. The number of new patients admitted to the outpatient clinic was 17,608 patients with over 3,500 new patients annually. The number keeps increasing each year, with almost 95% of the new patients having solid tumors (Figure 2). Half of the solid tumor patients were admitted to the Surgical Oncology Department (Figure 3).

Out of the total number of visiting and new surgical oncology patients from year to year, patients were grouped according to the type of cancer (Figure 4–5). Every year, breast cancer occupies the most type of cancer in new patients at Dharmais National Cancer Center. In 2017 new breast cancer patients accounted for 57% of all new patients enrolled in the surgical oncology clinic. The number of new breast cancer patients continues to increase from year to year, the most in 2018 as many as 73% of cancer patients at the surgical oncology clinic reaching 73% of the total new patients. The number of patients decreased in 2019 and 2020 causing a decrease in the number of new patients, but the number of breast cancer patients still ranks first in the largest number of patients in surgical oncology clinics, as many as 69% in 2019 and as many as 61% in 2020. In 2021, patients returned increasing with the number of breast cancer patients as much as 61% of the total number of patients at the oncology surgery clinic in 2021.

In the second place, the most common type of cancer in the surgical oncology clinic was thyroid cancer as many as 120 patients in 2017, then increased in 2018 to 226 patients. In 2019 and 2020 there was a decrease of 164 patients and 152. In 2021, the number of patients increased again by 187 patients. The third most common type of cancer is head and neck cancer, and sarcoma.
Figure 1. Distribution of patient visits in Dharmais Cancer Hospital from 2017 to 2021

N = 502,386

- Non Solid Tumor
- Solid Tumor

Figure 2. The distribution of new patients in Dharmais National Cancer Center from 2017 to 2021

N = 19811

- Solid Tumor
- Non Solid Tumor
- Others

Figure 3. The distribution of new cancer patients with solid tumors by the departments

- Oncologic Surgery 50.7% n = 8449
- Dermatovenerology 1.9% n = 321
- Neurosurgery 4% n = 669
- Pulmonology 6.8% n = 1137
- Digestive 8.5% n = 1420
- ENT 9.2% n = 1538
- Orthopedic 1.6% n = 268
- OBGYN 7.6% n = 1269
- Urology 8.3% n = 1374

N = 16625
The distribution of cancer patients in the surgical oncology clinic is dominated by females in all types of cancer (Table 2). In breast cancer, the number of female patients takes up to 99.46% of all breast cancer patients each year compared to male patients. In thyroid cancer, female patients make up an average of 83.44% of all thyroid cancer patients each year. In head and neck cancer and sarcoma, the amount of male and female patients is almost equal, with females predominant. Head and neck cancer with an average of 53.28% of female patients and 46.72% of male patients. Sarcoma patients average 53.44% of female patients and 46.5% of male patients each year. Skin cancer patients, on the other hand, are dominated by male patients with an average of 55.8% of male patients and 44.92% of female patients in the last five years.

The distribution of age groups in breast cancer, thyroid cancer, and head and neck cancer is dominated...
Based on the most common type of cancer in new patients, breast cancer is placed first. This data is in accordance with the findings in previous studies. The numbers of breast cancer patients according to GLOBOCAN 2020, breast cancer is also the most common new case worldwide compared to other types of cancer [2]. We think that this result is associated with the early detection of breast cancer becoming more common and also because the public is more aware of the early detection of cancer and breast self-examination. As the Ministry of Health recommended that early breast cancer detection can be done at the age of 40 and above, it aligns with the data, where most breast cancer patients are diagnosed in the age group of 40 to 55 years old.

In comparison with statistics from cancer registration at other national referral hospitals in Indonesia from 2008 to 2012, cervical cancer was ranked first as the most common type of cancer. This is different from the findings obtained with breast cancer as the most common cancer at our institution [6].

Following breast cancer, thyroid cancer placed second followed by head and neck cancer. Contrary to the data from GLOBOCAN 2020 worldwide where the second most common is skin cancer and thyroid cancer, in Sarcoma, the most common age group is younger than 40 years old, followed by the 40 to 55 years old age group. In patients with skin cancer, on the other hand, patients above 55 years old are more common compared to other age groups.

The distribution of patients based on their education is dominated by senior high school graduates with an average of 42.8% of patients for the last five years. Most of the patients are married with an average of 82.04% of all patients for the past five years.

Based on the data gathered, the prevalence between solid and nonsolid tumors, in this case, represented by the number of patients in surgical oncology and nonsurgical oncology patients, shows that most of the cases of cancer are solid tumors.

### Table 2. The distribution of Surgical Oncology patients based on sex and type of cancer from the Surgical Oncology Outpatient Clinic in Dharmais Cancer Hospital from 2017 to 2021

<table>
<thead>
<tr>
<th>Types of cancer</th>
<th>Male (%)</th>
<th>Female (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>27 (0.5)</td>
<td>5605 (99.5)</td>
</tr>
<tr>
<td>Thyroid</td>
<td>142 (16.7)</td>
<td>708 (83.2)</td>
</tr>
<tr>
<td>Head and Neck</td>
<td>323 (46.4)</td>
<td>373 (53.6)</td>
</tr>
<tr>
<td>Sarcoma</td>
<td>150 (46)</td>
<td>176 (54)</td>
</tr>
<tr>
<td>Skin</td>
<td>104 (55.9)</td>
<td>82 (44.1)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7690</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3. The distribution of Surgical Oncology patients based on age group and type of cancer from the Surgical Oncology Outpatient Clinic in Dharmais Cancer Hospital from 2017 to 2021

<table>
<thead>
<tr>
<th>Types of cancer</th>
<th>40 years old (%)</th>
<th>40–55 years old (%)</th>
<th>&gt;55 years old (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>1100 (19.5)</td>
<td>3139 (55.7)</td>
<td>1393 (24.7)</td>
</tr>
<tr>
<td>Thyroid</td>
<td>320 (37.6)</td>
<td>344 (40.5)</td>
<td>186 (21.9)</td>
</tr>
<tr>
<td>Head and Neck</td>
<td>184 (26.8)</td>
<td>254 (37.0)</td>
<td>248 (35.6)</td>
</tr>
<tr>
<td>Sarcoma</td>
<td>116 (35.6)</td>
<td>122 (37.4)</td>
<td>88 (29.7)</td>
</tr>
<tr>
<td>Skin</td>
<td>33 (19.7)</td>
<td>59 (35.1)</td>
<td>76 (45.2)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7690</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
is placed third [2]. On the other hand, compared to Indonesia’s data from GLOBOCAN, our data is in accordance with where thyroid cancer placed second and the head and neck cancer placed third [7].

Based on the data, the most common cancer diagnosed in women is breast cancer. This finding is similar to the findings in GLOBOCAN 2020. According to a study by Momenivohed et al. [8] Breast cancer is unique to women and may only account for less than 1% of all cancer in men. The data also shows that thyroid cancer is dominated by female patients. This aligns with the study by LeClair et al. [9], where female patients benefit more from the guidelines that aim to promote a more focused use of thyroid imaging compared to male patients who are more at risk of being diagnosed at later stages.

On the other hand, in our data, head and neck cancer cases in our hospital have almost the same prevalence between female and male patients, with female patients slightly more than male patients by an average of 6.56%. On the contrary, Park et al. [10], stated that males are more susceptible to head and neck cancers than females regardless of their lifestyle factors such as alcohol consumption and smoking.

The case of skin cancer is more common in male patients compared to female patients. This is in accordance with the study by Singer et al. [11] where skin cancers are more predominant in male patients with the leading hypothesis that males are more engaged with skin cancer risk behaviors compared to females. In another study, it was also found that skin cancer is more common in males with more predominant in the head and neck region while hip and lower extremities region are higher in females [12].

According to the data gathered, most patients are diagnosed at the age between 40 to 55 years old. This data aligns with a study in Iraq by Alwan et al. [13] where one-third of breast cancer patients are diagnosed at the age of 40 to 49 years old. Asian countries have statistically younger population structures compared to Western, this may contribute to the younger patients found in Asian countries compared to Western countries.

In thyroid cancer, most patients are diagnosed at the age between 40 to 55 years old. This data differs from the study conducted in Czech Republic where the highest prevalence in the age group with thyroid cancer is 55 to 59 years old [14]. In another study, thyroid cancer is the most common cancer diagnosed in people under 40 with high survival [15].

Patients with skin cancer in this study are mostly engaged with skin cancer risk behaviors compared to male patients. This is in accordance with the study by Ferrari et al. [17], where males are more susceptible to skin cancer risk behaviors compared to females. In another study, it was also found that skin cancer is more common in males with more predominant in the head and neck region while hip and lower extremities region are higher in females [12].

According to the data gathered, most patients are diagnosed at the age between 40 to 55 years old. This data aligns with a study in Iraq by Alwan et al. [13] where one-third of breast cancer patients are diagnosed at the age of 40 to 49 years old. Asian countries have statistically younger population structures compared to Western, this may contribute to the younger patients found in Asian countries compared to Western countries.

In thyroid cancer, most patients are diagnosed at the age between 40 to 55 years old. This data differs from the study conducted in Czech Republic where the highest prevalence in the age group with thyroid cancer is 55 to 59 years old [14]. In another study, thyroid cancer is the most common cancer diagnosed in people under 40 with high survival [15].

Patients with skin cancer in this study are mostly engaged with skin cancer risk behaviors compared to male patients. This is in accordance with the study by Ferrari et al. [17], where males are more susceptible to skin cancer risk behaviors compared to females. In another study, it was also found that skin cancer is more common in males with more predominant in the head and neck region while hip and lower extremities region are higher in females [12].

In our study, most patients with sarcoma are in the age range of younger than 40 years old. This result is in accordance with the study by Ferrari et al. [17], where sarcoma, especially rhabdomyosarcoma is mostly diagnosed in patients below 20 years old. In this study, younger patients had better survival compared to the older patients.

Patients with skin cancer in this study are mostly diagnosed at the age above 55 years old. This result is similar to the American Cancer Society, which shows the average age of people diagnosed with skin cancer at 65 years old [18].

The limitation of this study is that data taken between the years of the transition from the physical medical record system to the electric medical record caused some data to be missing and incomplete.

CONCLUSIONS

The general characteristic of cancer patients in Dharmais Cancer Hospital as the National Referral Hospital is dominated by breast cancer patients, most patients are female. Most of the patients are diagnosed in the age group between 40 to 55 years old. Most patients are with high education, and most are senior high school graduates. These findings can be used as a reference for national conditions that describe the sociodemographic profile of patients with cancer who come to surgical oncology outpatient clinics. Further studies need to be done on each type of cancer to have a better understanding of the profiles and characteristics of solid cancer patients in Dharmais Cancer Hospital.

DECLARATIONS

Ethics approval and consent to participate:
The ethical clearance was obtained from the Ethics Commission of Health Research in Dharmais Cancer Hospital with the Number 289/KEPK/XII/2022.

Competing interest:
The authors declare no competing interest in this study.

Acknowledgement:
The Authors wish to thank the research staff at Surgical Oncology Department and Dharmais Cancer Hospital.

REFERENCES


