



Factors Associated with Cervical Cancer at the Regional Public Hospital Dok II Jayapura in 2021

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Abstract

Background Cervical cancer is a type of cancer that develops from the cervix, which is cylindrical in shape, protrudes, and is connected to the vagina via the external uterine os. Cervical cancer is the most common in developing countries, ranks 10th in developed countries, and ranks 5th globally. According to Anatomical Pathology data from 2010, cervical cancer ranks second out of the top ten cancers in Indonesia, with a 12.7 percent incidence. According to preliminary data from Dok II Hospital, there were 11 cases (10.4 percent) of cervical cancer or the third order among 105 cancer patients studied. **Objectives:** The purpose of this study is to identify the risk factors for cervical cancer at the Regional General Hospital Dok II Jayapura in 2021. **Methods:** This study was conducted at the Regional General Hospital Dok II Jayapura using a quantitative method and a Case Control design. A total of 105 cases, 11 cases, and 94 controls were used in the study. **Result:** According to the findings of this study, age at first birth ($p = 0.008$); OR: 0.14 (0.03 – 0.55) had a significant relationship with the incidence of cervical cancer in women at Regional General Hospital Dok II Jayapura. Meanwhile, maternal age variable ($p = 0.3$) OR: 2.5; 95 percent CI (0.5-10.2), Age of Menarche ($p = 0.72$); OR: 0.14 (0.38-5.24) and Family History of Cancer ($p = 0.7$); OR: 1.3 (0.3-4.7) have no significant relationship with the incidence of cervical cancer in women in Regional General Hospital Dok II Jayapura in 2021.

Keywords: Cervical cancer; family history of cancer.

1. Introduction

It is estimated that in 2010 the incidence of cervical cancer was 454,000 cases.

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These data were obtained from population-based cancer registrations, vital data registrations, and verbal autopsy data from 187 countries from 1980 to 2010. The annual incidence of cervical cancer increased by 3.1% from 378,000 cases in 1980. It was found that approximately 200,000 cervical cancer-related deaths were found, and 46,000 of them are women aged 15-49 years who live in developing countries [1].

According to GLOBOCAN 2020 data, the Human Papilloma Virus (HPV) has claimed 21,003 lives as the cause of cervical cancer, and there are 36,633 new cases of women. This means that 50 women in Indonesia die from cervical cancer every day, making it the second most common cancer in the country. Furthermore, it is known that more than 80% of all new cervical cancer cases discovered in Indonesia are in an advanced stage. Treatment becomes more difficult and expensive in this condition, and the success rate also decreases [2].

Breast cancer has the highest incidence in women, at 42.1 per 100,000 population, with an average death rate of 17 per 100,000 population, followed by cervical cancer at 23.4 per 100,000 population, with an average death rate of 13.9 per 100,000 population [3].

According to Adventa Aibesa's research data from the Dok II general hospital in 2021, there were 11 cases (10.4 percent) of cervical cancer, ranking third among all types of cancer treated. Based on the description above, it is clear that cervical cancer is an important problem to research due to its high prevalence and preventability. There are several risk factors for cervical cancer that are important to understand, such as reproductive factors, hormonal factors, and genetic factors, to help determine whether a woman is at high risk or not in order to prevent and detect cervical cancer early. As a result, the researcher intends to investigate the risk factors for cervical cancer in women of childbearing age at the Regional General Hospital Dok II Jayapura.

2. Methods

This study uses a quantitative method with a Case Control design carried out at the Regional General Hospital Dok II Jayapura. All 255 patients who visited the Hospital's Oncology Polyclinic between January and May 2021 were included in this study. This study had two samples: case samples and controls, with the case samples in this study being some of the female patients. In this study, 11 samples were diagnosed with cervical cancer and visited the Oncology Polyclinic of Dok II Hospital Jayapura, while the control sample consisted of 94 samples. The ratio of the case group to the control group was 1:9. Purposive sampling was used in this study as a sampling technique for specific purposes and considerations made by researchers based on previously known population characteristics.

3. Results

3.1. Relationship between Maternal Age and the Incidence of Cervical Cancer

Table 1: The relationship between the age of respondents and the incidence of cervical cancer in the DOK II Jayapura Hospital in 2021.

Age	Cases		Controls		Total	%
	n	%	n	%		
> 40 years old	9	81.8	60	63.8	69	65.7
≤ 40 years old	2	18.2	34	36.2	36	34.3
TOTAL	11	100	94	100	105	100

P-value = 0.3; OR=2.5; CI 95% (0.5-10.2)
Source: Primary data, 2021

Based on Table 1, female patients who came to visit the Oncology Polyclinic in 2021 showed. that from 11 cases of cervical cancer there were 9 (81.8%) aged > 40 years and from 94 controls there were 60 cases (63.8%) aged > 40 years. The results of the chi-square statistical test showed that the P value was 0.3 or it was interpreted that the relationship between age and the incidence of cervical cancer was not significant. The results of the analysis are known OR = 2.5, but because the lower and upper values include 1, so age is not significant.

3.2. The Relationship between the Age of Menarche and the Incidence of Cervical Cancer

Table 2: The relationship between the age of Menarche and the incidence of cervical cancer in the DOK II Jayapura Hospital in 2021.

Age of menarche	Cases		Controls		Total	%
	n	%	n	%		
< 12 years old	4	36.4	27	28.7	31	29.5
≥ 12 years old	7	63.6	67	71.3	74	70.5
TOTAL	11	100	94	100	105	100

P-value = 0.72; OR=0.14; CI 95% (0.38-5.24)

Source: Primary data, 2021

According to Table 2, female patients who visited the Oncology Polyclinic in 2021 had 4 (36.4 percent) of their first menarche (menstruation) age at risk (< 12 years), while the control group had 27 (28.7 percent) of their first menarche (menstruation) age at risk (< 12 years). The chi-square test results revealed that the P value = 0.72, or not significant, and the OR > 1, but because the lower and upper values include the number 1, which means that it is not statistically significant, it indicate that age at menarche is not a risk factor for cervical cancer.

3.3. The Relationship between the Age of First Delivery and the Incidence of Cervical Cancer

Table 3: The relationship between the age of first delivery and the incidence of cervical cancer in the DOK II Jayapura Hospital in 2021.

Age of first delivery	Cases		Controls		Total	%
	n	%	n	%		
> 35 years old	6	54.5	84	89.4	90	85.7
≤ 35 years old	5	45.5	10	10.6	15	14.3
TOTAL	11	100	94	100	105	100

P-value = 0.008; OR=0.14; CI 95% (0.03-0.55)

Source: Primary data, 2021

According to Table 3, female patients who visited the Oncology Polyclinic in 2021 included 6 (54.5 percent) whose first age was pregnant > 35 years, and 84 (89.4 percent) from the control group whose first age was pregnant < 35 years. The chi-square test results showed that the P value of 0.008 indicated that the relationship between the age of first delivery and the incidence of cervical cancer was significant. The OR value of < 1 and the lower and upper values < 1, indicated that the age of first delivery was a protective factor for the incidence of cervical cancer.

3.4. The Relationship between a family history of cancer and the Incidence of Cervical Cancer

Table 4: The relationship between the history of cancer in the family and the incidence of cervical cancer in the DOK II Jayapura Hospital in 2021.

History of Cancer in the family	Cases		Controls		Total	%
	n	%	n	%		
Yes	5	45.5	36	38.3	41	39.0
No	6	54.5	58	61.7	64	61.0
TOTAL	11	100	94	100	105	100

P-value = 0.7; OR=1.3; CI 95% (0.3-4.7)

Source: Primary data, 2021

According to Table 4, of the 11 female patients who visited the Oncology Polyclinic in 2021, 5 (45.5 percent) had a family history of cancer, while 36 (38.3 percent) of the 94 controls were known to have cancer. The chi-square test results revealed that the P value of 0.7, or the relationship between the history of cancer in the family, was not significant. The OR value of > 1, but because the lower and upper values include the number 1, which means that it is not statistically significant, it indicate that the history of cancer in the family is not a risk factor for cervical cancer.

4. Discussion

4.1. Relationship between Maternal Age and the Incidence of Cervical Cancer

Based on the results of the study, it is known that the relationship between maternal age and the incidence of cervical cancer is not significant where the results of the chi-square statistical test are known to have P value: 0.3. The results of the analysis are known OR: 2.5 but because the lower and upper values include the number 1, so the age of the mother is not significant.

The findings of this study differ from those of [4], who discovered a significant ($p < 0.05$) relationship between the incidence of cervical pre-cancerous lesions and age > 35 years in Women of Childbearing Age Couples in the Muara Bungo Health Center Work Area. The findings of this study also contradict the findings of [5] at the Jatinegara Health Center in Jakarta, who discovered that the majority of positive VIA cases increased after the age of 35. Nindrea (2017) discovered the same thing while conducting research at Dr. Mohammad Hoesin Hospital Palembang discovered that more than half (70%) of women over the age of 35 had pre-cancerous lesions on their cervix [6].

This research differs from Dewi's findings in Denpasar City, specifically in the four health centers that serve IVA. Dewi (2017) concluded from a study of 120 respondents that pre-cervical cancer lesions were more common in women over the age of 35. (40-49 years) [7]. All of the above-mentioned studies discovered that the peak incidence of cervical cancer occurred between the ages of 40 and 55. This finding differs from the findings of Ike Yuviska in 2015, who discovered that maternal age is associated with an increased risk of cervical cancer (P-Value = 0.006 ; OR = 2.877) [8].

Cervical cancer is frequently diagnosed at a young age; approximately 25-30% of cases occur before the age of 25. According to Setyarini in Manoppo (2016), young adults aged 18-40 years are frequently associated with the fertile period, which is a triggering factor for cervical cancer [9]. There are many health issues during this time, such as pregnancy disorders, chronic fatigue from child care, and career demands. Obesity, cancer, depression, and other serious illnesses strike at this age. Then, according to Setyarini (2009), people over the age of 35 are 4.23 times more likely to develop uterine cancer than people under the age of 35 [10].

According to Anggraeni in Fitriasia (2019), the risk of cervical cancer more than doubles between the ages of 35 and 60. The increased risk of cancer in the elderly is due to a combination of increased and longer exposure to carcinogens and immune system weakness. Not to mention that during this time, health issues alternate with pregnancy disorders, fatigue from child care, and career demands. Obesity, cancer, depression, and other serious illnesses strike at this age [4].

4.2. Relationship between the Age of Menarche and the Incidence of Cervical Cancer

Based on the results of the chi-square test, it is known that the P value = 0.72 or the relationship between the age of menstruation (menarche) and the incidence of cervical cancer is not significant and the OR value < 1 means that age at menarche is not a risk factor for cervical cancer.

Hormones are widely believed to play a role in the etiology of cervical cancer. Estrogen is the most studied hormone because of epidemiological evidence that prolonged exposure to estrogen (early menarche, late menopause, null parity, and delayed pregnancy) increases the risk of cervical cancer.

4.3. The Relationship between the Age of First Delivery and the Incidence of Cervical Cancer

The results of this study showed that the relationship between age at first giving birth with cervical cancer in women at the Regional General Hospital Dok II Jayapura was significant. The results of the chi-square statistical test are known to have P Value = 0.008 or < from Alpha = 0.05 and OR = 0.14 which is interpreted as not a risk factor.

The results of this study are comparable to Norma Ningtiyas' research in 2019 which found that there was a relationship between age at first giving birth and the incidence of cervical cancer [11]. The same thing was found by Vita Wulandari in 2017 who found that there was a relationship between age at first giving birth <18 years and the incidence of cervical cancer ($p = 0.024$) OR 2.34 (95% CI 1.09–5.02) [12].

In addition, pregnancy will reduce the number of a person's menstrual cycle. The hormones estrogen and progesterone play an important role in shaping a person's menstrual cycle. With a decrease in the number of menstrual cycles, the body's exposure to these hormones will also decrease, this can reduce the risk of cervical cancer [13].

4.4. The Relationship between a family history of cancer and the Incidence of Cervical Cancer

The results of this study found that the relationship between family history of cancer and cervical cancer was not significant with the chi-square test results obtained P value = 0.7 and OR = 1.3 95% CI (0.3-4.7)

The results of this study are different from research from Yuviska in 2015 which found that there was a relationship between family history and the incidence of cervical cancer with family history (P-Value = 0.022; OR = 2.329) at the Hospital of Dr. H Abdul Moeloek Lampung Province [8].

Having a family member (mother or sister) who has had cervical cancer makes a person have a 2-3 times greater risk of cervical cancer compared to people who do not have a history of cervical cancer in their family. This is due to the condition of the inability to fight HPV infection that is genetically inherited.

Cancer is considered a group of cellular and genetic diseases because it originates from a single cell that has undergone a DNA mutation as a basic component of genes. Cells that are genetically damaged are no longer sensitive to normal cell cycle regulatory mechanisms so they will continue to proliferate without control. Mutations that occur in DNA in genes that regulate cell cycles (cell growth, death and maintenance) will cause cell cycle irregularities and one of the consequences is the formation of cancer or carcinogenesis.

The National Cancer Institute (2009), states that BRCA1 and BRCA2 are genes in humans that belong to a class of genes known as tumor suppressor genes. Family history of cancer is one of the risk factors for cervical cancer

[14]. The most common risk factor is a history of cervical cancer in first-degree relatives of the mother [15]. One of the main reasons for this risk is an inherited mutation in one of the two genes, namely BRCA1 and BRCA2 [16]. Family history is an important component in the history of patients who will be screened for cervical cancer. There is an increased risk of malignancy in women whose families suffer from cervical cancer, namely the presence of mutations in several genes (BRCA1 and BRCA2).

5. Conclusion

Age at first birth was significantly related to the incidence of cervical cancer with p value = 0.008 and OR: 0.14 (0.03 – 0.55). Meanwhile, the variable of maternal age (p = 0.3) OR: 2.5 95% CI (0.5-10.2), Age of Menarche (p = 0.72) OR: 0.14 (0.03-0.5), and Family History of Cancer (p = 0.7) OR: 1.3 (0.3-4.7) were not the incidence of cervical cancer in women in the Regional Public Hospital Dok II Jayapura in 2021.

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