

## THE RELATIONSHIP BETWEEN BREASTFEEDING HISTORY AND AGE AT MENOPAUSE WITH BREAST CANCER INCIDENCE IN THE ONCOLOGY SURGERY ROOM OF JENDERAL AHMAD YANI HOSPITAL METRO CITY

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### ABSTRAK: HUBUNGAN ANTARA RIWAYAT MENYUSUI DAN USIA MENOPAUSE DENGAN INSIDENSI KANKER PAYUDARA DI RUANG BEDAH ONKOLOGI RUMAH SAKIT JENDERAL AHMAD YANI METRO CITY

Kanker payudara merupakan kanker yang menempati peringkat pertama sebagai jenis kanker yang paling sering terjadi pada perempuan di seluruh dunia. Kanker payudara menjadi urutan 2 teratas dengan presentasi kasus 11,6% atau 2.296.480 wanita yang didiagnosis menderita kanker payudara, (WHO, 2022). Penyebab kanker payudara sampai saat ini belum diketahui secara pasti namun, ada faktor risiko yang meningkatkan kemungkinan kanker payudara. Dampak kanker payudara meliputi aspek fisik, psikologis, sosial, ekonomi, dan spiritual, termasuk risiko penyebaran ke organ lain serta menjadi penyebab kematian. Tujuan umum penelitian ini untuk mengetahui hubungan antara riwayat menyusui dan usia menopause dengan kejadian kanker payudara pada wanita di Ruang Bedah Onkologi RSUD Jenderal Ahmad Yani Kota Metro. Penelitian ini merupakan penelitian case control. Populasi kasus adalah semua pasien wanita yang terdiagnosa kanker payudara yang ada di ruang bedah onkologi, populasi kontrol semua pasien wanita yang tidak terdiagnosis kanker payudara di ruang bedah onkologi, dengan sampel penelitian berjumlah 68 responden yang terdiri dari 34 sampel kasus dan 34 sampel kontrol. Analisis menggunakan uji chi-square dengan menentukan tingkat kepercayaan 95%. Hasil penelitian didapatkan proporsi wanita dengan riwayat menyusui berisiko 35,5%, dan proporsi wanita dengan usia menopause berisiko 33,8%. Ada hubungan antara riwayat menyusui dengan kanker payudara nilai p-value = 0,005. Ada hubungan antara usia menopause dengan kanker payudara nilai p-value = 0,040.

Kata Kunci: Kanker payudara; riwayat menyusui; usia menopause

### ABSTRACT

Breast cancer is the most commonly diagnosed cancer among women worldwide. It ranks as the second most prevalent cancer overall, accounting for 11.6% of all cases, with approximately 2,296,480 women diagnosed in 2022 (WHO, 2022). Although the exact cause of breast cancer remains unclear, several risk factors have been identified that increase the likelihood of its occurrence. The impact of breast cancer extends across physical, psychological, social, economic, and spiritual domains, including the risk of metastasis to other organs and its contribution to mortality. The general objective of this study was to examine the relationship between breastfeeding history and age at menopause with breast cancer incidence in the oncology surgery room of Jenderal Ahmad Yani Hospital Metro City. This study employed a case-control design. The case population consisted of all female patients diagnosed with breast cancer in the oncology surgical ward, while the control population included female patients without a breast cancer diagnosis in the same ward. A total of 68 respondents were included, comprising 34 cases and 34 controls. Data were analyzed using the chi-square test with a 95% confidence level. The results showed that 35.5% of women had a high-risk breastfeeding history, and 33.8% had a high-risk age at menopause. A significant association was found between breastfeeding history and breast cancer incidence (p-value = 0.005). In addition, age at menopause was also significantly associated with breast cancer incidence (p-value = 0.040). The findings of this study indicate that there is a significant relationship between breastfeeding history and age at menopause with the incidence of breast cancer. It is recommended that hospitals provide education regarding breast cancer risk factors in order to enhance awareness and contribute to reducing the incidence of breast cancer.

Keywords: Breast cancer; breastfeeding history; age at menopause

## INTRODUCTION

Breast cancer ranks as the most commonly diagnosed cancer among women worldwide (WHO, 2022). According to data from the International Agency for Research on Cancer (IARC) in 2022, there were 19,976,466 new cancer cases globally, with breast cancer accounting for the second highest proportion at 11.6%, or approximately 2,296,480 cases (WHO, 2022). In Indonesia, Globocan 2022 reported 408,661 new cancer cases, with breast cancer representing the highest incidence among women, totaling 66,271 cases (16.2%) (WHO, 2024). This figure reflects an increase compared to 2020, which recorded 65,858 cases (Ministry of Health, 2022).

Regional data also indicate an upward trend. In Lampung Province, 2023 records showed 112 suspected cancer cases and 278 cases of tumors or lumps, marking an increase from 2022 (Provincial Health Office of Lampung, 2023). In Metro City, 31 cases of tumors or lumps were identified from 5,684 clinical breast examinations (SADANIS) in 2023, exceeding the number reported in the previous year (Metro City Health Office, 2024). Similarly, RSUD Jenderal Ahmad Yani Metro City documented a rise in breast cancer cases from 1,407 in 2020 to 2,714 in 2023 (RSUD Jenderal Ahmad Yani, 2024).

Breast cancer is associated with a range of risk factors, including age, family history, early menarche, late menopause, parity, breastfeeding history, and the use of hormonal contraceptives (Ariani, 2015; Ministry of Health of Indonesia, 2015; Savitri et al., 2019). A study by Sofa et al. (2024) demonstrated a significant association between breastfeeding history and breast cancer incidence ( $p=0.021$ ;  $OR=4.5$ ), indicating that women who did not breastfeed have a higher risk compared to those who did. Similarly, Sari et al. (2019) reported a significant relationship between age at menopause and breast cancer incidence ( $p\leq 0.05$ ).

Prolonged exposure to estrogen plays a critical role in increasing breast cancer risk. Women who do not breastfeed tend to experience higher cumulative estrogen exposure, whereas breastfeeding reduces estrogen levels due to the predominance of prolactin. Later onset of menopause further extends the duration of estrogen exposure (Savitri et al., 2019; Gani et al., 2022).

Previous studies have identified various risk factors for breast cancer; however, most have examined these factors independently and have not specifically analyzed the combined effect of breastfeeding history and age at menopause within a single research model, particularly in specific

healthcare settings. In addition, local data examining both variables simultaneously at RSUD Jenderal Ahmad Yani Metro City remain limited, indicating a research gap that warrants further investigation.

This study offers novelty by analyzing the simultaneous relationship between breastfeeding history and age at menopause in relation to breast cancer incidence among patients in the oncology surgical ward. Based on this rationale, the study is entitled "The Relationship Between Breastfeeding History And Age At Menopause With Breast Cancer Incidence In The Oncology Surgery Room Of Jenderal Ahmad Yani Hospital Metro City."

## RESEARCH METHODS

The type of this research is quantitative research with a case-control study design. A case-control study is an analytical observational study used to identify the determinants of a disease by comparing subjects who have a condition (cases) with subjects who do not have the condition (controls) retrospectively (Syapitri et al., 2021). In this study, the respondents were divided into two groups. The case group consists of women diagnosed with breast cancer and undergoing treatment in the Oncology Surgery Room of Jenderal Ahmad Yani Hospital, Metro City based on medical records. The control group consists of women who were not diagnosed with breast cancer in the same Room. This study aims to determine the relationship between breastfeeding history and age at menopause with the incidence of breast cancer. The case population in this study is 2,724 women diagnosed with breast cancer, while the control population is women who are not diagnosed with breast cancer in the same area. The sample size was determined based on the minimum sample calculation using the odds ratio value from previous research, resulting in 34 respondents in each group with a 1:1 ratio, making the total research sample 68 respondents. Sampling was conducted using a non-probability sampling technique with the accidental sampling method. Data collection was carried out through interviews using a structured questionnaire after respondents gave their consent to participate in the study. The independent variables in this study are breastfeeding history and age at menopause, while the dependent variable is the incidence of breast cancer. Data analysis includes univariate analysis to describe the distribution of variables and bivariate analysis using the chi-square test to determine the relationship between variables with a significance level of  $\alpha = 0.05$  (Donsu, 2019).

## RESEARCH RESULT AND DISCUSSION

Based on the data processing results related to the relationship between breastfeeding history and menopause age with breast cancer incidence In The Oncology Surgery Room of Jenderal Ahmad Yani Hospital Metro City, this study was conducted in the oncology surgical Room with a total of 68 respondents. Each respondent in the case group (diagnosed with breast cancer) and the control group (not diagnosed with breast cancer) consisted of 34 people. Data collection took place from April 8 to May 8, 2025, through interviews with the respondents. The data collected will be presented through univariate and bivariate analysis. The following is an overview of the data that has been successfully obtained:

**Tabel 1**  
**Characteristics of Respondents**

Category	Total	%
Age (years)		
40 – 49	14	20,6
50 – 59	37	54,4
60 – 69	12	17,6
≥70	5	7,4
Education		
No formal education	6	8,8
Elementary school	19	27,9
Junior high school	16	23,5
Senior high school	20	29,4
Diploma I	1	1,5
Diploma III	1	1,5
Bachelor's degree	5	7,4
Occupation		
Housewife	41	60,3
Farmer	14	20,6
Self-employed	6	8,8
Entrepreneur	2	2,9
Civil servant	5	7,4

The characteristics of respondents indicate that the majority were aged 50–59 years, accounting for 54.4%, followed by those aged 40–49 years (20.6%), 60–69 years (17.6%), and ≥70 years (7.4%). This distribution shows that most respondents were in the late adulthood age group.

In terms of educational background, most respondents had completed senior high school (29.4%), followed by elementary school (27.9%) and junior high school (23.5%). A smaller proportion had no formal education (8.8%) or higher education levels, including diploma and undergraduate degrees.

Regarding occupation, the majority of respondents were housewives (60.3%), while others worked as farmers (20.6%), entrepreneurs/self-employed (11.7%), and civil servants (7.4%). This indicates that most respondents were not formally employed in structured occupational sectors.

### Univariate Analysis

The researcher has conducted data processing and univariate analysis, resulting in an overview of breastfeeding history and menopause age as follows:

Proportion of Breastfeeding History in the Oncology Surgery Room of Jenderal Ahmad Yani Hospital, Metro City

**Tabel 1**  
**Proportion of Breastfeeding History**

Breastfeeding History	Total	%
<1.5 years or not breastfeeding	24	35,3
≥1.5 years	44	64,7

The analysis results based on Table 1 show that out of 68 respondents, those with a breastfeeding history of <1.5 years or not breastfeeding amounted to 24 people (35.3%), and those with a breastfeeding history of ≥1.5 years amounted to 44 people (64.7%).

Proportion of Menopause Age in the Oncology Surgery Room of Jenderal Ahmad Yani Hospital, Metro City

**Tabel 2**  
**Proportion of Menopause Age**

Age of Menopause	Total	%
>55 years	23	33,8
≤55 years	45	66,2

The results of the analysis based on Table 2 show that out of 68 respondents, the age of menopause in the case group, respondents who experienced menopause >55 years amounted to 23 people (33.8%), while those who experienced menopause ≤55 years amounted to 45 people (66.2%).

### Analisis Bivariat

Bivariate analysis in this study aims to identify the relationship between breastfeeding

history and menopause age with the incidence of breast cancer in patients in the oncology surgical Room of Jenderal Ahmad Yani Hospital Kota Metro. The relationship between variables was analyzed using the Chi-Square Test, and the results will be presented in table form to facilitate data interpretation.

The Relationship Between Breastfeeding History and Breast Cancer Incidence in the Oncology Surgical Room of Jenderal Ahmad Yani Hospital Metro City

**Table 3**  
**Bivariate Analysis of Breastfeeding History**

Breastfeeding History	Breast Cancer Diagnosis				Total		P value	OR	95% CI
	Case		Control		n	%			
	n	%	n	%					
<1.5 years or not breastfeeding	18	52,9	6	17,6	24	35,5	0,005	5,250	1,731-15,922
≥1.5 years	16	47,1	28	82,4	44	64,7			

Based on Table 3, of the 34 respondents in the case group (diagnosed with breast cancer), 18 individuals (52.9%) had a breastfeeding history of <1.5 years or did not breastfeed at all, while in the control group (not diagnosed with breast cancer), 6 individuals (17.6%) had a breastfeeding history of <1.5 years or did not breastfeed.

The Chi-Square test results showed that the p-value = 0.005, which means  $p\text{-value} \leq \alpha$  (0.05), indicating a relationship between breastfeeding history and breast cancer incidence in the oncology

surgical Room of RSUD Jenderal Ahmad Yani Kota Metro. The OR value=5.250 (95% CI=1.731-15.922) means that women with a breastfeeding history of <1.5 years or who did not breastfeed at all are 5.250 times more likely to develop breast cancer compared to women who breastfed for ≥1.5 years.

The Relationship Between Menopause Age and Breast Cancer Incidence in the Oncology Surgery Room of RSUD Jenderal Ahmad Yani Metro City

**Table 4**  
**Bivariate Analysis of Menopause**

Age Menopause	Breast Cancer Diagnosis				Total		P value	OR	95% CI
	Case		Control		n	%			
	n	%	n	%					
>55 years	16	47,1	7	20,6	23	33,8	0,040	3,429	1,176-9,994
≤ 55 years	18	52,9	27	79,4	45	66,2			

Based on Table 4, it is known that among respondents in the case group (diagnosed with breast cancer), 16 people (47.1%) experienced menopause at > 55 years, while in the control group (not diagnosed with breast cancer), only 7 people (20.6%) experienced menopause at > 55 years.

The results of the Chi-Square test show that the p-value = 0.040, which means  $p\text{-value} \leq \alpha$  (0.05), indicating that there is a relationship between menopause age and the incidence of breast cancer in the oncology surgical Room of RSUD Jenderal Ahmad Yani Kota Metro. The OR value=3.429 (95% CI=1.176-9.994) means that women who experience menopause after 55 years are 3.429 times more likely to develop breast cancer

compared to women who experience menopause at or before 55 years.

**Proportion of Mothers' Breastfeeding History in the Oncology Surgery Room of Hospital Jenderal Ahmad Yani Metro City**

This study was conducted in the Oncology Surgery Room of RSUD Jenderal Ahmad Yani Kota Metro, involving 68 respondents. A total of 24 out of 68 people (35.3%) had a breastfeeding history of <1.5 years or did not breastfeed at all, while 44 out of 68 people (64.7%) had a breastfeeding history of ≥1.5 years. The results of this study are consistent with the research by Sofa et al. (2024), which involved 77 respondents, with a breastfeeding

history at risk in 29 people (37.7%). The study conducted by Wandari et al. (2025) showed similar results, stating that 39 out of 100 people (39%) had a breastfeeding history of <18 months or did not breastfeed at all (at risk). The results of this study were higher compared to previous research, namely the study by Sarinaex et al. (2021), which stated that mothers who breastfed for <1.5 years (at risk) amounted to 37 out of 56 people (66.1%).

### **Proportion of Menopausal Age in the Oncology Surgery Room of Hospital Jenderal Ahmad Yani Metro City**

This study was conducted in the Oncology Surgery Room of Hospital Jenderal Ahmad Yani Metro City involving 68 respondents. Overall, out of 68 respondents, 23 people (33.8%) experienced menopause at age >55 years, and 45 people (66.2%) experienced menopause at age ≤ 55 years. The results of this study are higher compared to the study by Laamiri et al. (2015), which found that the number of people at risk of menopause age (≥55 years) was 120 out of 800 people (15%). The study by Sari et al. (2019) showed even higher results, with 47 out of 105 people (44.8%) at risk of menopause age (≥55 years). Another study with even higher results compared to previous studies is the one by Listyawardhani et al. (2018), which found that 56 out of 106 people (52.8%) were at risk of menopause age (≥55 years).

### **The Relationship Between Breastfeeding History and Breast Cancer Incidence in the Oncology Surgery Room of Jenderal Ahmad Yani Hospital Metro City**

The study conducted in the Oncology Surgery Room of Jenderal Ahmad Yani Hospital Metro City regarding the relationship between breastfeeding history and breast cancer incidence showed a p-value of 0.005 ( $p \leq 0.05$ ), indicating a relationship between breastfeeding history and breast cancer incidence. The statistical analysis revealed an odds ratio (OR) of 5.250, meaning that women with a breastfeeding history of <1.5 years or no breastfeeding at all are 5.250 times more likely to develop breast cancer compared to women who breastfed for ≥1.5 years.

These findings are consistent with previous research conducted by Sofa et al. (2024) titled "Risk Factors for Breast Cancer in Women." One of the factors examined in this study was breastfeeding history. The risk factor of breastfeeding history for breast cancer, as determined by the chi-square test, yielded a p-value of 0.021, indicating a relationship between breastfeeding history and breast cancer in

women at Klinik Bintang Kimaja Kota Bandar Lampung in 2022. The OR value = 4.5, which means that mothers with a breastfeeding history of <6 months have a 4.5 times greater risk of developing breast cancer compared to mothers with a breastfeeding history of ≥6 months.

This result is also consistent with the research by Sarinaex et al. (2021) titled "The Relationship Between Breastfeeding History and Breast Cancer Incidence at RSUD Raja Ahmad Tabib Tanjungpinang." The statistical test using chi-square yielded a p-value of 0.002 ( $\leq 0.05$ ), indicating a relationship between breastfeeding history and breast cancer incidence. The OR value = 6.923, which means that mothers with a breastfeeding history of <1.5 years have a 6.923 times greater risk of developing breast cancer compared to mothers with a breastfeeding history of ≥1.5 years.

Another study with similar results was conducted by Wandari et al., (2025) titled "The Relationship Between Age, Hormonal Contraceptive Use, and Breastfeeding History with the Incidence of Breast Cancer at Hospital Provinsi NTB." For the Breastfeeding History variable, a p-value of 0.002 ( $\leq 0.05$ ) was obtained, indicating a relationship between breastfeeding history and the incidence of breast cancer. The OR value was 0.269, meaning that mothers with a breastfeeding history of < 18 months are 0.269 times more likely to develop breast cancer compared to mothers with a breastfeeding history of ≥ 18 months.

Breastfeeding influences hormonal changes in women, which are associated with breast cancer risk (Savitri et al., 2019). During lactation, levels of estrogen, progesterone, and prolactin are altered (Astutik, 2014). Increased prolactin suppresses estrogen production, while estrogen and progesterone levels decline sharply postpartum and remain low throughout breastfeeding. This hormonal reduction decreases epithelial cell proliferation in breast tissue, thereby lowering cancer risk.

In addition, breastfeeding promotes full differentiation of breast cells into functional milk-producing glands. Extended breastfeeding for 1.5–2 years has been shown to reduce the risk of breast cancer, partly due to a decrease in the cumulative number of menstrual cycles over a woman's lifetime. The longer the duration of breastfeeding, the lower the risk of developing breast cancer (Wandari et al., 2025).

### **The Relationship Between Menopause Age and Breast Cancer Incidence in the Oncology Surgery Room of Hospital Jenderal Ahmad Yani Metro City**

The research conducted on the relationship between menopause age and breast cancer incidence in the oncology surgery Room of Hospital Jenderal Ahmad Yani Kota Metro, after statistical testing, obtained a p-value of 0.021 ( $p \leq 0.05$ ), which means there is a relationship between menopause age and breast cancer incidence. The statistical analysis results also show an odds ratio (OR) of 3.429, which means women who experience menopause at > 55 years old are 3.429 times more likely to develop breast cancer compared to women who experience menopause at  $\leq 55$  years old.

The results of this study are consistent with the research by Sari et al. (2019) titled "Path Analysis of the Effect of Biological and Social Factors on the Case of Breast Cancer." Many factors were analyzed in Sari et al.'s (2019) study, one of which is menopause age. Sari et al.'s (2019) research showed that there is a relationship between menopause age >55 years and breast cancer cases, with a p-value of 0.00 ( $p \leq 0.05$ ), indicating that there is a relationship between menopause age and breast cancer cases.

The results of this study are also supported by research conducted by Listyawardhani et al., (2018) titled Risk Factors of Breast Cancer in Women at Dr. Moewardi Hospital, Surakarta, Central Java. Several factors were analyzed in that study, one of which is menopause age. Menopause age  $\geq 55$  years is a risk factor for breast cancer occurrence with a p-value of 0.001 ( $p < 0.05$ ). Based on the chi-square analysis, an Odds Ratio (OR) of 19.46 was obtained, indicating that women who experience menopause at the age of  $\geq 55$  years have a 19 times greater likelihood of developing breast cancer compared to those who undergo menopause before the age of 55.

Another relevant study is the one by Laamiri et al., (2015) titled Risk Factors for Breast Cancer of Different Age Groups: Moroccan Data. One of the factors is the age of menopause. The study states that the p-value =  $< 0.001$  ( $p\text{-value} \leq 0.05$ ) indicates a relationship between late menopause and breast cancer cases. The OR value = 2.360, meaning women who experience late menopause (>55 years) have a 2,360 times greater chance of developing breast cancer compared to those who experience menopause at  $\leq 55$  years.

Women who have late menopause or are over 55 years old have a higher risk of breast

cancer compared to those who have a normal menopause age, which is under 55 years. Estrogen is a hormone that plays a role in the development of female sexual organs. Prolonged exposure to estrogen is considered a potential initiating factor in the development of breast cancer in some women. This is caused by the presence of estrogen receptors in the epithelial cells of the milk duct. The estrogen hormone that attaches to these ducts will gradually transform these epithelial cells into cancer. Delayed menopause can cause breast cancer because the longer a woman enters menopause, the longer her body will be exposed to estrogen hormones. High levels of estrogen and progesterone will trigger the development and changes in breast glands that have various hormone receptors. Estrogen exposure will increase cell proliferation factors, and if not biologically controlled, it will progress to cancer following its stages, (Ariani, 2015).

This study has several limitations. The case-control design may introduce recall bias, as data on breastfeeding history and age at menopause were obtained through interviews. The relatively small sample size may also limit the statistical power of the analysis. Furthermore, the analysis was restricted to bivariate methods, which do not adequately control for potential confounding variables. Despite these limitations, the findings have important practical implications for healthcare services, particularly in promotive and preventive efforts. Education on the importance of optimal breastfeeding duration should be strengthened as a strategy to reduce breast cancer risk. In addition, increasing awareness of hormonal risk factors is essential to support the early detection of breast cancer.

### **CONCLUSION**

The proportion of respondents had a history of shorter breastfeeding duration or no breastfeeding, as well as later age at menopause, which are considered risk factors. Breastfeeding history is significantly associated with the incidence of breast cancer, where shorter duration or absence of breastfeeding increases the risk. Age at menopause is also significantly associated with breast cancer incidence, with later menopause contributing to a higher risk.

### **RECOMMENDATIONS**

For Educational Institutions, Educational institutions are encouraged to integrate these findings into teaching materials, particularly in

reproductive health courses, and to apply case-based learning to enhance students' understanding of breast cancer risk factors in clinical practice. For Hospital Jenderal Ahmad Yani Kota Metro, The hospital is recommended to strengthen structured education on breast cancer risk factors through counseling, health education sessions, and informational media. In addition, early detection programs, such as clinical breast examinations, should be further reinforced. For Future Researchers, Future studies are recommended to involve larger sample sizes and apply multivariate analysis to control for confounding variables. Additional variables, such as hormonal contraceptive use, age at menarche, and genetic factors, should also be considered to obtain more comprehensive findings.

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