



# JNK

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## Risk Factors of Breast Cancer based on Case-Control Study in Women of Child-Bearing Age (WEBA) at Gambiran Hospital Kediri



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### Abstract

Breast cancer is a type of cancer that starts in the breast tissue and spreads throughout the body. Every year more than 185,000 women are diagnosed with breast cancer. This incidence is increasing in developed countries (Kemenkes RI, 2015). In Indonesia, a high rate of breast cancer, especially in Kediri, makes breast cancer the number one position of cancer in women, followed by cervical cancer. Based on study by Harrianto et al. at Dr. Cipto Mangunkusumo Hospital in the Journal of Public Health 8 (2) (2013) 121-126, breast cancer risk factors include a family history of breast cancer patients (15.79%), early menarche (8.77%), nullipara (7.02%), and long-term use of pills containing estrogen (42.11%). In addition, there are also incidences of breast cancer, namely late menopause, history of breastfeeding, and obesity. From the description above, the purpose of this study was to determine and analyze the risk factors for breast cancer based on a case-control analysis in women at Gambiran Hospital, Kediri. This study used data collection sheets and field studies then processed for hypothesis testing so that the objectives of this study can be carried out. This study indicated a significant correlation between the risk factors for a breast cancer history with a p-value of 0.0000 OR 9.837. For women who have families with cancer should be aware of the onset of breast cancer. If they have reached puberty, it is recommended for early detection (screening test) through breast self-examination (BSE), IVA method, and mammography testing.

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## INTRODUCTION

Women are pretty susceptible to cancer in themselves, so it becomes a scary thing for women. The term cancer is a disease that refers to an estimated death due to a negative attitude about cancer, accompanied by not knowing medical treatment and the hospital environment. It will cause anxiety for patients who have just been diagnosed with cancer, even when the prognosis is good. However, psychological and physiological effects will cause changes in self-concept, namely self-image, actualization. (Saragih, 2010)

Breast cancer is a global problem and an important international health issue, including the most common malignancy in women in developed countries and second only to cervical cancer in developing countries, also accounting for 29% of all carcinomas diagnosed each year.

Breast cancer is the leading cause of death among all cancers experienced by women in Indonesia. Breast cancer is one of the world's most significant health problems, with a growing number of deaths due to advanced stages of the disease (WHO, 2014).

Global Cancer Observatory data in 2018 shows the incidence of cancer in Indonesia (136.2/100,000 population) is at number 8 in Southeast Asia, while in Asia, it is at 23. The most prevalent malignancy among women is breast cancer, with a 42.1 per 100,000 incidence rate and a 17 per 100,000 death rate, followed by cervical cancer, which has a rate of 23.4 per 100,000 and a death rate of 13.9 per 100,000 (Kemenkes RI, 2019).

Based on study by Harrianto et al. at Dr. Cipto Mangunkusumo Hospital in the Journal of Public Health 8 (2) (2013) 121-126, breast cancer risk factors include a family history of breast cancer patients (15.79%), early menarche (8.77%), nullipara (7.02 %), and long-term use of pills containing estrogen (42.11%). In addition, there are also incidences of breast cancer, namely late menopause, history of breastfeeding, and obesity.

Primary prevention, such as controlling risk factors and enhancing communication, information, and education, may manage breast cancer. Secondary prevention is carried out through early detection of breast cancer, namely breast self-examination (BSE) (Kemenkes RI, 2015).

This study came up with a problem statement: how the Risk Factors for Breast Cancer Occur-

rence Based on Case-Control Studies in Women at Gambiran Hospital, Kediri.

This study aims to identify and assess risk variables for breast cancer incidence in women at Gambiran Hospital in Kediri using a case-control analysis. The choice of Kediri as the object of study is due to the high incidence of breast cancer in women of child-bearing age. Data from the Kediri Health Office shows that, until 2018, cancer patients found in the working area of the Puskesmas in Kediri were eight people with cervical cancer and 31 people with breast cancer.

## METHOD

This study used the quantitative study method. It is analytical observational with a case-control design. The case-control method could be used to assess the role of the variables studied in this study. It included age, menarche, marital status, age of giving birth to their first child, breastfeeding status, breast cancer history, family history of cancer, hormonal family planning acceptors, and active/passive smoking. The population in this study included all breast cancer patients at Gambiran Hospital, Kediri. The sample in this study was female breast cancer patients who were recorded at Gambiran Hospital. The complete sampling method was employed in this investigation, with a sample size of 52 cases and 52 controls. A data collecting sheet was utilized in this investigation as an instrument. The data was examined using the Chi-Square test, and the risk analysis Odds Ratio (OR) (= 0,05) was produced.

## RESULT

A. Frequency distribution of respondents based on case and control risk factors for breast cancer in Gambiran Hospital, Kediri

**Table 1** Frequency Distribution of Respondents Based on Case and Control Risk Factors for Breast Cancer in Gambiran Hospital, Kediri

| Variable | Frequency | Percent (%) |
|----------|-----------|-------------|
| Case     | 52        |             |
| Control  | 52        | 50          |

Source: Secondary Data

B. Frequency distribution of respondents' age based on the case and control risk factors for breast cancer incidence in Gambiran Hospital, Kediri

**Table 2** Frequency Distribution of Respondents' Age Based on The Case and Control Risk Factors for Breast Cancer Incidence in Gambiran Hospital, Kediri

| Variable        | Case      | Control   | Total      |
|-----------------|-----------|-----------|------------|
| < 20 years old  | 2         | 8         | 10         |
| 20-35 years old | 16        | 21        | 37         |
| >35 years old   | 34        | 23        | 57         |
| <b>Total</b>    | <b>52</b> | <b>52</b> | <b>104</b> |

Source: Secondary Data

C. Distribution of the frequency of menarche of respondents' risk factors for breast cancer in Gambiran Hospital, Kediri

**Table 3** Distribution of The Frequency of Menarche of Respondents' Risk Factors for Breast Cancer in Gambiran Hospital, Kediri

| Variable        | Case      | Control   | Total      |
|-----------------|-----------|-----------|------------|
| < 10 years old  | 0         | 0         | 0          |
| 10-15 years old | 19        | 24        | 43         |
| >15 years old   | 33        | 28        | 61         |
| <b>Total</b>    | <b>52</b> | <b>52</b> | <b>104</b> |

Source: Secondary Data

D. Frequency distribution of respondents' marital status based on case and control risk factors for breast cancer in Gambiran Hospital, Kediri

**Table 4** Frequency Distribution of Respondents' Marital Status Based on Case and Control Risk Factors for Breast Cancer in Gambiran Hospital, Kediri

| Variable     | Case      | Control   | Total      |
|--------------|-----------|-----------|------------|
| Married      | 47        | 34        | 81         |
| Unmarried    | 5         | 18        | 23         |
| <b>Total</b> | <b>52</b> | <b>52</b> | <b>104</b> |

Source: Secondary Data

E. Frequency distribution of the respondent's child-bearing age based on case and control risk factors for breast cancer in Gambiran Hospital, Kediri

**Table 5** The Distribution of The Frequency of Child-bearing Age of Respondents is a Risk Factor for The Incidence of Breast Cancer in Gambiran Hospital, Kediri

| Variable        | Case      | Control   | Total      |
|-----------------|-----------|-----------|------------|
| < 20 years old  | 12        | 8         | 20         |
| 20-35 years old | 26        | 15        | 31         |
| >35 years old   | 9         | 10        | 19         |
| never 5         | 19        | 24        |            |
| <b>Total</b>    | <b>52</b> | <b>52</b> | <b>104</b> |

Source: Secondary Data

F. Frequency distribution of breastfeeding status of respondents based on the case and control risk factors for breast cancer incidence in Gambiran Hospital, Kediri

**Table 6** Distribution of The Frequency of Breastfeeding Status of Respondents Based on The Case and Control Risk Factors for Breast Cancer Incidence in Gambiran Hospital, Kediri

| Variable     | Case      | Control   | Total      |
|--------------|-----------|-----------|------------|
| Yes          | 48        | 24        | 72         |
| No           | 5         | 27        | 32         |
| <b>Total</b> | <b>52</b> | <b>52</b> | <b>104</b> |

Source: Secondary Data

G. Frequency distribution of respondents' hormonal family planning acceptors based on case and control risk factors for breast cancer at Gambiran Hospital, Kediri

**Table 7. Frequency distribution of respondents' hormonal family planning acceptors based on case and control risk factors for breast cancer at Gambiran Hospital, Kediri**

| Variable     | Case      | Control   | Total      |
|--------------|-----------|-----------|------------|
| Yes          | 36        | 24        | 40         |
| No           | 16        | 28        | 44         |
| <b>Total</b> | <b>52</b> | <b>52</b> | <b>104</b> |

Source: Secondary Data

H. Frequency distribution of respondent's breast cancer history based on the case and control risk factors for breast cancer incidence in Gambiran Hospital, Kediri

**Table 8 Frequency Distribution of Respondent's Breast Cancer History Based on The Case and Control Risk Factors for Breast Cancer Incidence in Gambiran Hospital, Kediri**

| Variable     | Case      | Control   | Total      |
|--------------|-----------|-----------|------------|
| Yes          | 37        | 7         | 44         |
| No           | 15        | 45        | 60         |
| <b>Total</b> | <b>52</b> | <b>52</b> | <b>104</b> |

Source: Secondary Data

I. Frequency distribution of respondent's family history of cancer-based on the case and control risk factors for breast cancer incidence in Gambiran Hospital, Kediri

**Table 11 Frequency Distribution of The Incidence of Breast Cancer Based on Cases and Controls in Women of Child-Bearing Age at Gambiran Hospital, Kediri**

| Variable                           | P-Value | OR 95% CI    |
|------------------------------------|---------|--------------|
| Age                                | 0.882   | 0.536-1.709  |
| Menarche                           | 0.320   | 0.679-3.263  |
| Marital status                     | 0.479   | 0.281-1.815  |
| Age of giving birth to first child | 0.779   | 0.657-1.370  |
| Breastfeeding status               | 0.396   | 0.622-3.321  |
| Hormonal family planning acceptors | 0.428   | 0.622-3.321  |
| History of breast cancer           | 0.000   | 3.908-24.757 |
| Family history of cancer           | 0.844   | 0.500-2.334  |
| Active/Passive Smoker              | 0.807   | 0.340-2.314  |

**Table 9 Frequency Distribution of Respondent's Family History of Cancer-Based on The Case and Control Risk Factors for Breast Cancer Incidence in Gambiran Hospital, Kediri**

| Variable     | Case      | Control   | Total      |
|--------------|-----------|-----------|------------|
| Yes          | 22        | 27        | 49         |
| No           | 30        | 25        | 55         |
| <b>Total</b> | <b>52</b> | <b>52</b> | <b>104</b> |

Source: Secondary Data

J. Frequency distribution of active/passive smokers based on case and control risk factors for breast cancer at Gambiran Hospital, Kediri

**Table 10 Frequency Distribution of Respondents' Active/Passive Smokers Based on Case and Control Risk Factors for Breast Cancer at Gambiran Hospital, Kediri**

| Variable     | Case      | Control   | Total      |
|--------------|-----------|-----------|------------|
| Active       | 4         | 17        | 21         |
| Passive      | 48        | 35        | 83         |
| <b>Total</b> | <b>52</b> | <b>52</b> | <b>104</b> |

Source: Secondary Data

K. Frequency distribution of the incidence of breast cancer based on cases and controls in women of child-bearing age at Gambiran Hospital, Kediri

## DISCUSSION

### Age

In this study, most breast cancers were found at the age of more than 35 years. Age is closely related to breast cancer. Swart's survey in the Journal of Breast Cancer Risk Factors at RSUD Dr. Soedarso Pontianak showed that age has a relative risk of > four times in causing breast cancer, and the risk of breast cancer increases with age.

### Menarche

The earlier age of the first menstruation is related to the duration of exposure to estrogen and progesterone in women, affecting tissue proliferation, including breast tissue.

### Marital Status

The article related to Breast Cancer Risk Factors in RSUD Dr. Soedarso Pontianak, Faculty of Medicine, Tanjungpura University, Pontianak by Hendri Fitoni, stated that marital status does not directly play a role in breast cancer risk. Women who are married and have children and breastfeed their children have a lower risk of developing breast cancer. Women who have children and breastfeed will experience perfect differentiation in their breasts, thereby reducing the risk of breast cancer

### Age of Giving Birth to First Child

Another study found that women who had their first kid after 30 had twice the chance of breast cancer than women who had their first child before 30. Another study conducted by Briit stated that women who gave birth to their first child under the age of 20 had a much lower risk of developing breast cancer than women who did not give birth. However, it is not known for sure the correlation between the number of parity and the incidence of breast cancer.

Another study stated that the age of first giving birth above 30 years is a risk of breast cancer only in the type of breast cancer with estrogen receptors and progesterone receptors on its cancer cells, which are commonly written as ER (+) and PR (+). In contrast, the type of cancer that does not have estrogen receptors or ER (-), giving birth to their first child at over 30 years does not increase the risk of breast cancer. In this study, most breast cancer cases occurred at their first child, 20-35 years, where that age was the productive age.

### Breastfeeding Status

Breastfeeding habits are related to the hormonal cycle. Immediately after childbirth, the high levels of the hormones estrogen and progesterone during pregnancy will decrease sharply. Stations of the hormones estrogen and progesterone will remain low during breastfeeding. Reduced levels of estrogen and progesterone in the blood during breastfeeding will reduce these hormones to the process of tissue proliferation, including breast tissue.

### Hormonal Family Planning Acceptors

Most hormonal contraceptives contain estrogen and synthetic gestagens, but hormonal contraceptives contain only gestagens. During breast growth, estrogen is the essential hormone in existence. It should be emphasized, however, that too much estrogen is not necessarily a healthy thing. Too much estrogen will overwhelm the body and switch off the activity of estrogen receptors. Estrogen can cause cancer in 2 ways. The first act as a mitogen stimulates breast tissue to increase cell division (mitosis), resulting in cancer due to cell division errors (mutations). Second, specific estrogen metabolisms also act as carcinogens or genotoxins by damaging DNA directly, causing cancer cells to form. The effects of estrogen were included in the model. The results show that the presence of extra estrogen increases the risk of developing breast cancer.

### History of Breast Cancer

The result of statistical tests with chi-square obtained p-value = 0.0000 indicates a correlation between a history of breast cancer and the incidence of breast cancer in WCBA at Gambiran Hospital, Kediri, with an OR 95% CI = 3.908-24,757. It means women of child-bearing age with a history of Breast cancer have a risk of 3.9 – 24.7 times more risk of developing breast cancer than women who do not have a history of breast cancer. According to Suryani Rina, et al.'s study published in the Health Journal entitled Risk Factors Associated with Breast Cancer Incidence at the Regional General Hospital Dr. H. Abdul Moeloek Lampung Province, patients with breast cancer family history is often unaware of their innate or inherited susceptibility to the disease. It is indicated that cancer patients whose parents have had cancer on one

breast side have a risk of getting cancer for the other breast or high recurrence at the previous cancer site.

In the Sudirman Journal of Nursing (The Sudirman Journal of Nursing), Volume 4 Number 2 the Year 2009 by Nani Desiyani, states that a history of inherited breast cancer is one of the risk factors. The presence of breast cancer carrier factors will increase the development of breast cancer at a young age. There is a genetic correlation between the occurrence of ovarian cancer and breast cancer. The presence of a breast-ovarian cancer gene located on chromosome 17q12-21 (BRCA1) will strengthen the occurrence of breast and ovarian cancer. BRCA2 (Breast Cancer gene two), located on chromosome 13, can also trigger breast cancer. BRCA1 (Breast Cancer gene one) is a tumor suppressor gene that plays a role in developing breast and ovarian cancer. Although BRCA1 and BRCA2 mutations can cause breast cancer, the percentage of incidence is small (Harianto, Rina, dan Hery. 2005).

### Family Cancer History

In this study, it was found that a family history of cancer has no correlation with the incidence of breast cancer. It follows the opinion of Hetty, 2009 in the Sudirman Journal of Nursing (The Sudirman Journal of Nursing), Volume 4 Number 2 of 2009 by Nani Desiyani, which states that Breast cancer has been linked to specific genes in genetic study. A gene for breast cancer is 60 percent at 50 years old and 85 percent at 70 years old. Family history is an essential component in the history of patients who will be screened for breast cancer. There is an increased risk of this malignancy in women whose families have had breast cancer.

### Active/Passive Smoker

To see the effect of smoking on the incidence of breast cancer seen from women as active/passive smokers. Women who are active smokers will have a higher level of estrogen hormone metabolism than women who do not smoke. The hormone estrogen affects the process of proliferation of breast tissue. The unlimited expansion will lead to breast cancer. Based on study conducted by Indrati Rini in the Journal of Risk Factors Affecting the Incidence of Women's Breast Cancer states that passive smoking has a more significant risk factor for breast cancer than women who smoke.

## CONCLUSION

Based on the study, it was found that several risk factors for the incidence of breast cancer. The elements are age, menarche, marital status, age of giving birth to their first child, breastfeeding status, hormonal family planning acceptors, history of breast cancer, family history of cancer, and active/passive smoking. The results showed that the history of breast cancer was strongly associated with the incidence of breast cancer in women of child-bearing age at Gambiran Hospital, Kediri, with a p-value of 0.0000 and an OR 9.837 95% CI 3.908-24.757. It means that breast cancer patients have a higher risk of developing breast cancer. The occurrence of breast cancer on the other side of the breast by 9.8 times compared to women who did not have a history of breast cancer.

## SUGGESTION

For women who have families with cancer should be aware of the onset of breast cancer. If they have reached puberty, it is recommended for early detection (screening test) through breast self-examination (BSE), IVA method, and mammography testing.

## REFERENCES

- Book:
- Angela R. Starkweather. (2013). Symptom Cluster Study in Women with Breast Cancer: A Comparison of Three Subgrouping Techniques. *Advance in Breast Cancer Study*, 2 (4)
- Departemen Kesehatan Republik Indonesia. (2019). *Pedoman Penemuan dan Penatalaksanaan Kanker Tertentu di Komunitas*. Jakarta: Depkes
- Departemen Kesehatan Republik Indonesia. (2013). *Seminar Sehari dalam Rangka Memperingati Sehari dalam Rangka Memperingati Hari Kanker Sedunia*. <http://depkes.go.id>
- Hidayat, A.A. (2019). *Metode Penelitian Keperawatan dan Analisa Data*. Jakarta: Salemba Medika
- Gant, F. N., & Cunningham, G. F. (2020). *Dasar-dasar Ginekologi & Obstetri*. Jakarta : EGC
- Nurcahyo, Jalu. (2010). *Awas bahaya kanker rahim dan kanker payudara*. Yogyakarta : wahana totalita publisher
- Nursalam. (2009). *Konsep Penerapan Metodologi Penelitian Ilmu Keperawatan*. Jakarta: Salemba Medika
- William F. R. & Christoper. (2001). *Obstetri dan Ginekologi*. Jakarta: Widya Medika
- World Health Organization. (2013). *Breast Cancer Risk*

- Factors. Available from: <http://www.who.int/cancer/detection/breastcancer/en/index.html>
- Article in Journal:
- Anggorowati, Lindra. (2013). FAKTOR RESIKO KANKER PAYUDARA WANITA. *Jurnal Kesehatan Masyarakat Universitas Negeri Semarang*
- Anothaisintawee, T., et al. (2013). RISK FACTORS OF BREAST CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS. *Asia Pac J Public Health*, 23 (2)
- Indrati, R., Setyawan, H.S., & Handojo, D. (2020). FAKTOR FAKTOR RESIKO YANG BERPENGARUH TERHADAP KEJADIAN KANKER PAYUDARA. *Jurnal Epidemiologi Universitas Diponegoro*
- Fitoni, Hendri. (2012). FAKTOR RESIKO KANKER PAYUDARA DI RSUD DR. SOEDARSO PONTIANAK. *Fakultas Kedokteran Universitas Tanjungpura Pontianak*
- Anggarini, Dwi Wahyuning. (2018). HUBUNGAN PENGGUNAAN KONTRASEPSI HORMONAL DENGAN KEJADIAN KANKER PAYUDARA DI RSUP DR. SARDJITO YOGYAKARTA. *Politeknik Kesehatan Kementerian Kesehatan Yogyakarta*
- Suryani, Rina. (2016). FAKTOR RESIKO YANG BERHUBUNGAN DENGAN KEJADIAN KANKER PAYUDARA DI RUMAH SAKIT UMUM DAERAN Dr. H. ABDUL MOELOEK PROVINSI LAMPUNG. *Jurnal Kesehatan Politeknik Kesehatan Kementerian Kesehatan Tanjung Karang Volume VII Nomor 1*
- Nani, Desiyani. (2019). ANALISIS FAKTO-FAKTOR YANG BERHUBUNGAN DENGAN KEJADIAN KANKER PAYUDARA DI RUMAH SAKIT PERTAMINA CILACAP. *Jurnal Keperawatan Soedirman (The Soedirman Journal of Nursing)*, Volume 4 No. 2.
- Yulianti Iin, et.al. (2016). FAKTOR-FAKTOR RESIKO KANKER PAYUDARA. *Jurnal Kesehatan Masyarakat Vol. 4 No. 4*