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

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Abstract

There has been an effort of cancer registry in Cancer Control Program, especially Hospital-based, but it would not be useful if the data and procedure was not standardized. This study was a cross-sectional study with cancer data collected from every health facility in South Jakarta from 2017, April to May. Inclusion criteria was every patient that resided in South Jakarta from 2008, January 1st to 2012, December 31st with no exclusion criteria. Five most common cancers for male are hematopoietic and reticuloendothelial systems, nasopharynx, lung, lymph nodes, and liver cancer, respectively. Five most common cancers in female are breast, cervix uteri, ovarium, hematopoietic and reticuloendothelial systems, thyroid gland cancer, respectively. Cancer patients were comprised by female a lot more than male with 1.86:1 frequency comparison. Compared to data from Malaysia and Singapore in the same period of time, there were some differences in cancer profile between the countries. Based on the data reviewed, the quality was not perfect, one of the examples is shortcoming of SriKandi form which was used to input the data, especially occupation data. This can be a refinement point for future research and registry of cancer in Indonesia.

Keywords: Cancer Registry, Cancer Profile, South Jakarta

INTRODUCTION

According to World Health Organization (WHO) data, malignant neoplasms are the second leading cause of death, with 8.2 million deaths in 2012.[1,2] Data from GLOBOCAN 2012 showed that the most prevalent malignant neoplasms in male are lung cancer (1.2 million cases), prostate cancer (1.1 million cases), and colorectal cancer (746,000 cases). In female, the most prevalent ones are breast cancer (1.6 million cases), colorectal cancer (610,000 cases), and cervical cancer (583,000 cases). There are some differences of the incidence in the developed and the developing countries due to several risk factors differences. Prostate, lung, and colorectal cancers were common among men in developed countries. Otherwise, lung cancer, liver cancer, and gastric cancer were common in developing countries.[2,3]

As a developing country, cancer incidence in Indonesia is 122.4 per 100.000 with breast, cervical, and lung cancer as the three most common cancer types according to GLOBOCAN 2012. However, this incidence data was calculated from Singapore and Penang patients and the mortality data of cancer in Indonesia was calculated from survival analysis statistics.[4] This was due to the fact that Indonesia could not provide any data to WHO, especially for IARC. Eventhough there was a data from Riset Kesehatan Dasar (Riskesdas) 2013, but it was taken from public survey and there was no confirmation from hospital nor death registry data.

There has been an effort in Cancer Control Program, especially Hospital-based cancer registries done by some big hospitals such as Dr. Cipto Mangunkusumo

Hospital (RSCM) and Dharmais Cancer Hospital (RSKD). However, cancer registration would not be useful if the data and procedure was not standardized. Based on the law from ministry of health and Provincial government, RSCM and several sub-regional hospitals were appointed to register cancer patients in Indonesia. This research reports cancer registry in South Jakarta subregion from 2008-2012 which came from every health facility in South Jakarta in hopes that this research will be beneficial to decision-making, future research, and future registries.

METHODS

This study was a cross-sectional study with cancer data taken from every health facility in South Jakarta from 2017, April to May. Every data was accounted based on total sampling method. Inclusion criteria was every patient which resided in South Jakarta from 2008, January 1st to 2012, December 31st with no exclusion criteria. SPSS 22.0 was used to descript frequencies along with distribution of gender, age, and histopatologic types.

From **Table 1**, cancer patients were comprised by female a lot more than male with 1.86:1 frequency comparison. The most prevalent age groups for cancer patients in South Jakarta were patients on their '40s and '60s with the peak at 45-54 years old (24%). Stay-at-home mother became the most common group in cancer patients (24.5%), followed by office worker (9.6%), but there were a lot of data that did not include occupation (31.8%) and other occupations that were not listed in the registry (31.3%).

On **Table 3** we could see the differences between male and female in the incidence of cancer type. The most common cancer in male was hematopoietic and reticuloendothelial system, nasopharyngeal cancer, bronchial and lung, lymph nodes, liver and intrahepatic bile ducts, respectively. In female, the most common was breast cancer followed by cervical cancer, ovarian, hematopoietic and reticuloendothelial systems, and thyroid gland cancer, respectively. One of the five most common cancer type in both male and female was hematopoietic and reticuloendothelial system cancer.
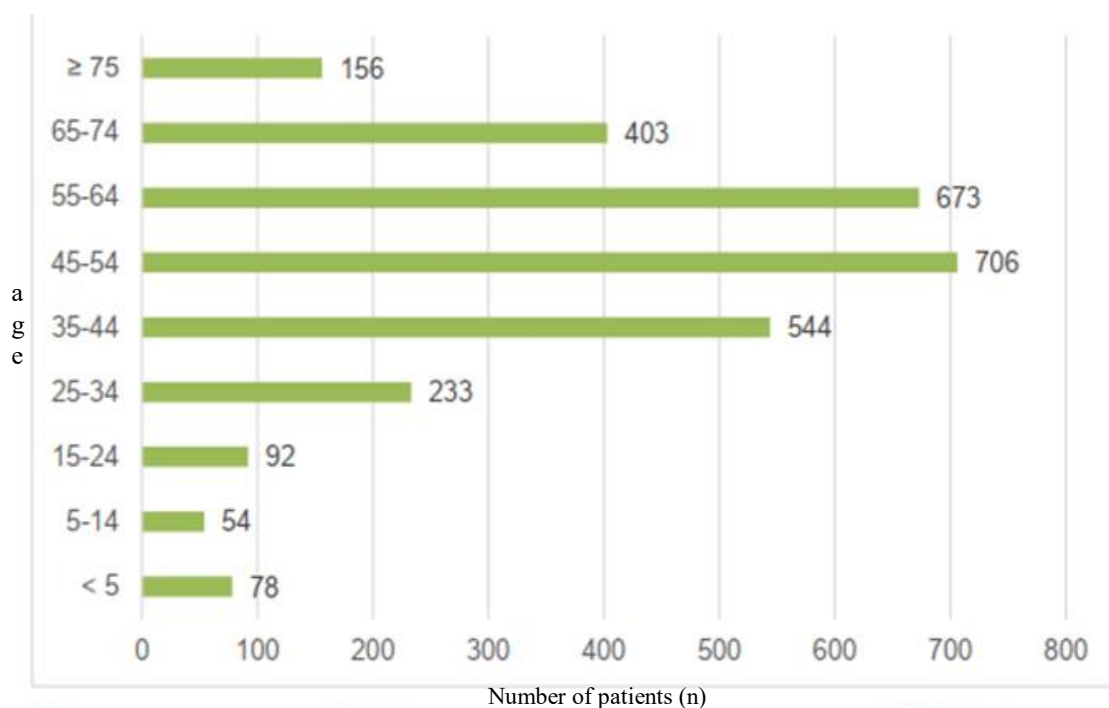
Figure 1. Age distribution of cancer patients

Table 1. Characteristic of cancer patients in South Jakarta from 2008 to 2012

Characteristics	N	%
Gender		
Male	1026	34.9
Female	1913	65.1
Age		
<5	78	2.7
5-14	54	1.8
15-24	92	3.1
25-34	233	7.9
35-44	544	18.5
45-54	706	24.0
55-65	673	22.9
65-74	403	13.7
≥75	156	5.3
Occupation		
Office Worker	283	9.5
Farmer	2	.1
Factory Worker	33	1.1
Armed Force	5	.2
Stay-at Home Mother	719	24.5
Healthcare Worker	2	.1
Teacher	6	.2
Trader	34	1.2
Others	919	31.3
No Description	936	31.8

Five most common morphology on each of the cancer type can be seen in **Table 7**. Generally, most of the morphology in South Jakarta from 2008-2012 were coded as unspecified malignant neoplasm (code 8000/3) or unspecific carcinoma (code 8010). In breast cancer, the most common morphology was invasive ductal carcinoma with 301 patients (45.74%). In cervical cancer, squamous cell carcinoma became the most common after malignant neoplasm with 97 patients (64 non-keratinizing and 33 keratinizing). For hematopoietic and reticuloendothelial systems cancer, acute lymphoblastic leukemia was the most common with 36 patients (19.05%), followed by chronic myeloid leukemia with 33 patients (17.46%). For ovarian cancer, unspecified malignant neoplasm was the most common, followed by endometrioid adenocarcinoma with 18 patients (12.95%). For Lymph node cancer, Unspecified non Hodgkin and Diffuse B-Cell Lymphoma became the most common with 39 patients (29.3%)

and 35 patients (26.32%).

DISCUSSION

Total number of cancer patients in South Jakarta from 2008-2012 were 2939 patients. RISKESDAS 2013 shows that prevalence of cancer in Indonesia was 1.4 per 1000, and cancer prevalence in Jakarta was 1.9 per 1000. With the number of South Jakarta resident of 2,141,941, the estimated cancer patients were 4070 people. Therefore, it can be assumed that cancer registration for South Jakarta region was still not optimal.

The most prevalent age group for cancer patients in South Jakarta from 2008-2012 was the 45-54 years old with 706 patients (24%). Compared with GLOBOCAN 2012, there was a difference because global most prevalent age group was above 75 years old.[4] Based on the occupation, stay-at-home mother became the most prevalent group with 719 patients (24.5%). However, 919 (31.3%) patients was from another occupation category and 936 patients (31.8%) had no occupation data available. Therefore, subsequent research should address this problem more. Stay-at-home mother became the most prevalent group could be caused by the ratio of cancer patients in this research which was 1: 1.86 (male: female).

The most common cancer location distribution in South Jakarta from 2008-2012 consisted of breast cancer with 665 patients (22.6%), cervix uteri cancer with 302 patients (10.3%), hematopoietic cancer with 194 patients (6.6%), ovarian cancer with 139 (4.7%) dan lymph node cancer with 136 patients (4.6%). There was a bit of difference between the data from our research and from GLOBOCAN 2012 which stated that five most common cancers in South East Asia was breast, cervix uteri, lung, colorectal, and oral cavity cancer. And our data differed from GLOBOCAN 2012 data in world's most prevalent cancer which are lung, breast, colorectal, prostate, and gastric cancer.[4]

In female patients from our research, the most common cancer location distribution were breast with 654 patients (34.1%), followed by cervix uteri with 301 patients (15.7%), ovarium 136 patients (7.1%), hematopoietic cancer with 86 patients (4.5%), dan thyroid cancer with 58 patients (3.0%). Compared with cancer registry from Singapore, there was a difference between those two. In Singapore, the most common was breast cancer (29.3%), followed by colorectal (13.6%), lung (7.7%), uterus (6.1%), and ovarium (5.5%).[5] Most of the cancer listed was gynecological cancer, but cervical cancer which was the second most common cancer in

Table 2. Primary site location characteristics

Characteristics	N	%
Lip (00)	2	.1
Other and unspecified parts of mouth (01,03-06)	10	.3
Tongue (02)	20	.7
Parotid gland (07)	15	.5
Other and unspecified major salivary glands (08)	4	.1
Tonsil (09)	13	.4
Oropharynx (10)	1	.0
Nasopharynx (11)	131	4.5
Hypopharynx (13)	1	.0
Other and ill-defined sites in lip, oral cavity, and pharynx (14)	2	.1
Esophagus (15)	12	.4
Stomach (16)	20	.7
Small intestine (17)	11	.4
Colon and Rectosigmoid junction (18-19)	112	3.8
Rectum (20)	77	2.6
Anus and Anal canal (21)	2	.1
Liver and intrahepatic bile ducts (22)	101	3.4
Gallbladder (23)	11	.4
Other and unspecified parts of biliary tract (24)	5	.2
Pancreas (25)	40	1.4
Other and ill-defined digestive organ (26)	6	.2
Nasal cavity, Middle ear, and Accessory (30,31)	19	.6
Larynx (32)	19	.6
Bronchus and Lung (34)	130	4.4
Thymus (37)	5	.2
Heart, Mediastinum, and Pleura (38)	13	.4
Bones, Joints, and Articular Cartilage (40-41)	34	1.2
Hematopoietic and reticuloendothelial systems (42)	194	6.6
Skin (44)	71	2.4
Retroperitoneum and Peritoneum (48)	8	.3
Connective tissue (49)	45	1.5
Breast (50)	665	22.6
Vulva (51)	5	.2
Vagina (52)	5	.2
Cervix uteri (53)	302	10.3
Corpus uteri (54-55)	67	2.3
Ovarium (56-57)	139	4.7
Placenta (58)	4	.1
Penis (60)	5	.2
Prostate gland (61)	44	1.5
Testis and Other unspecified male genital organ (62-63)	16	.5
Kidney (64)	19	.6
Renal pelvis and Ureter (65-66)	1	.0
Bladder (67)	49	1.7
Other and unspecified urinary organ (68)	1	.0
Eye and Adnexa (69)	21	.7
Meninges (70)	19	.6
Brain (71)	48	1.6
Spinal cord, Cranial Nerves, and Other parts of central nervous system (72)	8	.3
Thyroid gland (73)	89	3.0
Other endocrine glands and related structures (74-75)	8	.3
Other and ill-defined sites (76)	10	.3
Lymph nodes (77)	136	4.6
Unknown primary site (80)	144	4.9

Table 3. Five most common cancer

Gender	Cancer Type	N	%
Male	Hematopoietic and reticuloendothelial systems (42)	109	10.6
	Nasopharyngeal (11)	93	9.1
	Bronchial and Lung (34)	88	8.6
	Lymph nodes (77)	86	8.4
	Liver and intrahepatic bile ducts (22)	67	6.5
Female	Breast (50)	654	34.1
	Cervical (53)	301	15.7
	Ovarian (56-57)	136	7.1
	Hematopoietic and reticuloendothelial systems (42)	86	4.5
	Thyroid gland (73)	58	3

Table 4.Age distribution of five most common cancer

Cancer Type	Age n (%)								
	<5	5-14	15-24	25-34	35-44	45-54	55-64	65-74	≥75
Breast	1 (0.2%)	1 (0.2%)	4 (0.6%)	49 (7.4%)	177 (26.6%)	207 (31.1%)	144 (21.7%)	64 (9.6%)	18 (2.7%)
Cervical	1 (0.3%)	0 (0%)	2 (0.7%)	23 (7.6%)	62 (20.5%)	110 (36.4%)	75 (24.8%)	22 (7.3%)	7 (2.3%)
Hematopoietic and reticulo-endothelial systems	24 (13.4%)	14 (7.2%)	21 (10.8%)	11 (5.7%)	27 (13.9%)	32 (16.5%)	38 (19.6%)	19 (9.8%)	6 (3.1%)
Ovarian	1 (0.7%)	0 (0%)	12 (8.7%)	16 (11.6%)	33 (23.9%)	42 (30.4%)	27 (19.6%)	6 (4.3%)	1 (0.7%)
Lymph nodes	4 (2.9%)	6 (4.4%)	7 (5.1%)	18 (13.2%)	16 (11.8%)	28 (20.6%)	29 (21.3%)	20 (14.7%)	8 (5.9%)

Table 5. Gender distribution of five most common cancer

Cancer Type	Gender n (%)	
	Male	Female
Breast	11 (1.7%)	654 (98.3%)
Cervical	0 (0%)	302 (100%)
Hematopoietic and reticuloendothelial systems	109 (56.2%)	85 43.8%)
Ovarian	0 (0%)	138 (100%)
Lymph nodes	87 (64%)	49 (36%)

Table 6. Staging distribution of five most common cancer

Cancer Type	Stage 1	1A	1B	1C	n (%) 2	2A	2B	2C	3	3A	3B	3C	4	4A	4B	4C	Not Applicable	No Data
Breast	1 (0.3%)	2 (0.7%)	18 (6.0%)	2 (0.7%)	0 (0%)	24 (7.9%)	39 (12.9%)	0 (0%)	8 (2.6%)	2 (0.7%)	62 (20.5%)	0 (0%)	6 (2.0%)	1 (0.3%)	2 (0.7%)	0 (0%)	0 (0%)	135 (44.7%)
Cervical	12 (1.8%)	11 (1.7%)	5 (0.8%)	21 (3.2%)	4 (0.6%)	42 (6.3%)	45 (6.8%)	0 (0%)	56 (8.4%)	22 (3.3%)	80 (12.0%)	14 (2.1%)	57 (8.6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	295 (44.4%)
Hematopoietic and reticuloendothelial systems	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	194 (100%)	0 (0%)
Ovarian	0 (0%)	0 (0%)	0 (0%)	6 (4.3%)	0 (0%)	1 (0.7%)	0 (0%)	3 (2.2%)	10 (7.2%)	1 (0.7%)	0 (0%)	8 (5.8%)	8 (5.8%)	0 (0%)	1 (0.7%)	0 (0%)	0 (0%)	100 (72.5%)
Lymph nodes	1 (0.7%)	0 (0%)	1 (0.7%)	0 (0%)	0 (0%)	1 (0.7%)	2 (1.5%)	0 (0%)	17 (12.5%)	0 (0%)	0 (0%)	1 (0.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	113 (83.1%)

Table 7. Morphology distribution of five most common cancer

Morphology	Cancer Type	N	%
Breast	Invasive ductal carcinoma	301	45.74
	Malignant neoplasm	169	25.68
	Unspecific carcinoma	60	9.12
	Invasive lobular carcinoma	50	7.6
	Unspecific adenocarcinoma	23	3.5
Cervix uteri	Malignant neoplasm	80	26.85
	Unkeratinizing squamous cell carcinoma	64	21.48
	Keratinizing squamous cell carcinoma	33	11.07
	Unspecific adenocarcinoma	31	10.4
	Unspecific carcinoma	29	9.73
Hematopoietic and reticulo-endothelial systems	Acute Lymphoblastic leukemia	36	19.05
	Chronic myeloid leukemia	33	17.46
	Acute myeloid leukemia	24	12.7
	Multiple myeloma	15	7.94
	Myelodisplastic syndrome	12	6.35
Ovarium	Malignant neoplasm	35	25.18
	Endometroid adenocarcinoma	18	12.95
	Unspecific adenocarcinoma	16	11.51
	Clear cell adenocarcinoma	15	10.79
	Papillary serous cystadenoma	14	10.08
Lymph nodes	Unspecific non-hodgkin's lymphoma	39	29.32
	Diffuse B-cell lymphoma	35	26.32
	Malignant neoplasm	11	8.27
	Burkitt lymphoma	6	4.51
	Uspecific carcinoma	5	3.76+6

South Jakarta was not even in the five most common cancer list. When we compare cancer characteristics between South Jakarta from 2008-2012 and Malaysia from 2007-2011, the difference was smaller. Breast cancer ranked as the first most common (32.1%), followed by colorectal cancer (10%), cervical cancer (8.4%), ovarian cancer (6.5%), and lung cancer (5.4%).[6]

In male patients, the most common location of cancer was hematopoietic cancer with 109 patients (10.6%), followed by nasopharyngeal cancer with 93 patients (9.1%), lung cancer with 88 patients (8.6%), lymph node cancer with 86 patients (8.4%), dan hepatocarcinoma with 67 patients (6.5%). The difference is stark with the registry data in Singapore and Malaysia. In Singapore, five most common for male were colorectal cancer (17.5%), followed by lung cancer (15.4%), prostate cancer (12%), hepatocarcinoma (7.6%), and lymph node cancer (6.6%). In Malaysia,

the most common cancer location in male was lung cancer (16.3%), colorectal cancer (14.6%), nasopharyngeal cancer (8.4%), prostate cancer (6.2%), lymph node cancer (5.5%). Hematopoietic cancer became the most common cancer in South Jakarta, especially in male, whereas in Malaysia and Singapore lung cancer was the most common.[5,6]

In table 4, the most prevalent age group for five of the most common cancer was within 45-54 years old. Only hematopoietic systems malignancy which had 55-65 years old age group as the most prevalent one, eventhough the distribution was even in all of the age groups. Compared with Malaysia registry from 2007-2011, breast cancer was different because the age group was from 51-60 years old. In singapore from 2008-2012, breast cancer was the most prevalent in 35-64 years old age group, with a different system of age grouping in Singapore.[5,6]

Aproximately 40% of staging data in our research was

not completed, especially in ovarium and lymph node cancer which had 70% of missing staging data. This is an important message to remember that one of the most important prognostic factors in cancer is staging and it is one of the foundation of the treatment choice. The staging data problem has to be addressed in future cancer registry, which will need close collaboration between HBCR and local hospital's medical record department.

In morphology data, ductal invasive carcinoma was the most common histological type of cancer with 301 patients. This is the same with the findings from Malaysia and Singapore.[5,6] For cervix uteri cancer, the most common morphology was unkeratinizing squamous cell carcinoma with 64 patients (21.48%) followed by keratinizing squamous cell carcinoma with 33 patients (11.07%). Compared with Singaporean and Malaysian data this had no differ-ence.[5,6] For hematopoietic cancer, the most common morphology was acute lymphoblastic leukemia with 36 patients (19.05%), followed by chronic myeloid leukemia with 33 patients (17.46%) and acute myeloid leukemia with 24 patients (12.7%).

Based on the data reviewed, the quality was far from perfect, especially in the shortcomings of SriKandi form which was used to input the data. This can be seen from the occupation data, because a lot of patients could not state their description of the occupations. There were a lot of occupation data which were not included in patients' characteristics from the medical record, this can be a refinement point for future research and registry of cancer in Indonesia. Based on the data provided above, there has to be a commitment in future development of registry and medical record input, because it can directly affect the quality of cancer registry in hospitals and population. Indonesian government should oversee the continuity and quality of popula-tion-based cancer registry in each of its' regions. One of the way is to promote electronic health record form medical and cancer registry records which could in-crease the efficiency and quality of the data.

ACKNOWLEDGEMENTS

REFERENCES

1. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. Int J Cancer. 2015;136(5):E359–86.

2. American Cancer Society. Global Cancer Facts & Figures 3rd Edition. Am Cancer Soc [Internet]. 2015;(800):1–64. Available from: http://www.ncbi.nlm.nih.gov/pubmed/ 22019360

3. Bott R. Data dan Informasi Kesehatan Situasi Penyakit Kanker. Igarss 2014. 2014;(1):1–5.

4. IARC. Globocan 2012 [Internet]. 2016 [cited 2017 Jan 9]. Available from: http://globocan.iarc.fr/old/method/method.asp?country=360

5. National Registry of Disease Office. Cancer Incidence and Mortality 2003–2012 and selected Trends 1973 – 2012. 2015;(8):243.

6. Zainal AO, Nor Saleha IT. National Cancer Registry Report. Ministry of Health Malaysia. 2011. 1-127 p.