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Cancer Profile in West Jakarta: A 5-year descriptive study

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Abstract

Background. Cancer burdens the government in terms of health care funding. Unlike Indonesia, cancer information and data in other several countries are handled by a program called The National Program of Cancer Registries (NPCR), managed by the Centers for Disease Control and Prevention (CDC). This study was aimed to describe the cancer profile in West Jakarta Region from 2008 to 2012 due to insufficient data provided by the government.

Methods. This was a cross-sectional, descriptive study involving all cancer patients residing in West Jakarta based on the medical record of Cipto Mangunkusumo Hospital, acting as DKI Jakarta Cancer Registry Control Center.

Results This study found 4,057 cancer cases in the area. Five most commonly diagnosed cancer cases based on the sites of disease are breast cancer (22,5%), cervical cancer (10,3%), lung and bronchus cancer (7,5%), nasopharyngeal cancer (5,3%), and hemopoietic and reticuloendothelial malignancies (5,3%). Most cases were diagnosed in advance stage (III and IV) and predominantly in women aged 45 – 54 years old. Intraductal carcinoma was the most common morphology type for breast cancer cases.

Keywords: 2008-2012, cancer profile, Cipto Mangunkusumo, West Jakarta

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INTRODUCTION

Cancer is a disease characterized by uncontrolled growth and spreading of abnormal cells. One in seven deaths is caused by cancer globally. Cancer is the second leading cause of death in high-income countries, while in low-middle-income countries, cancer is the third leading cause of death.¹ It was predicted that the new case of cancer in 2008 could reach 12,7 million, responsible for 7,6 million deaths.¹ As stated by WHO the number of new cases of cancer is increasing every year. It was also estimated by the year of 2030, there would be a surge of new cancer cases, reaching 20,3 million new cases and 13,2 million cause of deaths.² Data from Indonesian National Basic Health Research showed that cancer incidence in 2013 is reaching 1,4 per 1000 population. Due to its high

incidence, cancer could also lead to a major funding problem, reaching 2,294 trillion Rupiah based on 2015 annual data. This result in unequal funding for other diseases.³

Due to the difference in demography, geography, and variation of income among various countries result in different risk factors identified in various countries. Socioeconomic state of a country can be measured by the Human Development Index (HDI), that consist of three parameters: life expectancy, education, and income. The number of lung, cervical, and liver cancer in low HDI countries is suspected due to high number infection case, being a major risk factor.⁴

Cancer Registry process in Indonesia is both hospital-based and population-based. The first population-based

cancer registry in Indonesia was conducted by Dharmais Cancer Hospital as National Cancer Burden Control Center, involving 40 Hospitals and Primary Health Care Unit (Puskemas) in DKI Jakarta. In 2010 it expands by involving a total of 151 Hospitals, 10 Pathology Laboratories, and 345 Primary Health Care Unit in DKI Jakarta.⁵

Based on decree by Minister of Health Republic Indonesia (Kepmenkes HK 02.02/MENKES/410/2016), Cipto Mangunkusumo Hospital as Cancer Registry Control Center in DKI Jakarta, is assisted by five hospitals in every region, and Dharmais Cancer Hospital is responsible for registering cancer cases obtained by all health care facilities, laboratories, and hospitals in West Jakarta region.⁵

Framing the prevention and control of cancer policy need a solid, reliable, and dependable registries and reports. However, to date, registry and reported cancer data in 2008-2012 is still lacking, especially from West Jakarta. This study aimed to describe the cancer profile in West Jakarta in 2008-2012 based on the data from Cipto Mangunkusumo Hospital as DKI Jakarta Cancer Registry Control Center.

METHODS

This descriptive, cross-sectional study used total sampling technique. The study was conducted in Cipto Mangunkusumo Hospital in May - June 2017. All registered and recorded cancer cases residing in West Jakarta region since January 1st, 2008 to December 31st, 2012 in Cipto Mangunkusumo Hospital and been diagnosed based on pathological, clinical, and other examinations were included in this study. There were no exclusion criteria. This study had been approved for ethical clearance by the Ethics Committee of the Faculty of Medicine, University of Indonesia.

Data extracted from Cipto Mangunkusumo was filtered from data duplication and was limited to West Jakarta population only. Patient's demographic and initial cancer stage data were collected, along with the diagnosis based on tumor location and morphology recorded in Srikandi form (refer to ICD-O-3: *International Classification of Disease for Oncology 3rd Ed*).

The descriptive summaries include frequency distribution of cancer cases classified based on gender, age, region, occupation, cancer staging, topology, and morphology. Data were analyzed by using Canreg 5 and SPSS 20.0 software.

RESULTS

A total of 14.726 cancer cases were recorded in DKI Jakarta from 2008 until 2012. A total of 798 cases were diagnosed in 2008, 723 cases in 2009, 694 cases in 2010, 897 cases in 2011, and 897 cases in 2012. The detailed proportion distribution of cancer cases in 2008 – 2012 was presented in Table 1.

Cancer registry system found 54 tumor sites based on its topography, in which breast was the most common site of cancer (914 cases, 22,5%). The least number of cases were renal pelvis, hypopharynx, and oropharyngeal cancer (1 case, 0,0%). This study also found that the age group of 45-54 years old was the most common age developing malignancy, and the least common age group was 5-14 years (69, 1,7%). Females cases were more common (25540, 62,6%) than males (1517, 37,4%).

Regarding cancer staging, the majority of the cases found were diagnosed with stage 3 (504 cases, 12,4%), and stage 4 (262, 6,5%). The 5 most common cancer based on site of disease were the following: breast cancer (914, 25%), cervical cancer (416, 10,3%), lung and bronchus cancer (304, 7,5%), nasopharyngeal cancer (215, 5,3%), hematopoietic and reticuloendothelial malignancies (214, 5,3%). The highest number of cases in female were breast cancer (904, 35,6%), cervical cancer (416, 16,4%), ovarian cancer (173, 6,8%), lung and bronchus cancer (87, 3,4%), hematopoietic and reticuloendothelial malignancies (83, 3,3%). For males, lung cancer (217, 14,3%), nasopharyngeal cancer (154, 10,2%), hematopoietic and reticuloendothelial malignancies (131, 8,6%), liver and intrahepatic biliary duct cancer (121, 8,0%), and colon cancer (104, 6,9%) were the most common site.

It was also observed that breast cancer and cervical cancer mostly occurred in 45-54 years old age group, while lung cancer mostly recorded in the age group of 65-74 years old, with a total of 91 cases from 2008-2012. The age group of 35-44 years old were the most common age group to develop nasopharyngeal cancer.

By ruling out code 8 and code 9, it was found that most patients were in stage 3 cancer by the time of diagnosis. Breast cancer cases were mostly found in stage 3 (109, 11,9%), stage 4 (93, 10,2%), and stage 3B (86, 9,4%). Majority of cervical cancer cases were staged 3B (83, 20%) and 2B (73, 17,5%).

For lung cancer, majority of cases were diagnosed with stage 4 (42, 13, 8%) and stage 3 (32, 10,5%). Stage 3 was the most common diagnosed stage for nasopharyngeal cancer (31, 14,5%), followed by stage 1

(16, 7,5%) and stage 2 (13, 61%).

The most common morphology type for five most common cancer was recorded. For breast cancer the most common morphology type was infiltrating duct carcinoma (359, 39,3%), while for cervix uteri, it was non-keratinizing squamous cell carcinoma (135, 32,5%). Adenocarcinoma was the most common morphology for lung and bronchial cancer (66, 21,7%), undifferentiated carcinoma for nasopharyngeal cancer (72, 33,5%), and acute lymphoblastic leukemia (31,14,5%) for hematopoietic and reticuloendothelial system cancer.

DISCUSSION

Table 1 showed an overall increase in cancer case estimation rate per 1000 population. Cancer was estimated to grow from 0,36 in 2008 to 0,39 per 1000 population in 2012 and steadily increasing. From data described above, it was first believed that the increase of estimated new cancer cases by each year was caused by the increase of population. However, further investigation revealed that the risk of developing cancer was actually greater than the rate of population growth. Some factors believed to play an important role in tackling these problems, such as improvement in health care access, growing awareness of West Jakarta residents on cancer, and a better registry system in 2012 compared to 2008. Nevertheless, this estimation still has to be studied further, due to possible underestimation of data recorded, owing to suboptimal reporting and registry system.

Based on this study, it was found that breast cancer was the highest case in West Jakarta. This finding was in concordance with most of the published studies in developing countries, mainly in Asia. For instance, the Philippines reported that breast cancer was the most common malignancy (15%) followed by lung cancer (14%).⁶ Malaysia, on the other hand, recorded that breast cancer was the most common cancer in 2007. However, the was recorded decrease in 2008.⁷ The pattern was found similar in Indonesia, possibly due to a similar lifestyle, geographical pattern, socio-culture, and economic state in countries mentioned above. The distribution of proportion based on tumor location was provided in **Table 2**.

This study result was similar to a previous study conducted by Brohet in 2016, reported that most cancers developed in the age range from 45-54 years old.⁸ Cancer treatment in younger age at diagnosis believed to be more effective than adult age, resulting in prolonged survival and life expectancy, making

current age at diagnosis as a significant prognostic factor.⁹

The label "unknown" for the common category in cancer patients based on their occupation reflected the system's ignorance and unawareness to fill out detailed data, and also reflected that current codes of occupation still could not facilitate all occupation grouping. This study also found housewives, with most of their time spent at home, still in great risk for developing cancer. Minimal air ventilation, sewage gas from cooking indoor, and widespread use of asbestos as housing material, contributed to prolonged exposure of the carcinogenic substance to housewives.

Most cancer cases found in this study had an unknown stage. This could be caused by limited healthcare services and facilities needed for staging and also reflected on lack of skill and awareness of medical staff to input data in the medical record. On the other hand, high cancer cases in advanced stage (stage 3 and 4) in this study captured the poor condition of Indonesia's population in detecting early stage of cancer. Most of the patients seek treatment after they are in the advanced or terminal stage. Some cancer types in earlier stage did not have signs or symptoms, making it difficult to diagnose in early stages. Other contributing factors were patient denial on having cancer, low economic status, and lack of knowledge on the importance of early detection. Early detection of cancer not only it could reduce cancer mortality rate, but also improve the quality of life of patients.¹⁰

Breast and lung cancer are consistently being the highest prevalence of case occurred worldwide in West Jakarta, based on the results of this study. The result of gender and topography in this study were similar to the data provided by GLOBOCAN 2012.³ Lung cancer was the most common cancer occurred in males, while breast cancer was the most common cancer in females, while the rest of the cases slightly differs than other developing countries.¹¹ Singapore as one of a developed country in the world founded that colorectal, lung and prostate cancer were the most common cancer occurring in males, while breast, colorectal, and lung cancer were the most common cancer occurring in females. The difference observed in both countries provides a theory that one of the risk factors for developing cancer is high infection rate, shown by a high rate of cervical and nasopharyngeal cases that are widely known due to viral infection, while in colorectal, it was predominantly caused by lifestyle.¹² The finding of age group 45-54 years old as the most common group with breast and cervical cancer were consistent with the current theory and publications.

Breast cancer was mostly diagnosed in 40-60 years old, and the risk factors were first menstruation before the age of 10, late menopause after 55 years old, and no childbirth after 35 years old.¹² Cervical cancer is mostly caused by Human Papilloma Virus (HPV), with risk factors of having multiple sex partners, history of sexual transmitted disease, long use of oral contraceptive, smoking, and low socioeconomic state. These factors were common in Indonesia, causing a high number of cervical cancer cases in Indonesia.⁴

The finding of lung cancer age group in this study was in concordance with American Cancer Society Lung Cancer Key Statistics that the median age of patients diagnosed with lung cancer was 70 years old.¹² Due to its high pollutant in its air, it was not surprising that developing countries had to face an increasing number of lung cancer. Accumulation on carcinogenic substances along with increasing age of its population caused a higher risk for developing lung cancer.¹²

Nasopharyngeal cancer risk factors include infection of Epstein-Barr Virus, high consumption of salted fish and preserved food, and smoking. Nasopharyngeal cancer develops rapidly in developing countries, especially in low-income countries and the culture of consuming preserved food. Regarding age, the finding that age group of 35-44 years old was mostly due to years of accumulation of preserved food consumption and smoking.¹³

Acute lymphoblastic leukemia (ALL) was the most common type of hematopoietic and reticuloendothelial system malignancy, mostly occurred in children. This finding was in concordance to 2011 Cancer Detection Guideline in Children, reporting that ALL was the most common type of cancer, followed by acute myeloid leukemia. The incidence reached its peak in a group of 2-5 years old and 15 years old with an incidence rate of 4-4,5/100.000 in each year.¹⁴

There were some limitations to this study. First, this study only described cancer prevalence and events in West Jakarta in 2008-2012 without aiming to find any correlation among variables mentioned nor measuring factors that may contribute to cancer prevalence in West Jakarta in 2008-2012. Second, this study used secondary data, and there were some missing data sources that cannot be retrieved, thus left blank. The blank data was likely due to incomplete entry on medical record by medical staff or different registered categories used in a different hospital.

In conclusion, a total of 4,057 cancer cases in West Jakarta were recorded. Cancer case estimation had grown from 0,36 in 2008 to 0,39 per 1000 population in 2012, with breast, cervical, lung and bronchial,

nasopharyngeal, hematopoietic and reticuloendothelial system was the most common cancer location in West Jakarta region. This study was the first study to investigate cancer data in West Jakarta. Therefore, the data presented in this study could be used for policy-making in an attempt to prevent cancer, especially in West Jakarta.

Table 1. Distribution of Cancer Proportion in West Jakarta in 2008-2012

Year	Total cases	Total Population	Case estimation (per 1000)
2008	798	2.202.672	0.36
2009	723	2.221.243	0.32
2010	694	2.281.945	0.30
2011	897	2.328.689	0.38
2012	945	2.395.130	0.39

Table 2. Distribution of Cancer Proportion in West Jakarta Based on Tumor Location in 2008-2012

1	Breast	914	22,5
2	Cervix uteri	416	10,3
3	Lung and bronchus	304	7,5
4	Nasopharynx	216	5,3
5	Hematopoietic and reticuloendothelial	214	5,3
6	Colon	182	4,5
7	Hepar and biliary tract	174	4,3
8	Ovarium	173	4,3
9	Lymphatic	142	3,5
10	Thyroid	109	2,7
11	Rectum	106	2,6
12	Prostate	102	2,5
13	Skin	94	2,3
14	Brain	83	2,0
15	Unknown primary site*	75	1,8
16	Pancreas	65	1,6
17	Soft tissue and subcutaneous	59	1,5
18	Endometrium	51	1,3
19	Bone, cartilage, and joint	47	1,2
20	Bladder	45	1,1
21	Stomach	40	1,0
22	Unknown †	39	1,0
23	Tongue	34	0,8
24	Other Oral Cavities	32	0,8
25	Sinonasal and middle ear	32	0,8
26	Renal	31	0,8
27	Larynx	27	0,7
28	Uterus Body	26	0,6
29	Tonsil	23	0,6
30	Eye	20	0,5
31	Ill-defined sites‡	20	0,5
32	Parotid and other salivary glands	19	0,5
33	Meningen	18	0,4
34	Gall bladder and other biliary tracts	18	0,4
35	Testis	15	0,4
36	Placenta	12	0,3
37	Heart, mediastinum, and pleura	11	0,3
38	Retroperitoneum dan peritoneum	10	0,2
39	Esophagus	7	0,2
40	Vulva	7	0,2
41	Other endocrine glands	6	0,1
42	The spinal cord, cranial nerve, and another central nervous system	6	0,1
43	Other digestive organs	5	0,1
44	Vagina	5	0,1
45	Anus	4	0,1
46	Thymus	4	0,1
47	Small Intestine	4	0,1
48	Ureter	2	0,0
49	Penis	2	0,0
50	Other male organs	2	0,0
51	The peripheral and autonomic nerve system	2	0,0
52	Renal pelvis	1	0,0
53	Hypopharynx	1	0,0
54	Oropharynx	1	0,0

*Unknown primary site: primary tumor location was not known yet the metastatic location was known.

†Unknown: no notes found on tumor location clinically or radiologically.

‡Ill-defined sites: tumor organ location was known, but not specifically

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