

Determinants Of Cervic Cancer In The Faisal Islamic Hospital, Makassar City, 2022

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Abstract

Cervical cancer is a major cause of cancer morbidity and mortality among women. According to the World Health Organization (WHO) in 2022, the estimated incidence of cervical cancer is 604,000 new cases and 342,000 deaths throughout 2020. 90% of the incidence and deaths from cervical cancer occur in low- and middle-income countries. The objective the research to determine the risk between menarche, changing sexual partners, nutritional status, smoking, and family history of cervical cancer and the incidence of cervical cancer. This study used a case control design with a retrospective analytic type of research. The research sample was 104 respondents, namely 52 cases (cervical cancer) and 52 controls (uterine myoma). Sampling used a simple random sampling method (case-control). Statistical analysis used was chi square test for bivariate analysis and multiple logistic regression for multivariate analysis which was intended to determine the magnitude of risk between outcome and exposure variables. Results are expressed in odds ratios. The findings in this study were menarche (OR: 5,829 (1,803-18,838); CL = 95%; P = 0,001) changing sexual partners (OR: 5,412 (1,836-15,953) CL=95%; P=0,001) and status nutrition (OR: 4.792 (1.732-13.25) CL=95%; P=0.002) was the determinant of cervical cancer incidence. Meanwhile, smoking and family history of cervical cancer were not significant (OR: 3.122 (0.314-31.047) CL=95%; P=0.308). Changing sexual partners is the most influential variable on the incidence of cervical cancer. The highest risk of cervical cancer is in women who experience menarche < 15 years, change sexual partners, and have poor nutritional status. For women who experience menarche <15 years, it is necessary to carry out HPV vaccination as a primary prevention effort.

Keywords: Cervical Cancer, Menarche, Nutrition, and Islam.

Introduction

Cervical cancer is the leading cause of cancer morbidity and mortality among women [1]. This cancer usually affects women aged 30-35 years [2]. In addition, globally cervical cancer is in the top three cancers that attack women aged <45 years, namely 79% in 146 among 185 countries in the world [3]. Where most of these countries are found in the Sub-Saharan Region of Africa, Melanesia, South America, and Southeast Asia [4].

According to the World Health Organization (WHO) in 2022, the estimated incidence of cervical cancer is 604,000 new cases and 342,000 deaths throughout 2020. 90% of the incidence and deaths from cervical cancer in 2020 will occur in low- and middle-income countries [5]. The highest incidence of cervical cancer occurred in East Africa with an incidence of 40.1/100,000 women and contributed to death by 28.6/100,000 women. The lowest incidence occurred in the West Asian

region with an incidence of 4.1/100,000 women and contributed to deaths of 2.3/100,000 women. Meanwhile, in Southeast Asia, the incidence of cervical cancer is 17.8/100,000 women and contributes to death by 10.0/100,000 women⁴. In Asia, cervical cancer is the 3rd most common type of cancer in women. In 2018, in Asia there were 315,346 new cases and 168,411 deaths from cervical cancer. Indonesia is one of the countries in Asia that contributes to the incidence of cervical cancer by 24.5/100,000 women every year [6].

The Infodatin Cancer report (2019) shows that in Indonesia, the burden of cervical cancer is around 19.12% of the total incidence of cancer in women [7]. The data from RISKESDAS (2013) show that of all provinces in Indonesia, South Sulawesi Province ranks 26th with an estimated number of cervical cancer cases as many as 3,400 cases [8]. Based on Medical Record Data from the Hospital. Islam Faisal Makassar obtained the incidence of cervical cancer in 2019 as many as 75 people, in

2020 as many as 17 people, and in 2021 as many as 53 people.

Cervical cancer has a significant impact on the incidence of cancer mortality and morbidity among women [5]. In addition to the burden of illness and death that continues to undermine women, cervical cancer also has an impact on the high economic burden and social burden in our society. Where the death rate from cervical cancer is 2 times higher among women who live in areas with high poverty rates compared to areas with low poverty rates [4].

Researchers are interested in the following topics based on the above context to determine the determinants of cervical cancer incidence at the Faisal Islamic Hospital Makassar in 2022.

Methods

Study Design and Sample Selection

This study used a case control design with a retrospective analytical type, namely to describe the incidence of cervical cancer by collecting data based on a medical record survey. To prevent bias, age-based matching was performed [9].

The sampling technique used in this study is simple random sampling, namely sampling from the population is carried out randomly without regard to the existing strata in the population (10). The sample formula used is as follows:

$$n = \frac{[Z_{1-\alpha/2}]^2 \cdot p_1 \cdot p_2}{(p_1 - p_2)^2} \quad (1)$$

With a value of P1 0.71 and P2 0.4. Thus, the number of samples for each group is 52 (the case group is 52 people and the control group is 52 people) with a ratio of case and control samples

1:1 so that the total sample size is 104 people. Inclusion criteria in this study were complete, moderate and or have undergone treatment (hospitalization). While the exclusion criteria in this study were patients who were being treated in the ICU, medical records were being used by doctors. Statistical analysis used was chi square test was used for bivariate analysis and multiple logistic regression was used for multivariate analysis which was intended to determine the magnitude of risk between outcome and exposure variables. Results are expressed in odds ratio [11].

Ethical Considerations

In conducting this research, the researcher used research ethics from the Faculty of Public Health, Hasanuddin University, South Sulawesi, Indonesia with ethics number 4898/UN4.14.1/TP.01.02/2022.

After the data is collected, it is then processed through editing, coding, and data entry. Editing is a method of checking the accuracy of the data that has been collected. Furthermore, the appropriate data is coded to facilitate tabulation and analysis in numerical code (numbers) of data consisting of several categories. Then enter the data collected into the master table or computer database. Meanwhile, the relationship between the independent and dependent variables was investigated using bivariate analysis, namely the chi square test. Furthermore, the variables that meet the requirements with P value < 0.25 will be included in the multivariate test, namely the multiple logistic regression test.

Results and Discussion

Distribution of Determinants of Cervical Cancer Incidence

Table 1. Determinants of Cervical Cancer Incidence in hospitals. Islam Faisal Makassar in 2022

No	Variable	Incidence of Cervical Cancer				Crude OR (95% CL)	P
		Case		Control			
		n	%	n	%		
1	Menarche						
	< 15 years	48	92,3	35	67,3	5,829	0,001
	≥ 15 years	4	7,7	17	32,7	(1,803-18,838)	
2	Changing sexual partners						
	≥ 2	19	36,5	5	9,6	5,412	0,001
	1	33	63,5	47	90,4	(1,836-15,953)	
3	Nutritional Status						
	Bad	20	38,5	6	11,5	4,792	0,002

	Good	32	61,5	46	88,5	(1,732-13,259)	
4	Smoke						
	Yes	3	5,8	1	1,9	3,122	0,308
	Not	49	94,2	51	98,1	(0,314-31,047)	
6	Family History of Cervical Cancer						
	Yes	3	5,8	1	1,9	3,122	0,308
	Not	49	94,2	51	98,1	(0,314-31,047)	

Source: Secondary Data

Based on table 1 regarding the distribution of respondents based on age at menarche, the high risk of cervical cancer is in respondents who experience menarche <15 years and low risk of cervical cancer is in respondents who experience menarche 15 years. The results of research at the hospital. Islam Faisal Makassar showed that menarche at the age of <15 years was found in the case group as many as 48 respondents (92.3%) compared to the control group of 35 respondents (67.3%).

The results of the analysis of the odds ratio (OR) on menarche obtained an OR of 5.829 at the confidence level (CI=95%; P=0.001), with the lower limit = 1.803 and the upper limit = 18,838. Therefore, the lower and upper limit values do not include a value of one, so menarche is a determinant of cervical cancer incidence. Thus, menarche <15 years has a 5.829 times greater risk of cervical cancer compared to menarche 15 years.

Based on table 1, the high risk of cervical cancer is in respondents who have 2 sexual partners and low risk of cervical cancer is in respondents who have 1 sexual partner. The results of research at the hospital. Islam Faisal Makassar, showed that women who changed sexual partners were mostly found in the case group, as many as 19 respondents (36.5%) compared to the control group, which was 5 respondents (9.6%).

The results of the analysis of the odds ratio (OR) on the habit of changing sexual partners obtained an OR of 5.412 at the confidence level (CI=95%; P=0.001), with the lower limit = 1.836 and the upper limit = 15.953. Therefore, the lower and upper limit values do not include a value of one, so women who have 2 sexual partners are the determinants of cervical cancer incidence. Thus, changing sexual partners have a 5.412 times greater risk of developing cervical cancer compared to those who only have 1 sexual partner.

Based on table 1 regarding the distribution of respondents based on nutritional status, the high risk of cervical cancer is in respondents with poor nutritional status and low risk of cervical cancer is

in respondents with good nutritional status. The results of research at the hospital. Islam Faisal Makassar, showed that there was a lot of poor nutritional status in the case group, as many as 20 respondents (38.5%) compared to the control group, which was 6 respondents (11.5%).

The results of the analysis of the odds ratio (OR) on nutritional status obtained an OR of 4.792 at the confidence level (CI=95%; P=0.002), with the lower limit = 1.732 and the upper limit = 13,259. Therefore, the value of the lower and upper limits does not include a value of one, so poor nutritional status is a determinant of the incidence of cervical cancer. Thus, poor nutritional status has a risk of 4.792 times greater for cervical cancer compared to good nutritional status.

Based on table 1 regarding the distribution of respondents based on smoking habits, the high risk of cervical cancer is in respondents who smoke and the low risk of cervical cancer is in respondents who do not smoke. The results of research at the hospital. Islam Faisal Makassar, showed that smoking was mostly found in the case group, as many as 3 respondents (5.8%) compared to the control group, which was 1 respondent (1.9%).

The results of the analysis of the odds ratio (OR) for smoking obtained an OR of 3.122 at the confidence level (CI=95%; P=0.308), with the lower limit = 0.314 and the upper limit = 31.047. Therefore, the lower limit value < the value of one and the upper limit is not equal to one, so smoking is not a determinant of cervical cancer incidence. Thus, smoking is protective.

Based on table 1 regarding the distribution of respondents based on family history of cervical cancer, the high risk of cervical cancer is in respondents who have a family history of cervical cancer and low risk of cervical cancer is in respondents who do not have a family history of cervical cancer. The results of research at the hospital. Islam Faisal Makassar, showed that a family history of cervical cancer was found in the case group, namely 3 respondents (5.8%)

compared to the control group, which was 1 respondent (1.9%).

The results of the analysis of the odds ratio (OR) for a family history of cervical cancer obtained an OR of 3.122 at the confidence level (CI=95%; P=0.308), with the lower limit = 0.314 and the

upper limit = 31.047. Therefore, the lower limit value < the value of one and the upper limit not equal to one, then the family history of cervical cancer is not a determinant of cervical cancer incidence. Thus, a family history of cervical cancer is protective.

Table 2. Results of Variable Analysis in The Equation Multiple Logistic Regression Determinants of Cervical Cancer Incidence in hospitals. Islam Faisal Makassar in 2022

Research Variables	B	Exp (B)	Wald	P
Menarche	2,188	8,913	9,374	0.002
Changing Sexual Partners	2,113	8,276	10,192	0.001
Nutritional Status	1,740	5,698	8,687	0,003
Constant	-2,636	0,072	13,226	0,000

Source: Secondary Data

Table 2 shows that the variable changing sexual partners is the most influential determinant on the incidence of cervical cancer with a wald value of 10.192 and an Exp (B) value of 8.276 and a significance of 0.001. Thus, changing sexual partners is a determinant of cervical cancer incidence in hospitals. Islam Faisal Makassar in 2022.

Based on the multivariate analysis performed using multiple logistic regression, the second model chosen was the model. According to the model, it can be explained that the variables related to cervical cancer are changing sexual partners, menarche, and nutritional status. The logistic regression equation obtained is:

$Y = -2,636 + 2,188 (\text{Menarche}) + 2,113 (\text{changing sexual partners}) + 1,740 (\text{Nutritional Status})$.

Menarche

Based on the Odds Ratio statistical test, it is known that the age of menarche <15 years increases the risk of cervical cancer by 5,829 times more risk than those who experience menarche at the age of 15 years.

The results of this study are in line with the results of research by Sharma, et.al (2018) which showed that menarche of 13-14 years was a significant risk factor for the incidence of cervical cancer with an OR of 2.9112. The results of other studies also support this study, namely women who experience menarche 13-14 years are 3.6 times more at risk of cervical cancer [13].

A study in Brazil showed that menarche <12 years had a 1.95 times risk for developing cervical cancer, and was independently associated with CIN 2, CIN 3, and cervical cancer in the 18-30 year age group [14].

This is in line with the theory which states that women who menstruate earlier tend to have an excess of the hormone estrogen. There is a tendency that excess estrogen causes an increased risk of breast, cervical, uterine cancer in women, and prostate and testicular cancer in men [15].

Changing Sexual Partner

Based on the Odds Ratio statistical test, it is known that women who change sexual partners increase the risk of cervical cancer by 5.412 times more at risk than women who have one sexual partner. This study is not in line with research conducted in the city of Makassar which showed that changing sexual partners was not significant for the incidence of cervical cancer [16].

Another study in line with this study showed that women who have 2 sexual partners or have husbands with 2 sexual partners increase the risk of cervical cancer 2.8 times compared to those who have one sexual partner for life. Other studies that are in line with this study were also conducted by Abebein Northwest Ethiopia showed that women who have multiple sexual partners have a 3-fold risk of developing cervical cancer than those who have had one sexual partner in their lifetime [18]. Another study also showed that those who had >5 sexual partners had a 6 times risk of developing pre-cancerous cervical lesions [19].

This is in line with the theory which states that the risk of getting HPV will be even greater if we frequently change partners. Women who have multiple sexual partners have a greater risk of developing cervical cancer [20].

Nutritional Status

Based on the Odd Ratio statistical test, it is known that poor nutritional status increases the risk of cervical cancer by 4.792 times more risk than those who have good nutritional status. This study is in line with a study conducted by Sreeja which showed that a high intake of a proinflammatory diet was associated with an increased risk of carcinogenesis among women with CIN 2 or CIN 3, which was 3.79 times more risky in those who did. proinflammatory diet without activity. Meanwhile, a higher dietary inflammatory index (DII) score was associated with the risk of cervical carcinogenesis. Where DII is closely related to the risk of CIN 2 or CIN 3 which is 3.14 times more risky than those who do not diet [21].

The results of this study are also in line with the results of research by Sharma in India which showed that those who tend to consume non-vegetarian foods are 2.2 times more likely to develop cervical cancer than those who consume vegetarian foods [12]. This is in line with the theory which states that nutritional and nutritional factors can be the cause of cervical cancer, in which people with poor nutrition are susceptible to infection and are more at risk of being infected with HPV [15]. Another study conducted in South Korea showed that grade 2 obesity was significantly associated with an increased risk of cervical cancer in postmenopausal women by 1.18 times and premenopausal women by 1.27 times more risk than those who were not obese [22].

Conclusion

Menarche, changing sexual partners and nutritional status are determinants of cervical cancer incidence. Meanwhile, smoking and family history of cervical cancer were not significant. Changing sexual partners is the most influential variable on the incidence of cervical cancer.

Suggestion

The introduction of HPV vaccination starting from the early adolescent group must be carried out in public service facilities (schools, health centers, and village offices) because menarche <15 years is a determinant of cervical cancer incidence.

Research Limitations

This study did not examine the variables of history of sexually transmitted infections (STIs), personal hygiene, alcohol consumption habits, and recurrent vaginal discharge. This variable requires a different research method, namely in-depth interviews (primary data) in order to obtain concrete results related to the determinants of cervical cancer incidence.

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