The Difference in Patient Characteristics based on Cervical Cancer Stage at Soedarso Hospital

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Abstract: Cervical cancer ranks fourth-most in cancer mortality in women worldwide and second in incidence and mortality from cancer in women in Indonesia. Many cervical cancer patients are diagnosed at an advanced stage with a poor prognosis and increased mortality, so it is necessary to identify the characteristics related to the stage. This research aims to determine the differences in patient characteristics based on the cervical cancer stage. This study was analytical with a cross-sectional approach. Samples were taken using consecutive sampling techniques with a total sample of 99 people. The research was conducted at Soedarso Hospital Pontianak by collecting data from medical records and an anatomical pathology laboratory. Most cervical cancer patients in this study were 41-50 years of age (39,4%), were a housewife (78,8%), had graduated from elementary school (44,4%) and had a number parity of more than 5 (31,3%). The data were analyzed using the Kruskal-Wallis. Statistical tests showed a significant difference between age (p 0.000), occupation (p 0.003), and parity (p 0.017) to the cervical cancer stage. It indicated that older ages, more parity, and housewife tended to be diagnosed with an advanced stage of cervical cancer. This study implied that older women, more parity, and housewives should be more aware of cervical cancer risk.

Keywords: cervical cancer; patient characteristic; stage

INTRODUCTION

Data from the World Health Organization (WHO) in 2018 shows that cancer is the second largest cause of death worldwide after cardiovascular disease.[1] Based on data from the Global Burden of Cancer (GLOBOCAN), the International Agency for Research on Cancer (IARC), new cases of cancer in women in the world in 2018 were breast cancer (24.22%), colorectal cancer (9.54%), lung cancer (8.41%) and cervical cancer (6.61%). The highest cause of death was breast cancer, 15.0% of the 4.2 million cases of cancer deaths in women, lung cancer (13.82%), colorectal cancer (9.51%) and cervical cancer (7.47%).[2]

Cervical cancer is one of the most common cancers in women, accounting for 311,365 deaths out of a total of 4.2 million deaths. A total of 569,847 new cases of cervical cancer occurred in 2018 out of a total of 8.6 million new cases of cancer in women. Cervical cancer ranks second after breast cancer for new cases and the highest death from cancer cases in women in Indonesia. An incidence rate reached 32,469 cases and a mortality of 18,279 cases. It was the highest in Indonesia in 2013, namely cervical cancer at 0.8‰ and breast cancer at 0.5‰. The prevalence of cervical cancer in West Kalimantan Province in 2013 was 0.4‰, with a total of 882 people.[3]

Cervical cancer is a malignancy in the uterine cervix (neck of the womb), with general symptoms of abnormal vaginal bleeding. In some cases, it may not show recognized symptoms until an advanced cancer

stage is obtained.[4] Other symptoms of cervical cancer are moderate pain during sexual intercourse, bleeding and vaginal discharge. In addition, patients at an advanced stage may lose appetite, lose weight, feel tired, have pain in the genitals, pelvis, back, and legs, swelling of the legs, vaginal bleeding, foul-smelling vaginal discharge and vaginal fistulas.[5,6] Generally, these tumors that grow on the cervix originate from the type of epithelial cells and are caused by oncogenic strains of the human papillomavirus (HPV). Risk factors for cervical cancer associated with HPV exposure include having first sex at a young age, multiple sex partners, smoking and immunodeficiency.[4] Age from the first pregnancy, parity, education level and STDs (Herpes and HIV) are risk factors for cervical cancer.[7-9]

Many cervical cancer patients are diagnosed at an advanced stage that has a poor prognosis and increased mortality, so it is necessary to identify characteristics related to the cervical cancer stage. Therefore, the data on the characteristics of cervical cancer patients is expected to be a reference in efforts to treat cervical cancer, especially in the field of prevention and early detection and to know the risk factors for cervical cancer patients. This study aims to determine patient characteristics that may affect the clinical stage of cervical cancer and increase women's awareness of cervical cancer.

MATERIAL AND METHOD

This research is an analytic study using a cross-sectional approach. This research was conducted at Soedarso Hospital Pontianak, where data were collected from the Hospital Health Promotion Section, Medical Records. The study was carried out from January 2021 to February 2021. The population of this study was all cervical cancer patients at Soedarso Hospital Pontianak for the 2017-2019 period. The sample of this study was cervical cancer patients at Soedarso Hospital Pontianak for the period 2017-2019 who met the inclusion and exclusion criteria of this study. The sampling method in this study used a consecutive sampling technique with a sample of 99 people.

The inclusion criteria were (i) cervical cancer patients who were hospitalized at Soedarso Hospital Pontianak for the 2017-2019 period, (ii) cervical cancer patients who had complete medical record data and (iii) cervical cancer patients who had carried out histopathological examinations. The exclusion criteria were (i) cervical cancer patients who had complete medical record data but no clinical stage diagnosis and (ii) cervical cancer patients whose histopathological examination results were not listed.

The independent variables in this study included age, parity, occupation, education and marital history. The dependent variable in this study was the clinical stage. The age variable is the patient's age when diagnosed with cervical cancer. Education is the formal education the patient has attended/finished/achieved. Parity means the number of births ever experienced by the patient. Marital history implies the number of marriages that have taken place. Age, education, parity and marital history are ordinal scales. Occupation is included in the nominal scale.

Data analysis was carried out bivariate with the Kruskal-Wallis Test. If it showed a significant difference, it would be continued with the Mann-Whitney statistical test for all variables, except for the work variable using the Kolmogorov-Smirnov. The research instrument used in this study was a medical record data collection format that facilitated classifying the studied variables. The data collection sheet includes medical record number, age, parity number, history of number of marriages, education, occupation, and stage. Stage classified according to FIGO (Federation of Gynecology and Obstetric). This research has been approved by the Research Ethics Committee of Soedarso Hospital Pontianak with registration number 01.01/RSDS/KEPK/2021.

RESULT

The distribution of characteristics of subjects based on age, occupation, education, number of parities, history of the number of marriages, and clinical stage of cervical cancer can be seen in Table 1. Most cervical cancer patients included in this study were in the 41-50-year age group, which was 39.4%, followed by the 51-60-year age group with 29.3%. The minimum age group (3,0%) is 70 years. The most dominant occupation (78,8%) is as a housewife, and the least (3,0% each) is working as a farmer and a civil servant. Most patients had graduated from elementary school, which amounted to 44.4%. The number of parities more than 5 was the most dominant in patients (31.3%), while the least was in patients who had never experienced childbirth (3.0%). Most patients have only been married once, which is 66.7%. The most diagnosed stage in cervical cancer patients was stage IIIB, as much as 42.4%, while stage IIA was the least diagnosed in patients (4.0%).

The statistical test results of the patient's characteristics against the stage, which showed significant differences, can be seen in Table 1. Characteristics of age, education, parity, and marital history were tested using Kruskal-Wallis. If it shows a significant difference, then it will be followed by the Mann-Whitney statistical test. Meanwhile, for the occupation characteristics, the Kolmogorov-Smirnov statistical test is used. Characteristics of patients who showed significant differences in staging based on the Kruskal-Wallis statistical test were age, parity, and occupation (p-value < 0.05). The age and parity variables were then continued with the Mann-Whitney statistical test. The results of the Mann-Whitney statistical test showed significant differences in the 51-60 age group with other groups. The age group with the most significant difference based on stage was between the 41-50 and 51-60 age groups (p=0.001). The data showed that the age above 40 years found the most advanced stages. Stage IIIB is dominated by the age group of 41-50 and 51-60 years, and stage IV is dominated by the age group of 51-60 years.

The results of the Mann-Whitney statistical test showed a significant difference (p < 0.05) in patients with parity 2 and 3 against patients with parity 4 and >5. It indicates a difference in the parity group less than or equal to 3 against parity of more than 3. A parity less than or equal to 3 was mostly diagnosed with a lower stage, while a parity of more than 3 was diagnosed with a higher stage. The parity group with the most significant difference based on stage was parity group 2 and >5 (p=0.009).

Occupation also showed a significant difference in the stage based on the Kruskal-Wallis statistical test and continued by Kolmogorov-Smirnov. The significance was found between the housewife against the private employee group and the farmer group against the private employee group. The most significant difference was between the housewife and the private employee (p=0.013). Most patients who work as housewives and farmers are diagnosed at a high stage, while patients who work as private employees tend to be diagnosed at an early stage.

Table 1. Patient Characteristics Based on Stage

Characteristics	Total Stage (%)						p-value
	IB	IIA	IIB	IIIA	IIIB	IV	
	7(7.1)	4(4.1)	21(21.2)	13(13.1)	42(42.4)	12(12.1)	
Age							0.000*
≤30	3 (60)	0	1 (20)	0	1 (20)	0	
31-40	1 (7.1)	3 (21.4)	5 (35.7)	1 (7.1)	3 (21.4)	1 (20)	
41-50	1 (2.6)	0	11 (28.2)	10 (25.6)	17 (43.6)	0	
51-60	0	1 (3.4)	3 (10.3)	2 (6.9)	17 (58.6)	6 (20.7)	
61-70	2 (22.2)	0	1 (11.1)	0	3 (33.3)	3 (33.3)	
≥70	0	0	0	0	1 (33.3)	2 (66.7)	
Mean±SD	42.3±16.5	42.0±7.4	44.2±7.9	45.8±4.0	49.5±8.4	60.2±11.1	
Occupation							0.003*
Housewife	2 (2.6)	3 (3.8)	17 (21.8)	10 (12.8)	35 (44.9)	11 (14.1)	
Entrepreneur	1 (14.3)	1 (14.3)	0	1 (14.3)	4 (57.1)	0	
Farmer	0	0	0	0	2 (66.7)	1 (33.3)	
Employee	4 (50)	0	2 (25)	2 (25)	0	0	
Civil servant	0	0	2 (66.7)	0	1 (33.3)	0	
Education Level							0.352
No Formal	0	1 (33.3)	0	0	2 (66.7)	0	
Elementary	2 (4.5)	1 (2.3)	9 (20.5)	3 (6.8)	23 (52.3)	6 (13.6)	
Junior High School	2 (7.4)	0	5 (18.5)	6 (22.2)	11 (40.7)	3 (11.1)	
Senior High School	3 (14.3)	2 (9.5)	5 (23.8)	3 (14.3)	5 (23.8)	3 (14.3)	
Bachelor	0	0	2 (50.0)	1 (25)	1 (25)	0	
Parity							0.017*
0	1 (33.3)	1 (33.3)	0	0	1 (33.3)	0	
1	0	0	1 (20)	1 (20)	2 (40)	1 (20)	
2	3 (17.6)	1 (5.9)	4 (23.5)	3 (17.6)	6 (35.3)	0	
3	1 (6.3)	1 (6.3)	8 (50)	1 (6.3)	4 (25)	1 (6.3)	
4	0	0	2 (15.4)	2 (15.4)	7 (53.8)	2 (15.4)	
5	1 (7.1)	0	2 (14.3)	2 (14.3)	7 (50)	2 (14.3)	
>5	1 (3.2)	1 (3.2)	4 (12.9)	4 (12.9)	15 (48.4)	6 (19.4)	
History of marriage							0.618
Once	5 (7.1)	4 (5.7)	16 (22.9)	8 (11.4)	29 (41.4)	8 (11.4)	

Twice	2 (10)	0	4 (20)	3 (15)	8 (40)	3 (15)
≥3 times	0	0	1 (11.1)	2 (22.2)	5 (55.6)	1 (11.1)

DISCUSSION

The results of the Kruskal-Wallis statistical test (Table 1) obtained a significant value of p = 0.000, which indicates there is a significant difference between age groups in terms of the stage. The Mann-Whitney statistical test was performed to determine the differences in these age groups. Patients who have a younger age tend to experience an early stage (I-IIA), while elderly patients tend to experience an advanced stage (IIB-IVB).[10] The results of this study align with the research by Saghari (2015), revealing a relationship between age and staging, where patients with an older age tend to be diagnosed with an advanced stage.[11] Research by Fedewa (2012) also states that older patients have a higher risk of experiencing an advanced stage. The risk of an advanced stage is found in patients aged 50 years and above by 2.2-2.5 times than that of patients aged 21-34 years. The advanced stage that is diagnosed more in older patients is probably due to the lack of cervical cancer screening, such as the Papanicolaou (Pap) test and the VIA test (Visual Inspection of Acetic Acid).[12]

The most diagnosed stage in patients was IIIB. About 38 patients over 40 years old were diagnosed with stage IIIB. It may occur because cervical cancer, in its early stages, usually does not show symptoms, so women are not aware of it unless a woman is undergoing screening.[13] Early symptoms of cervical cancer can be vaginal discharge, bleeding after sexual intercourse, urination, or defecation, and it may be ignored by some women who think this is normal.[14] As many as 43.6% of the 41-50-year age group and 58.6% of the 51-60-year-old group experienced stage IIIB. It is in line with a study by Fedewa (2012), stating that the greatest change to advanced stage occurs in women aged 40-44 years and 50-59 years associated with the onset of the menopause period.[12] This late diagnosis of the advanced stage can be caused by a lack of patient awareness of screening, less effective screening programs, and the natural progression of cervical cancer.[15-16]

This study found a significant difference between occupational groups in terms of staging based on the results of the Kruskal-Wallis statistical test (Table 1). The group that showed significant differences was found in the housewife group and farmers against the group of private employees. What might explain the results of this study is that occupation is related to a person's income level and socioeconomic status, which include access to health facilities.[17] Women likely to experience cervical cancer symptoms may not visit the hospital and ignore it due to problems such as costs for treatment, remote access to health facilities, and lack of transportation facilities.[18] As a result, cervical cancer, which may initially be in an early stage, then continues to develop into an advanced stage because it is not treated for years.

Work affects income, which is related to the patient's nutritional status.[17] Poor nutritional status in cervical cancer patients can affect the patient's body condition in fighting cancer-related to the clinical stage. Furthermore, work is related to the patient's knowledge and awareness of his health. Someone who does not have a job tends to have less awareness of cervical cancer.[19] Women who had poor knowledge of cervical cancer, lack of awareness of reproductive health, personal hygiene, and cervical cancer screening, such as a VIA/Pap smear examination, which are factors that cause delays in the diagnosis of cervical cancer among homemakers related to work.[20] In addition, work is also related to socioeconomic status, which can be a major barrier to awareness to maintain health. For example, a person from a low economic group may find it difficult to carry out a VIA/Pap smear examination as it requires a high cost. Visual Inspection of Acetic Acid/Pap smear examination as early detection is one way to reduce the delay in diagnosing cervical cancer.[19,20] A woman who routinely screens for cervical cancer will be diagnosed more quickly, even from the appearance of precancerous lesions, so that it can reduce the occurrence of advanced stages of cervical cancer. Advanced cervical cancer will give severe symptoms that make the patient come to the hospital; therefore, when the patient comes to the hospital, it will be diagnosed as an advanced stage.

There was no significant relationship between the level of education and stage based on the results of statistical tests. These results are in line with research by Ibrahim, where the education level is not related to the diagnosis of the clinical stage of cervical cancer.[21] Research by Jeanne also revealed that education level is not associated with the stage in the results of multivariate analysis.[22] Things that might explain these results are that Cervical cancer patients are usually asymptomatic at an early stage, and symptoms appear when they have an advanced stage, such as abnormal bleeding, vaginal discharge, and abdominal pain.[13] In addition, the education level does not always guarantee a person's health awareness. It is possible that women with higher education still are unaware of cervical cancer screening as early detection or HPV vaccination as prevention, both of which can prevent delays in cervical cancer diagnosis. This awareness can

be influenced by the surrounding environment, such as the work environment, which can form a mindset on the importance of early detection of cervical cancer.

Based on this study, the parity showed a significant difference in the stage of cervical cancer patients. High parity with more than 3 children was found to be a significant risk factor for cervical cancer. The risk doubles with the number of pregnancies.[23] Previous studies have shown that parity is a risk factor for the presentation of advanced cervical cancer.[24] A possible mechanism in this regard is that the transformation zone in multiparous women stays longer in the ectocervix, facilitating direct exposure to the virus in the transformation zone. Moreover, hormone levels increase in pregnancy, and impaired immune response worsens the situation. Another mechanism is local tissue damage that occurs during vaginal delivery or cellular oxidative stress with an increased likelihood of DNA damage and HPV integration. The more the frequent deliveries occur through the birth canal (vaginal), the more likely a malignancy will happen in the cervix, which can then develop into cervical cancer caused by trauma/injury to the birth canal (cervical uteri), infection, and chronic irritation.[25] Therefore, it can make cancer more invasive and associated with increasing stages. Advanced stage presentation can occur due to high parity and lack of knowledge and health literacy.

The results of the Kruskal-Wallis statistical test demonstrated that the value of p = 0.618 showed no significant difference between groups with the history of the number of marriages in the clinical stage of cervical cancer patients (significant $p < 0.05$). What might explain the absence of a relationship between these two variables is that the history of the number of marriages as much as 1 or 2 times cannot be equated with many sexual partners or the behavior of changing sexual partners, which is a risk factor for cervical cancer. The risk factor in the form of many sexual partners is related to the transmission of HPV by different partners, so there is a higher risk of experiencing HPV infection.[26] In addition, 9% of the data were marital history, indicating they have only had one partner for a long time and are less likely to contract HPV.

CONCLUSION

Based on the result of this study, statistical tests showed a significant difference between age, occupation, and parity in the cervical cancer stage. Older ages, more parity, and homemakers tended to be diagnosed with an advanced stage of cervical cancer. Age is related to the natural progression of cancer, parity is related to persistent inflammation in the transformation zone, and occupation is related to nutritional status. Older women, more parity, and housewives should be more aware of the risk of cervical cancer.

CONFLICT OF INTEREST

None declared.

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