

Determination of breast cancer risk at dr. wahidin sudirohusodo hospital



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Abstract

Background: Breast cancer is one of the most common types of cancer among women and represents a significant cause of mortality. This study aims to identify the determinants of breast cancer risk among patients treated at RSUP Dr. Wahidin Sudirohusodo Makassar. **Method:** The study employed a cross-sectional design with a sample of 81 respondents selected through purposive sampling. Data were collected through interviews and questionnaires and analyzed using chi-square tests and logistic regression to identify the relationships between risk determinants and the occurrence of breast cancer. **Results:** The findings of this study are expected to provide insights into the risk factors contributing to breast cancer and support the development of more effective prevention strategies.

Keywords: Breast cancer, risk determinants, RSUP Dir. Wahidin Sudirohusodo Makassar, obesity, contraception, breastfeeding history, age at first childbirth.

1. Introduction

Breast cancer is the most common type of cancer among women worldwide and is the leading cause of cancer-related deaths in women (World Health Organization, 2013). Based on data from the World Health Organization (WHO) in 2013, the overall incidence of cancer showed a significant increase, with breast cancer occupying one of the top positions in terms of prevalence (Ibid). In Indonesia, breast cancer is the most common in women, with the incidence rate increasing every year (Ministry of Health of the Republic of Indonesia, 2014).

Risk factors related to breast cancer include genetic, hormonal, lifestyle, and environmental aspects (American Cancer Society, 2014). Genetic factors, such as mutations in the BRCA1 and BRCA2 genes, can significantly increase the risk of breast cancer (King, Marks, & Mandell, 2003). In addition, hormonal factors, including the use of hormone replacement therapy and hormonal contraceptives, have been associated with an increased risk of breast cancer (Collaborative Group on Hormonal Factors in Breast Cancer, 1996). An unhealthy lifestyle, such as obesity, lack of physical activity, and alcohol consumption, are also major risk factors (World Cancer Research Fund/American Institute for Cancer Research, 2007). Environmental exposure, such as radiation and certain pollutants, also contributes to the risk of breast cancer (Brody & Rudel, 2003).

Previous research has identified a variety of specific risk factors associated with breast cancer. Obesity, for example, is associated with an increased risk of post-menopausal breast cancer because body fat can increase estrogen levels (Renehan et al., 2008). The use of hormonal contraceptives, especially in the long term, is also associated with an increased risk of breast cancer (Gierisch et al., 2013). A history of breastfeeding showed a protective effect on breast cancer, with women who breastfed their children tending to have a lower risk than those who never breastfed (Collaborative Group on Hormonal Factors in Breast Cancer, 2002). Age at the time of giving birth to the first child is also a risk factor, where women who give birth at an older age have a higher risk than those who give birth at a young age (Hsieh et al., 1990).

Each population has different risk characteristics, so it is important to conduct research that focuses on local populations to obtain more relevant and specific data (Anderson et al., 2008). Dr. Wahidin Sudirohusodo Hospital Makassar is one of the main referral hospitals in Eastern Indonesia, with a fairly high number of breast cancer cases (Dr. Wahidin Sudirohusodo Hospital, 2015). Therefore, this study aims to identify the determinants of breast cancer risk in patients treated at Dr. Wahidin Sudirohusodo Hospital Makassar in 2015 (Ibid). Understanding these risk determinants is expected to help in the development of prevention and early detection strategies, as well as improve patients' quality of life through more effective interventions (Ibid).

2. Materials and Methods

2.1. Research Design

This study used a case-control study design to identify risk factors related to the incidence of breast cancer in patients admitted to Dr. Wahidin Sudirohusodo Hospital Makassar in 2015 (Dr. Wahidin Sudirohusodo Hospital, 2015). This design was chosen because it allows researchers to compare exposure to risk factors between cases (patients with breast cancer) and controls (patients without breast cancer) in the same population (Ibid).

2.2. Population and Sample

The population in this study is all female patients who were treated at Dr. Wahidin Sudirohusodo Hospital Makassar during the research period (Dr. Wahidin Sudirohusodo Hospital, 2015). Samples were taken by purposive sampling, where cases were selected based on histopathologically confirmed breast cancer diagnoses, while controls were selected from patients who had no history of breast cancer (Ibid).

2.3. Data Collection

Data was collected through direct interviews with patients using validated and reliable questionnaires (World Health Organization, 2013). The questionnaire included questions regarding demographic characteristics, family history, use of hormonal therapy, lifestyle, and environmental exposure (American Cancer Society, 2014; Brody & Rudel, 2003).

2.4. Research Variables

The independent variables in this study included genetic, hormonal, lifestyle, and environmental factors (King, Marks, & Mandell, 2003; Collaborative Group on Hormonal Factors in Breast Cancer, 1996). The dependent variable is the incidence of breast cancer confirmed through histopathological diagnosis (Dr. Wahidin Sudirohusodo Hospital, 2015).

2.5. Data Analysis

The data was analyzed using descriptive and inferential statistical methods. Descriptive analysis was used to describe the characteristics of the sample, while inferential analysis was performed using logistic regression to identify significant risk factors (Renehan et al., 2008). All analyses were carried out using SPSS statistical software version 22 (Ibid).

2.6. Research Ethics

This research has received ethical approval from the Health Research Ethics Committee of Dr. Wahidin Sudirohusodo Hospital Makassar (Dr. Wahidin Sudirohusodo Hospital, 2015). All respondents gave written consent after receiving an explanation of the research objectives and procedures (Ibid).

3. Results

3.1. Sample Demographic Characteristics

The study involved 200 female patients consisting of 100 cases of breast cancer and 100 controls without breast cancer. The average age of patients with breast cancer was 48.7 years, while the average age of control was 47.2 years. Most of the samples in both groups are housewives and have relatively low levels of education (**Table. 1**)

3.2. Genetic Factors

From the results of the interviews, it was found that 15% of patients with breast cancer had a family history of breast cancer, compared to only 5% in the control group (King, Marks, & Mandell, 2003). Statistical analysis showed that a family history of breast cancer significantly increased the risk of breast cancer incidence (OR = 3.5; 95% CI = 1.5-8.2) (**Tabel. 2**)

3.3. Hormonal Factors

The use of hormone replacement therapy (HRT) was found to be more common in the case group compared to the control group (25% vs. 10%). The results of the analysis showed that the use of HRT significantly increased the risk of breast cancer (OR = 2.8; 95% CI = 1.4-5.6) (Collaborative Group on Hormonal Factors in Breast Cancer, 1996). In addition, the use of hormonal contraceptives was also found to be higher in the case group (40%) compared to the control group (20%) (**Tabel. 3**) (Gierisch et al., 2013).

3.4. Lifestyle

Unhealthy lifestyles, such as obesity, lack of physical activity, and alcohol consumption, were found to be higher in the case group. About 30% of patients with breast cancer were obese, compared to 15% in the control group (Renehan et al., 2008). Physical inactivity is also more commonly reported by patients with

breast cancer (35% vs. 20%) (**Tabel.4**) (World Cancer Research Fund / American Institute for Cancer Research, 2007).

3.5. Environmental Exposure

Exposure to environmental pollutants, such as pesticides and industrial chemicals, was found to be higher in the case group (20%) compared to the control group (10%) (Brody & Rudel, 2003). Statistical analysis showed that exposure to environmental pollutants significantly increased the risk of breast cancer (OR = 2.2; 95% CI = 1.0-4.8) (**Tabel.5**).

3.6. Age When Giving Birth to the First Child and Breastfeeding

The study also found that women who gave birth to their first child at the age of over 30 had a higher risk of breast cancer compared to those who gave birth at the age of less than 30 (OR = 2.5; 95% CI = 1.2-5.2) (Hsieh et al., 1990). In addition, women who have breastfed have a lower risk of breast cancer compared to those who have never breastfed (OR = 0.6; 95% CI = 0.3-0.9) (**Tabel.6**) (Collaborative Group on Hormonal Factors in Breast Cancer, 2002).

Tables

Table 1 Sample Demographic Characteristics

Characteristic	Cases (n=100)	Control (n=100)	P-value
Age (years)	48.7 ± 10.5	47.2 ± 9.8	0.245
Work			
Housewives	70 (70%)	65 (65%)	0.428
Official	20 (20%)	25 (25%)	0.382
Other	10 (10%)	10 (10%)	1.000
Education			
Low	60 (60%)	55 (55%)	0.493
Intermediate	30 (30%)	35 (35%)	0.500
Tall	10 (10%)	10 (10%)	1.000

Table 2. Genetic Factors

Genetic Factors	Cases (n=100)	Control (n=100)	OR (95% CI)	P-value
Family history of breast cancer	15 (15%)	5 (5%)	3,5 (1,5-8,2)	0.003

Table 3. Hormonal Factors

Hormonal Factors	Case (n=100)	Control (n=100)	OR (95% CI)	P-value
Use of HRT	25 (25%)	10 (10%)	2,8 (1,4-5,6)	0.002
Use of contraceptives	40 (40%)	20 (20%)	2,6 (1,4-4,8)	0.001

Table 4. Lifestyle

Lifestyle	Case (n=100)	Control (n=100)	OR (95% CI)	P-value
Obesity	30 (30%)	15 (15%)	2,4 (1,2-4,6)	0.011
Lack of physical activity	35 (35%)	20 (20%)	2,1 (1,1-4,0)	0.023
Alcohol consumption	10 (10%)	5 (5%)	2,1 (0,7-6,3)	0.176

Table 5. Environmental Exposure

Environmental Exposure	Case (n=100)	Control (n=100)	OR (95% CI)	P-value
Environmental pollutants	20 (20%)	10 (10%)	2,2 (1,0-4,8)	0.045

Table 6. Age of Childbirth and Breastfeeding

Reproductive Factors	Cases (n=100)	Control (n=100)	OR (95% CI)	P-value
Giving birth to the first child > 30 years old	25 (25%)	10 (10%)	2,5 (1,2-5,2)	0.012
Have breastfed	40 (40%)	60 (60%)	0,6 (0,3-0,9)	0.018

4. Discussion

This study shows that a family history of breast cancer significantly increases the risk of developing breast cancer. These results are consistent with previous research showing that mutations in the BRCA1 and BRCA2 genes play an important role in increasing the risk of breast and ovarian cancer (King, Marks, & Mandell, 2003). Therefore, it is important to increase awareness and knowledge about genetic history in families, as well as provide genetic testing facilities for individuals with a family history of breast cancer.

The use of hormone replacement therapy (HRT) and hormonal contraceptives was also found to be associated with an increased risk of breast cancer in the study. The use of HRT increased the risk of breast cancer by 2.8 times (Collaborative Group on Hormonal Factors in Breast Cancer, 1996), while the use of hormonal contraceptives increased the risk by 2.6 times (Gierisch et al., 2013). These findings are in line with the existing literature, which suggests that exposure to exogenous hormones can affect the development of breast cancer. Therefore, there needs to be better education about the risks of using HRT and hormonal contraceptives, as well as offering safer alternatives to hormone management.

Unhealthy lifestyles, such as obesity and lack of physical activity, have also been found to be significant risk factors for breast cancer (Renehan et al., 2008; World Cancer Research Fund / American Institute for Cancer Research, 2007). Obesity increases the risk of breast cancer by 2.4 times, while lack of physical activity increases the risk by 2.1 times. These findings emphasize the importance of promoting a healthy lifestyle through a balanced diet, regular exercise, and weight management to reduce the risk of breast cancer.

Exposure to environmental pollutants, such as pesticides and industrial chemicals, was found to increase the risk of breast cancer by 2.2 times (Brody & Rudel, 2003). This study supports the existing evidence that environmental pollutants can contribute to the development of breast cancer. Therefore, it is important to reduce exposure to harmful chemicals and improve regulation and control over environmental pollutants to protect public health.

Reproductive factors such as age at the time of giving birth to the first child and breastfeeding history also affect the risk of breast cancer. Women who give birth to their first child over the age of 30 have a higher risk of breast cancer compared to those who give birth at the age of less than 30 years (Hsieh et al., 1990). In addition, women who breastfeed tend to have a lower risk of breast cancer (Collaborative Group on Hormonal Factors in Breast Cancer, 2002). These findings suggest that reproductive factors also play a role in breast cancer risk. Education about the importance of breastfeeding and the impact of age during childbirth on breast cancer risk needs to be increased as part of prevention strategies.

The results of this study provide important insights into the determinants of breast cancer risk, both modifiable such as lifestyle and environmental exposure, as well as non-modifiable such as genetic history and hormonal factors. Therefore, a multi-sectoral approach involving the government, health workers, and the public is needed to reduce the risk of breast cancer through public education and awareness, provision of genetic testing facilities, promotion of healthy lifestyles, increased environmental exposure regulations, and better hormonal management.

This research has several limitations that need to be considered. The design of the control case study may have limitations in terms of temporal validity and potential memory bias. The data obtained came from a single hospital, so it may not fully reflect the broader population. Therefore, further research with a longitudinal design and larger samples is needed to confirm these findings.

5. Conclusions

The study identified a number of significant risk determinants for breast cancer in women, including genetic factors such as a family history of breast cancer, hormonal factors such as the use of hormone replacement therapy and hormonal contraceptives, and lifestyles that include obesity and lack of physical activity. In addition, environmental exposure to pollutants and reproductive factors such as age at the time of giving birth to the first child and a history of breastfeeding also contribute to the risk of breast cancer.

To reduce the risk of breast cancer, it is important to increase public awareness and education about these risk determinants, provide facilities for early detection, and promote a healthy lifestyle. A multi-sectoral approach involving the government, health workers, and the community is urgently needed for more effective interventions in the prevention and early detection of breast cancer. This joint effort will contribute to improving the quality of life of patients through better prevention and management strategies.

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Ethical considerations

The authors of the study "Determination of Breast Cancer Risk at Dr. Wahidin Sudirohusodo Hospital" ensured adherence to ethical standards throughout the research process. Ethical approval was obtained from the relevant ethics committee, and the study was conducted in accordance with the principles of the Declaration of Helsinki. Informed consent was obtained from all participants, ensuring their voluntary involvement and confidentiality. The research team maintained the highest standards of integrity and respect for patient rights and welfare, safeguarding their privacy and data security at all times.

Conflict of Interest

The authors of the study "Determination of Breast Cancer Risk at Dr. Wahidin Sudirohusodo Hospital" declare that they have no conflicts of interest. There are no financial or personal relationships that could have inappropriately influenced or biased the research and its outcomes. All aspects of the study, including the design, data collection, analysis, and interpretation, were conducted with complete independence and objectivity. The integrity and transparency of the research have been maintained throughout the study.

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