A Comparison of Cancer Incidences Between Dharmais Cancer Hospital and GLOBOCAN 2020: A Descriptive Study of Top 10 Cancer Incidences

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INTRODUCTION

Indonesia is facing an epidemiological transition that has resulted in a shift in the burden of disease from infectious diseases (CD) to non-communicable diseases (NCDs). These changes make NCDs increase significantly and become the main cause of death in Indonesia. Based on World Health Organization (WHO) data, NCDs cause 41 million deaths each year, or about 71% of all world deaths. More than 15 million people aged 30-69 years died from NCDs, of which 85% of these premature deaths occurred in low- and middle-income countries [1]. Based on data from the Institute For Health Metrics and Evaluation (IHME) in 2019, cancer is the second most common cause of death in Indonesia (13.4%) after coronary heart disease (38.2%), followed by diabetes (8.7%), and Chronic Obstructive Pulmonary Disease (COPD) (5.9%) [2].

Cancer is the leading cause of death and increased morbidity in every country in the world. According to Global Cancer Observatory (GLOBOCAN) 2020 data, it is estimated that 19.3 million new cancer cases and nearly 10.0 million cancer deaths occurred in the world in 2020. Based on the same data, it is estimated that 396,914 new cancer cases and nearly 234,511 cancer deaths are estimated to occur in Indonesia. Dharmais National Cancer Hospital (DNCH) as a national cancer center is a miniature of cancer data in Indonesia. For this reason, researchers want to compare whether the data on the number and types of cancer in DNCH are the same as those in GLOBOCAN 2020.

METHODS: This research is a descriptive analysis with secondary data collection methods taken from medical records. The sampling technique was total sampling, univariate data analysis, namely new cases of cancer patients for the January-December 2021 period which are 2,382 cases.

RESULTS: The results showed that the same order in both data was only found in the first, second, and seventh order, namely breast cancer, cervical cancer, and non-Hodgkin’s lymphoma, respectively. However, the percentage of new cases of breast cancer in RSKD is much higher (2.5-folds) than in GLOBOCAN.

CONCLUSIONS: There are several differences between the data on new cancer cases in the two data, which can be caused because DNCH has complete facilities, both for diagnostic and curative purposes, and examinations such as IHC and bone scans are only available at certain hospitals and one of them is DNCH.
Comparison of Cancer Incidence

(9.2%), lung (8.8%), colorectal (8.6%), and liver (5.4%). Lung cancer is the leading cause of cancer death, with an estimated 30,843 deaths (13.2%), followed by breast cancer (9.6%), cervical (9.0%), liver (8.9%), and nasopharyngeal (5.7%) [3].

Dharmais National Cancer Hospital (DNCH) as a national cancer center is a “miniature” of GLOBOCAN data in Indonesia. Therefore, the authors want to compare the data on the 10 most new cases of cancer in DNCH in 2021 with GLOBOCAN 2020 data.

METHODS

This study is a quantitative descriptive study using secondary data derived from the 2021 DNCH medical records [5]. Descriptive analysis is an analysis that organizes and analyzes data or numbers, to provide an orderly, concise, and clear description of a symptom, event, or circumstance so that certain meanings can be drawn. The population of this study was all patients with new cancer cases at the DNCH in 2021. The research sample used was all patients with the top 10 new cancer cases at the DNCH who met the inclusion and exclusion criteria. The inclusion criteria for this sample were patients with the top 10 new cancer cases at the DNCH from January to December 2021. The exclusion criteria in this sample were data that was not cited clearly. The sampling technique used is total sampling. Furthermore, data analysis was a univariate analysis performed using IBM SPSS version 26.

RESULTS

Site Overview

DNCH is a national cancer hospital type A and is also a national cancer center, in the sense that it is the main referral center for cancer patients who are generally referred by the health facilities below (type B, C, and D hospitals, and primary health care) in Indonesia.

From GLOBOCAN 2020 data, breast cancer ranks first in the number of new cases, namely 65,858 cases or 16.6% of the total 396,914 new cancer cases in Indonesia in 2020 [4]. The next highest number of new cases is cervical cancer with 36,633 cases (9.2%), followed by lung cancer in 34,783 cases (8.8%), colorectal cancer in 33,427 cases (8.6%), liver cancer in 21,392 cases (5.4%), nasopharyngeal cancer in 19,943 cases (5.0%), non-Hodgkin's lymphoma in 16,125 cases (4.1%), leukemia cancer 14,979 cases (3.8%), ovarian cancer 14,896 cases (3.8%), and prostate cancer 13,563 cases (3.4%).

Breast cancer ranks first in the number of new cases, namely 1,046 cases or 43.9% of the total 2,382 new cancer cases in DNCH in 2021. The next highest number of new cases is cervical cancer with 272 cases (11.4%), followed by lung cancer in 191 cases (8.0%), colorectal cancer in 150 cases (6.3%), non-Hodgkin’s lymphoma in 111 cases (4.6%), prostate cancer with 75 cases (3.1%), bladder cancer with 69 cases (2.9%), and rectal cancer with 61 cases (2.5%).

Table 1. Top 10 Cancer Incidences According to DNCH 2021 and GLOBOCAN 2020

<table>
<thead>
<tr>
<th>No</th>
<th>Type of Cancer</th>
<th>DNCH 2021 New Cases</th>
<th>Percentage</th>
<th>Type of Cancer</th>
<th>GLOBOCAN 2020 New Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Breast</td>
<td>1,046</td>
<td>43.9</td>
<td>Breast</td>
<td>65,858</td>
<td>16.6</td>
</tr>
<tr>
<td>2.</td>
<td>Cervix uteri</td>
<td>272</td>
<td>11.4</td>
<td>Cervix uteri</td>
<td>36,633</td>
<td>9.2</td>
</tr>
<tr>
<td>3.</td>
<td>Nasopharyngeal</td>
<td>193</td>
<td>8.1</td>
<td>Lungs</td>
<td>34,783</td>
<td>8.8</td>
</tr>
<tr>
<td>4.</td>
<td>Lungs</td>
<td>191</td>
<td>8.0</td>
<td>Colorectal</td>
<td>33,427</td>
<td>8.6</td>
</tr>
<tr>
<td>5.</td>
<td>Thyroid</td>
<td>150</td>
<td>6.3</td>
<td>Liver</td>
<td>21,392</td>
<td>5.4</td>
</tr>
<tr>
<td>6.</td>
<td>Colon</td>
<td>111</td>
<td>4.6</td>
<td>Nasopharyngeal</td>
<td>19,943</td>
<td>5.0</td>
</tr>
<tr>
<td>7.</td>
<td>Non-Hodgkin’s Lymphoma</td>
<td>79</td>
<td>3.3</td>
<td>Non Hodgkin’s Lymphoma</td>
<td>16,125</td>
<td>4.1</td>
</tr>
<tr>
<td>8.</td>
<td>Prostate</td>
<td>75</td>
<td>3.1</td>
<td>Leukemia</td>
<td>14,979</td>
<td>3.8</td>
</tr>
<tr>
<td>9.</td>
<td>Bladder</td>
<td>69</td>
<td>2.9</td>
<td>Ovary</td>
<td>14,896</td>
<td>3.8</td>
</tr>
<tr>
<td>10.</td>
<td>Rectum</td>
<td>61</td>
<td>2.5</td>
<td>Prostate</td>
<td>13,563</td>
<td>3.4</td>
</tr>
<tr>
<td>11.</td>
<td>Others</td>
<td>135</td>
<td>5.6</td>
<td>Others</td>
<td>125,315</td>
<td>31.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2,382</td>
<td>100</td>
<td>Total</td>
<td>396,914</td>
<td>100</td>
</tr>
</tbody>
</table>

DNCH, Dharmais National Cancer Hospital; GLOBOCAN, Global Cancer Observatory
The results showed that the same order in both data was only found in the first, second, and seventh order, namely breast cancer, cervical cancer, and non-Hodgkin’s lymphoma, respectively. However, the percentage of new cases of breast cancer in DNCH is much higher (2.5-folds) than in GLOBOCAN. In addition, there is no type of cancer with the same percentages from the two data, but for lung cancer, the percentage of DNCH is 0.8% smaller than GLOBOCAN.

DISCUSSION

Based on the results of this study, the incidences of cancer in DNCH in 2021 amounted to 2,382 cases, with breast cancer as the highest incidence with a total of 1,046 cases (43.9%). This shows the same results as the GLOBOCAN 2020 data, where breast cancer is the highest incidence of all cancers with 65,858 cases or 16.6% of the total 396,914 cases in Indonesia. Although the first rank in both data is the same, the percentage of new cases of breast cancer is much more different between data from DNCH and data from GLOBOCAN. This difference may be because DNCH has complete facilities, both for diagnostic and curative purposes. Management of breast cancer itself can be done locally (surgery and radiation) and systemically (chemotherapy, hormone therapy, and targeted therapy) [6]. DNCH can provide all forms of treatment for patients. Some breast cancer tests such as immunohistochemistry (IHC) and bone scan are also only available at certain hospitals, such as DNCH.

IHC is a special staining process performed on fresh or frozen breast cancer tissue removed during a biopsy [7]. IHC was used to characterize intracellular or various cell surface proteins in all tissues. Individual markers or panels of various marker proteins can be used to characterize various tumor subtypes, confirm tissue of origin, differentiate metastases from primary tumors, and provide additional information that may be important for prognosis, predict response to therapy, or evaluate post-treatment tumor residues. This information plays an important role in treatment planning [8]. However, currently, the IHC examination can only be performed in 17 hospitals in Indonesia [9].

Apart from IHC, a bone scan is also often performed as a routine staging procedure for patients with breast cancer. Once breast cancer has been diagnosed, some people undergo bone scans to determine the stage of breast cancer [10]. Bone scans can show whether cancer has spread to the bone and can find small areas of cancer spread that are not visible on a regular X-ray [11]. The National Nuclear Energy Agency noted that only 12 hospitals have nuclear medicine installations and use radiopharmaceuticals for the diagnosis and therapy of diseases, especially cancer degenerative diseases, one of which is DNCH [12]. Thus, health facilities from all over Indonesia refer patients to the DNCH for complete management, and this referral system is one of the causes of the high number of new cases of breast cancer in the DNCH.

Furthermore, the second rank is occupied by cervical cancer with 272 new cases (11.4%) in DNCH. The same thing is also found in GLOBOCAN 2020 with a total of 36,633 cases or 9.2% of new cases of cervical cancer of the total cancer cases in Indonesia. The difference in the percentage of the two is not far apart, only 2.2%. The third order is occupied by nasopharyngeal cancer with 193 new cases (8.1%) in DNCH. This is different from GLOBOCAN 2020, where nasopharyngeal cancer in GLOBOCAN 2020 is in sixth place with 19,943 cases (5.0%). Similar to breast cancer, the main treatment for nasopharyngeal cancer is radiotherapy, so many patients are referred to DNCH because the facilities in their area are still lacking. Meanwhile, the third place in the GLOBOCAN 2020 data is occupied by lung cancer with a total of 34,783 new cases (8.8%), differing from the data in DNCH which shows lung cancer is in fourth place with a proportion of 8.0% or a total of 191 new cases.

Then, thyroid cancer ranks fifth in the DNCH in 2021 with 150 cases (6.3%), meanwhile, in GLOBOCAN 2020, thyroid cancer does not reach the top 10 most cancer incidences and is in 11th place with a percentage below 3.4%. Colon cancer ranks sixth with 111 new cases (4.6%) and rectal cancer ranks tenth with 61 new cases (2.5%) in DNCH. In the GLOBOCAN 2020 data, colon and rectal cancer data were combined into one and ranked fourth with 33,427 new cases (8.6%).

Non-Hodgkin’s lymphoma ranks seventh in both data, with 79 new cases (3.3%) in DNCH and 16,125 new cases (4.1%) in the GLOBOCAN 2020 data. The eighth order of DNCH data is occupied by prostate cancer with 75 new cases (3.1%). Almost the same percentage is shown in the GLOBOCAN 2020 data, where the number of new cases of prostate cancer reaches 13,563 cases (3.4%) even though they are in different ranks. Bladder cancer is in ninth place in the 2021 DNCH data with an incidence of 69 cases (2.9%), while in the GLOBOCAN 2020 bladder cancer is not ranked in the top 10 new cases in Indonesia. It is ranked 13th with a total of 7,828 cases (2.0%).

One of the limitations of this study is the absence of data from the area of origin of the referrer, so the researcher cannot determine whether the distribution is even or not. Future researchers need to add data related to the address/area of origin of the referrer so that targeted interventions can be carried out. This research is expected to provide information for all health workers in Indonesia so that they can determine health promotion activities and policy decisions related to cancer as an effort to prevent and control the incidence of cancer, especially those related to the field of breast cancer.
CONCLUSIONS

Based on the comparison of the cancer incidence data between Dharmais Cancer Hospital 2021 and the GLOBOCAN 2020 data, it can be concluded that breast cancer is the type of cancer with the highest number, that is, 1,046 new cases (43.9%) in the DNCH data and 65,858 new cases (16, 6%) in GLOBOCAN data. However, the percentage of new cases of breast cancer in DNCH is much higher (2.5-folds) than in GLOBOCAN. The second order in the two data is cervical cancer (11.4% in DNCH and 9.2% in GLOBOCAN). In addition, there is no type of cancer with the same percentages from the two data. There are several differences between the data on new cancer cases in the two data which is because Dharmais Cancer Hospital has complete facilities, both for diagnostic and curative purposes, and examinations such as IHC and bone scans are only available at certain hospitals and one of them is DNCH.

DECLARATIONS

Ethics Approval
This research has passed the ethical review of the Committee of the Medical Research Ethics of the “Dharmais” Cancer Hospital, with the committee’s reference number of 257/KEPK/X/2022.

Competing Interest
The authors declare no competing interests in this study.

Acknowledgment
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REFERENCES


