

The Relationship Between Age Of Menarche And Parity With The Incidence Of Breast Cancer In The Oncology Surgery Room Of General Ahmad Yani Regional Hospital, Metro City

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ABSTRACT

Breast cancer is a disease in which breast cells grow uncontrollably and form tumors. Breast cancer is a non-communicable disease but is a deadly disease for women, (WHO, 2024) According to the World Health Organization (WHO) in 2022, there were 2.3 million women diagnosed with breast cancer. Based on Globocan data in 2020, the number of new cases of breast cancer in Indonesia in 2020 reached 16.6% or 65,858 cases out of a total of 396,914 new cases. This study generally aims to determine the relationship between age at menarche and parity with the incidence of breast cancer in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City. This study is a quantitative study with a case-control study design. Data collection was carried out through interviews and reviewing medical records. The case population was all mothers diagnosed with breast cancer in the Oncology Surgery Room, the control population was all mothers who were not diagnosed with breast cancer in the Oncology Surgery Room, the research sample consisted of 80 respondents consisting of 40 case samples and 40 control samples, taken by accidental sampling technique. The analysis used univariate analysis with frequency distribution and bivariate analysis using the chi square test by determining the 95% confidence level. The results of the study on mothers with breast cancer (case group) obtained a proportion of menarche age of 65% and a proportion of parity of 55.0%. The results of the statistical test showed a relationship between menarche age p value = 0.007 and OR 3.857 and parity p value = 0.001 and OR = 5.762. The conclusion of the study is that there is a relationship between menarche age and parity with the incidence of breast cancer. Researchers hope that hospitals can provide education to patients and the community regarding menarche age, parity and other risk factors related to breast cancer in order to minimize the occurrence of breast cancer.

Keywords: Breast cancer, age at menarche, parity

I. INTRODUCTION

Breast cancer is a non-communicable disease caused by the uncontrolled growth of breast cells, which eventually forms a tumor. This disease is one of the leading causes of death in women worldwide. In 2022, approximately 2.3 million women were diagnosed with breast cancer, and approximately 670,000 deaths occurred globally (World Health Organization, 2024). In Indonesia, breast cancer also ranks first in cancer cases, accounting for 16.6%, or approximately 65,858 cases out of a total of 396,914 new cancer cases (Ministry of Health of the Republic of Indonesia, 2022).

At the regional level, breast cancer remains a public health problem. Data from the Lampung Provincial Health Office shows that in 2021, 553 cases of breast tumors were found, then decreased to 159 cases in 2022 and increased again to 295 cases in 2023. Meanwhile, in Metro City, cases of tumors and suspected breast cancer were recorded at 15 cases in 2021, decreased to 2 cases in 2022, and increased to 31 cases in 2023 (Lampung Provincial Health Office, 2024; Metro City Health Office, 2024). Health service data at General Hospital Ahmad Yani General Hospital, Metro City, also saw an increase in breast cancer cases. In 2021, 1,981 cases were recorded, increasing to 2,250 cases in 2022 and again to 2,714 cases in 2023. This indicates that breast cancer remains a common disease treated in healthcare facilities (General Ahmad Yani General Hospital, Metro City, 2024).

Several risk factors are known to play a role in the development of breast cancer, including age, age at

menarche, age at first pregnancy, parity, history of breastfeeding, use of hormonal contraceptives, childlessness, late menopause, family history, obesity, a high-fat diet, radiation exposure, and low physical activity (Ministry of Health of the Republic of Indonesia, 2021). Early menarche is known to increase the risk of breast cancer due to prolonged exposure to the hormone estrogen. Women who experience menarche before age 12 have a 1.7 to 3.4 times higher risk of developing breast cancer than women who experience menarche after age 12 (Olfah et al., 2019).

Furthermore, parity is also an important factor influencing breast cancer risk. Women who have never given birth (nulliparous) have a 30% higher risk of developing breast cancer than women who have given birth multiple times (multiparous) (Rasjidi, 2010). Previous research has shown a significant association between age at menarche and breast cancer incidence, with women with early menarche having a 5.163 times greater risk of developing breast cancer compared to those with a normal age (Iqmy et al., 2021). Another study also found that women with a high number of births (nulliparous and primiparous) have a 4.9 times greater risk of developing breast cancer compared to multiparous women (Rahayu & Arania, 2018).

Breast cancer not only impacts physical health, such as changes in body shape, but also causes psychological and mental disorders in sufferers. Furthermore, breast cancer can spread to other organs such as the lungs, liver, brain, and bones through the lymphatic system and bloodstream. Globally, breast cancer caused approximately 670,000 deaths in 2022, and more than 22,000 deaths in Indonesia, making it one of the leading causes of cancer-related deaths (World Health Organization, 2024; Ministry of Health of the Republic of Indonesia, 2024).

Previous research has shown a relationship between age at menarche and parity with breast cancer incidence. Women with early menarche have a 5.163 times greater risk of developing breast cancer compared to those with a normal age, while women with a high number of births (nulliparous and primiparous) have a 4.9 times greater risk of developing breast cancer than multiparous women (Iqmy et al., 2021; Rahayu & Arania, 2018). Therefore, research on the relationship between age of menarche and parity with the incidence of breast cancer needs to be conducted at General Ahmad Yani Regional Hospital, Metro City.

II. RESEARCH METHODS

This study used an observational analytical design with a case-control approach to determine the relationship between age at menarche and parity with breast cancer incidence. The study was conducted in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City, in May 2025. The case population consisted of all 2,724 mothers diagnosed with breast cancer at the hospital, while the control population consisted of mothers who were not diagnosed with breast cancer. The study sample consisted of 80 respondents, consisting of 40 cases and 40 controls, with a 1:1 ratio. The sampling technique used non-probability sampling with the accidental sampling method (Notoatmodjo, 2018). Data collection was conducted using a checklist questionnaire, interviews, and documentation study through medical records. The dependent variable was breast cancer incidence, while the independent variables included age at menarche and parity. Data analysis was carried out univariately to describe the frequency distribution of variables and bivariately using the Chi-square test with a significance level of $\alpha = 0.05$ and the Odds Ratio (OR) calculation to determine the strength of the relationship.

III. RESULTS AND DISCUSSION

This study was conducted in the Oncology Surgery Room of General Ahmad Yani General Hospital, Metro City, to analyze the relationship between age at menarche and parity with breast cancer incidence in patients diagnosed and undiagnosed with breast cancer. Data collection took place from May 1 to May 31, 2025. The data obtained were then analyzed using univariate and bivariate analyses to determine the distribution of proportions and the

relationships between the variables studied.

A. Results

Univariate Analysis

The univariate analysis aimed to describe the distribution of each study variable, namely age at menarche and parity as independent variables, and breast cancer as the dependent variable. The results of the data processing are presented as follows:

1. Proportion of Age at Menarche and Parity with Breast Cancer Incidence in the Oncology Surgery Room of General Ahmad Yani General Hospital, Metro City.

Table 1. Proportion of Age at Menarche and Parity with Breast Cancer Incidence in the Oncology Surgery Room of General Ahmad Yani General Hospital, Metro City

Tabel 1. Proporsi Usia Menarche dan Paritas dengan Kejadian Kanker Payudara di Ruang Bedah Onkologi RSUD Jenderal Ahmad Yani Kota Metro

Variabel	Breast Cancer (Case Study n = 40		No Breast Cancer (Control) n = 40	
	Total	%	Total	%
Age of Menarche				
At Risk (<12 years)	26	65,0	13	32,5
Not at Risk (≥12 years)	14	35,0	27	67,5
Total	40	100,0	40	100,0
Paritas				
At Risk (≤1)	22	55,0	7	17,5
Not at Risk (>1)	18	45,0	33	82,5
Total	40	100,0	40	100,0
Total	40	100,0	40	100,0

Table 1 shows that in the case group, the majority of respondents experienced menarche at <12 years (65.0%), while in the control group, the majority experienced menarche at ≥12 years (67.5%). Based on parity, the case group was dominated by parity ≤1 (55.0%), while the control group was dominated by parity >1 (82.5%).

Analisis Bivariat

A bivariate analysis was conducted to assess the association between age at menarche and parity with breast cancer incidence in patients attending the Oncology Surgery Unit of General Ahmad Yani Regional Hospital, Metro City. The relationship between variables was analyzed using the Chi-square test, and the results are presented in tabular form for ease of interpretation.

1. Relationship between Age at Menarche and Breast Cancer Incidence in the Oncology Surgery Room, General Ahmad Yani Regional Hospital, Metro City

Table 2. Analysis of the Relationship between Age at Menarche and Breast Cancer Incidence in the Oncology Surgery Room, General Ahmad Yani Regional Hospital, Metro City

Age of Menarche	Breast Cancer						P Value	OR Value	95% CI
	Yes (Case)		No (control)		Total				
	n	%	n	%	n	%			
At Risk (<12 years)	26	65,0	13	32,5	39	48,8	0,007	3,857	1,526-9,750
Not at Risk (≥12 years)	14	35,0	27	67,5	41	51,2			
Total	40	100,0	40	100,0	80	100,0			

The analysis results showed that respondents with menarche <12 years were more common in the case group (65.0%) compared to the control group (32.5%). The Chi-square test showed a significant association between age at menarche and breast cancer incidence (p = 0.007). The OR value of 3.857 indicated that menarche <12 years increased the risk of breast cancer approximately 3.8 times compared to menarche ≥12 years.

2. The Relationship Between Parity and Breast Cancer Incidence in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City

Tabel 3. Analisis Hubungan Paritas dengan Kejadian Kanker Payudara di Ruang Bedah Onkologi RSUD Jenderal Ahmad Yani Kota Metro

Paritas	Kanker Payudara						P Value	OR Value	95% CI
	Yes (Case)		No (Control)		Total				
	n	%	n	%	n	%			
At Risk (≤1)	22	55,0	7	17,5	29	36,3	0,001	5,762	2,065-16,079
Not at Risk (>1)	18	45,0	33	82,5	51	63,7			
Total	40	100,0	40	100,0	80	100,0			

Based on Table 3, in the case group (n=40) as many as 22 respondents (55.0%) had parity ≤1, while in the control group (n=40) only 7 respondents (17.5%) had parity ≤1. The results of the Chi-square test showed a p value = 0.001 (p ≤ 0.05) which indicates a significant relationship between parity and the incidence of breast cancer in the Oncology Surgery Room of General Ahmad Yani Regional General Hospital, Metro City. The OR value = 5.762 indicates that women with parity ≤1 have a risk of approximately 5.7 times greater than

women with parity >1.

B. Discussion

1. Proportion of Maternal Menarche Age in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City

A study conducted in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City, among 80 respondents, showed that 39 respondents (48.8%) experienced menarche at age <12, while 41 respondents (51.2%) experienced menarche at age \geq 12. In the case group, the majority of respondents experienced menarche at age <12 (26) while 14 respondents (35.0%) experienced menarche at age \geq 12.

These results align with those of Wulandari et al. (2019), who reported that the majority of breast cancer patients experienced menarche at age <12 (124) out of a total of 202 respondents. Similar findings were also reported by Sofa et al. (2024) showed that 28 respondents (82.4%) in the case group experienced early menarche out of a total of 34 respondents.

Furthermore, research by Iqmy et al. (2021) also showed a high proportion in the case group, with 42 respondents (80.8%) experiencing menarche before 12 years of age out of a total of 90 respondents. These results confirm that early menarche is a factor associated with an increased risk of breast cancer.

2. Proportion of Maternal Parity in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City

A study conducted in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City, among 80 respondents, showed that 29 respondents (36.3%) had a parity at risk (\leq 1), while 51 respondents (63.7%) had a parity not at risk (>1). In the case group, of the 40 respondents, 22 respondents (55.0%) had a parity \leq 1 and 18 respondents (45.0%) had a parity >1.

The results of this study align with those of Rahayu & Arania (2018), who reported that 36 of 67 respondents (53.7%) had a high-risk parity (\leq 1). However, lower results were reported by Ningrum & Rahayu (2021), who found that only 12 respondents (6.7%) had a high-risk parity among women of childbearing age. These findings suggest that low parity may be a factor associated with an increased risk of breast cancer.

3. The Relationship between Age at Menarche and Breast Cancer Incidence in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City

Research conducted in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City, showed a significant relationship between age at menarche and breast cancer incidence with a p-value of 0.007 ($p \leq 0.05$). The analysis also showed an OR of 3.857,

meaning women with menarche <12 years old had approximately a 3.8 times greater risk of developing breast cancer compared to women with menarche \geq 12 years old.

This finding aligns with research by Sofa et al. (2024) and Fadhila et al. (2024), which also reported a significant association between age at menarche and breast cancer with p-values of 0.042 and 0.050, respectively. Furthermore, research by Iqmy et al. (2021) found similar results with $p = 0.000$ and $OR = 5.163$, indicating that early menarche significantly increases the risk of breast cancer.

Biologically, early menarche results in prolonged exposure to the hormone estrogen throughout a woman's reproductive life. Prolonged estrogen exposure can stimulate the proliferation of breast epithelial cells and increase the likelihood of cell mutations that could potentially develop into cancer (Krisdianto, 2019; Gani et al., 2022). Furthermore, excessive estrogen exposure can trigger abnormal cell growth in breast tissue (Deswita & Ningseh, 2023).

Menarche occurring before the age of 12 prolongs the duration of exposure to the hormones estrogen and progesterone, which play a role in breast tissue development. This condition can be influenced by various factors such as a high-fat diet, obesity, low physical activity, and an unhealthy lifestyle (Olfah et al., 2019). Therefore, women with early menarche require greater attention in early detection and breast health monitoring.

4. The Relationship Between Parity and Breast Cancer Incidence in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City

Research conducted in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City, showed a significant relationship between parity and breast cancer incidence with a p-value of 0.001 ($p \leq 0.05$). The analysis also showed an OR of 5.762, meaning women with a parity of ≤ 1 had a 5.7 times greater risk of developing breast cancer than women with a parity of more than 1.

This finding aligns with research by Ningrum & Rahayu (2021), which reported a significant association between parity and breast cancer with a p-value of 0.042 and an OR of 4.958, and research by Rahayu & Arania (2018), which found a p-value of 0.003 and an OR of 1.7. These results indicate that low parity is a factor associated with an increased risk of breast cancer.

Biologically, the number of pregnancies influences exposure to reproductive hormones. Women who have never given birth or who are of low parity are known to have a higher risk of developing breast cancer than multiparous women (Rasjidi, 2010). Long-term exposure to the hormone estrogen can stimulate the proliferation of breast epithelial cells and trigger abnormal cell growth (Suryani, 2020).

Furthermore, pregnancy and breastfeeding have a protective effect on breast tissue by aiding cell differentiation and reducing long-term estrogen exposure. Therefore, women of low parity or who have never given birth tend to have a higher risk of breast cancer (Kartini et al., 2023). Researchers assume that there is a significant relationship between parity, namely the number of children a woman has given birth to, and the incidence of breast cancer.

IV. CONCLUSION

Based on the results of this study on the relationship between age at menarche and parity with breast cancer incidence in the Oncology Surgery Room of General Ahmad Yani Regional Hospital, Metro City, it can be concluded that the proportion of respondents with age at menarche <12 years (high-risk category) was 48.8%, while respondents with parity ≤ 1 (high-risk category) was 36.3%. The analysis showed a significant association between age at menarche and breast cancer incidence with a p-value of 0.007 and an OR of 3.857. Furthermore, parity was also significantly associated with breast cancer incidence with a p-value of 0.001 and an OR of 5.762. These findings suggest that early menarche and low parity are factors associated with an increased risk

RECOMMENDATIONS

1. For Educational Institutions: The results of this study are expected to serve as an academic reference in developing learning materials on early detection and prevention of breast cancer. The findings regarding the relationship between age at menarche and parity and breast cancer incidence can also encourage further research and strengthen students' competencies in promotive and preventive health efforts.
2. For General Ahmad Yani Regional General Hospital in Metro City: The results of this study can be used as a consideration in improving health education for patients regarding breast cancer risk factors. Furthermore, these findings can support healthcare professionals in optimizing early detection strategies and patient counseling.

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