Risk Factors for Breast Cancer Occurrence in Women Age 15-65 Years in Kendari City in 2018

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Abstract: Basic Health Research of Indonesia "Riskesdas" in 2013 noted the prevalence of cancer in Indonesia was 1.4 per 1000 population or around 347,792 people and is the number 7 cause of death (5.7%) of all causes of death. The incidence of cancer in Southeast Sulawesi was 0.5 ‰ with an estimated absolute number of 590 cases. This research was analytic survey research with a case-control study approach. The population in this study were women aged 15-65 years who were diagnosed with breast cancer. The sample amounted to 100 respondents divided into 50 case samples and 50 control samples. The test analysis used was the odds ratio. The odds ratio test results indicated that a history of menarche was a risk factor for breast cancer, a history of breastfeeding was a risk factor for breast cancer incidence. Family history was a risk factor for breast cancer incidence. A history of hormonal contraception was a risk factor for breast cancer. The age of giving birth to a first child was not a risk factor for breast cancer, smoking history was a risk factor for breast cancer.

1 INTRODUCTION

Cancer is one of the leading causes of death worldwide. Cancer is an abnormal growth of body tissue cells that turn malignant. Cancer is a disease that does not recognize social status and can attack anyone and arise due to abnormal growth of body tissue cells that turn into cancer cells in its development. Breast cancer is a condition where cells have lost control and normal mechanisms, resulting in abnormal, fast, and uncontrolled growth that occurs in breast tissue. (Heena et al., 2019; Suardita, Chrisnawati, & Agustina, 2016)

Based on data from *Global Burden Cancer* (Globocan), the *International Agency for Research on Cancer* (IARC), stated that breast cancer was the highest cause of death from cancer in women. Breast cancer ranks first in new cases, and deaths from cancerwere 43.3% and 12.9%. Globocan also presented data on cases of breast cancer in 2012 that occurred in the world reached 1,677,000 and the mortality rate reached 522,000. (Fan et al., 2019; Wahyuni, Chrisnawati, & Santoso, n.d.)

The incidence of cancer in Asia was 20 people among the 100,000 population. While the incidence of breast cancer in Southeast Asia was recorded at 55,097 cases, and the death rate was 24,961 cases. Breast cancer is a major problem worldwide because of its high mortality and morbidity. (Fan et al., 2019; Suardita et al., 2016)

Globocan data for 2012 noted that the incidence of cancer in women in Indonesia is 134 per 100,000 population with the highest incidence of breast cancer of 40 per 100,000, followed by cervical cancer of 17 per 100,000 women. Furthermore, Globocan estimated the mortality rate in Indonesia for breast cancer to be 16.6 deaths per 100,000 population, followed by cervical cancer with 8.2 deaths per 100,000 population. An increasing number of breast cancers in Indonesia can be seen from patients who came for treatment, where 60-70% of sufferers were in advanced stages. (Rukmi & Handayani, 2013)

More than 25% of women were diagnosed with cancer, one of which was breast cancer. Until now, the exact cause of breast cancer was unknown, but many studies had shown that there were several factors associated with an increased risk or possibility

of breast cancer. These factors were risk factors which include reproductive factors such as menarche or first menstruation less than 12 years old, menopause at the age of more than 50 years, giving birth to a first child over 30 years of age, parity, history of breastfeeding; endocrine factors such as long-term use of oral contraceptives; diets such as fatty foods, alcohol; genetic or family history, exposure to ion and ultraviolet (UV) radiation during breast growth, history of smoking or exposure to cigarette smoke. (Fan et al., 2019; Wyatt, Jenkins, Plevak, Pont, & Pruthi, 2019)

The use of oral contraceptives (birth control pills) had a slightly greater risk of developing breast cancer than women who had never used it. This risk can decrease after stopping pill use. Women who stop using oral contraceptives for more than 10 years were less likely to have an increased risk of breast cancer. In addition to contraceptive pills, other hormonal contraceptives such as injectable contraceptives given every 3 months were also known to affect breast cancer. Women who used injectable contraceptives tend to have an increased risk of breast cancer. (Phipps et al., 2011)

Palmer et al (2011) in Rukmi (2013) showed that the age of giving birth to a first child was a factor that can cause a woman to develop breast cancer. Women with a history of giving birth to their first child before the age of 25 had a 30% to 40% reduction in the risk of breast cancer compared to women who had children after the age of 35 or in nulliparous women, regardless of the number of births. The increased risk of developing breast cancer was thought to be due to the stimulation of maturation of breast cells induced by pregnancy, which made these cells more sensitive to carcinogenic transformations. (Rukmi & Handayani, 2013)

Suciawati (2017) explained that women who smoke or were exposed to cigarette smoke can trigger breast cancer. Cigarette smoke contains chemicals in higher concentrations and is very dangerous for health. The longer exposure to cigarette smoke, the more particles of substances that are toxic and carcinogens accumulate in the body. (Ayu, Setiowati, Tanngo, & Soebijanto, 2016)

Initial studies at the Public Hospital of Bahteramas, the number of patients with breast cancer by 87 patients in 2015, then increased by 97 patients in 2016 and increased dramatically in 2017 by 128 patients. From January to March 2018 there were 26 patients. In Public Hospital of Kendari City Hospital there were 18 patients in 2016, declining to 12 patients in 2017 and from January to March in 2018 there were 6 patients. Anugrah Medika Medical

Oncology Clinic, which specializes in handling breast cancer cases from 2015 to 2018, found 91 sufferers and 35 domiciled in Kendari City. Breast cancer is cancer that is commonly found in women aged 15-65 years.

Based on the description above, breast cancer is one of the life-threatening health problems that continue to experience an increase in incidence caused by various factors. Therefore it is very important to research to analyze the risk factors for breast cancer.

2 METHODS

This research was analytic survey research with case-control approach. Research with a case-control approach was research conducted to determine risk factors or health problems that were suspected to have a close relationship with diseases that occur in the community.

The sample is part of the number and characteristics of the population or part of the object under study and is considered representative of the entire population. The control group was taken from the community in the area of Public Hospital of Bahteramas with the same age criteria as the case group and had carried out controls in polyclinic of oncology, so the number of samples in this study was 100 people consisting of 50 case groups and 50 control groups. Matching used in this study was age, ie women aged 15 to 65 years and women who were married, to balance between case samples and control samples to have the same characteristics.

Data collected from respondents during the study took place using a questionnaire. Secondary data is data obtained from other parties, namely from medical record reports of Public Hospital of Bahteramas, Public Hospital of Kendari City, and Oncology Clinic of Anugrah Medika Kendari.Data analysis is an activity in research which includes the preparation, tabulation and application of data.

Explain or describe the characteristics of each research variable. This analysis produced the frequency distribution and percentage of each variable. This analysis is used to see the extent of the relationship between variables. In this study the odds ratio test, which is a hypothesis test or analysis to obtain relative risk. Analysis of the data in this case to test the null hypothesis was used epidemiological analysis (Odds Ratio) using a 2x2 table.

In conducting research, it is necessary to have a recommendation from the institution of another party by applying for permission to the agency where the

research. After obtaining approval, the research is conducted by emphasizing research ethics issues which include:

Informed Consent: This consent sheet is given to respondents who meet the inclusion criteria, and are accompanied by the title of the study and the benefits of the study. If the subject refuses the researcher will not force the will and continue to respect the rights of the subject.

Anonymity: To maintain confidentiality, the researcher will not include the name of the respondent, but the sheet is given a code.

Confidentiality: The confidentiality of respondent information is guaranteed by the researcher and only certain data groups will be reported as research results. (Nursalam, 2013).

3 RESULTS AND DISCUSSION

The characteristics of the respondents as described in table 1 below. The table showed that of the 100 most respondents at age 50-57 which amounted to 34 respondents, while the smallest in the age group 58-65 years as many as 16. Respondents who had jobs as housewives numbered 80 people, as many as 19 civil servants and there were 1 entrepreneur. The level of education with the highest percentage was 39 people in high school, and the lowest was 8 people in elementary school.

Table 1: Characteristics of Respondents in Women Aged 15-65 Years in Kendari City.

Characteristics	Group		Total
	Case	Control	
Age			
34-41	12	12	24
42-49	13	13	26
50-57	17	17	34
58-65	8	8	16
Occupation			
Housewife	39	41	80
Civil Servant	11	8	19
Entrepreneur	-	1	1
Level of education			
Elementary School	2	6	8
Middle School	10	10	20
High School	29	10	39
College	9	24	33

The distribution of descriptive analysis was described in table 2 showed that out of 100 respondents based on a history of menarche, respondents in the risk category amounted to 25 people (25.0%) and the non-risk category amounted to 75 people (575.0%). For breastfeeding history, there were 43 risk categories (43.0%) and 57 respondents (57.0%) with no risk categories. Family history at risk was 53 respondents (53.0%), and those who were not at risk were 47 respondents (47.0%). At-risk due to the use of hormonal contraception as many as 73 people (73.0%), while those who are not at risk were 27 respondents (27.0%). Risks due to the age of giving birth to the first child were 19 respondents (19.0%) while those who were not at risk totaled 81 respondents (81.0%). Risks resulting from a smoking history of 72 respondents (72.0%) while those who were not at risk totaled 28 respondents (28.0%).

Table 2: Distribution of Respondent Descriptive Analysis in Women Aged 15-65 Years in Kendari City.

No.	Descriptive Analysis	n	%
1	History of Menarche		
	Risky	25	25.0
	No-Risk	75	75.0
2	History of Breastfeeding		
	Risky	43	43.0
	No-Risk	57	57.0
3	History of Family		
	Risky	53	53.0
	No-Risk	47	47.0
4.	The Use of Hormonal Contraception		
	Risky	73	73.0
	No-Risk	27	27.0
5.	Age of Childbirth First Child		
	Risky	19	19.0
	No-Risk	81	81.0
6	History of Smoking		
	Risky	72	72.0
	No-Risk	28	28.0

Risk factors for breast cancer seen in table 3 below. The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) =

2.705 CI 95% = 1.040-7.036, this meant that women who had menarche <12 years would be 2.705 times more likely to develop breast cancer compared to women who had menarche at age > 12 years. Because of the value of OR (2.705)> 1, the history of menarche was a risk factor for breast cancer in women aged 15-65 years in Kendari City in 2018.

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 3.551 CI 95% = 1.541-8.181, this meant that women who did not breastfeed their babies would have a risk of 3,551 times greater breast cancer than women who breastfed their babies. Because of the OR value (3,551)> 1, breastfeeding history was a risk factor for breast cancer incidence in women aged 15-65 in Kendari City in 2018.

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 2.912 CI 95% = 1,290-6,571, this meant that women who had family member who suffered from breast cancer would be 2,912 times more likely to have breast cancer than those who did not have family members with breast cancer. Because of the OR value (2,912)> 1, family history was a risk factor for breast cancer in women aged 15-65 years in Kendari City in 2018.

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 14.462 CI 95% = 3.3972-52,656, this meant that women who used hormonal contraception ≥ 5 years would have a risk of 14,462 times greater breast cancer than women who used hormonal contraception <5 years. Because the OR value (14.462)> 1, a history of hormonal contraceptive use was a risk factor for the incidence of breast cancer in women aged 15-65 years in Kendari City in 2018.

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 0.516 CI 95% = 0.184-1.444, this meant that women who given birth to their first child at age> 35 years were 0.516 times more likely to develop breast cancer compared to women who given birth first child at age <35 years. Because the OR value (0.516) <1, the age of giving birth to the first child was not a risk factor for the incidence of breast cancer in women aged 15-65 years in Kendari City in 2018.

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 10.615 CI 95% = 3.319-33,951, this meant that women who smoked or had family members who smoked would have a risk of 10,615 times more likely to develop breast cancer compared to women who did not smoke or non-smoking family members. Because of the OR value (10,615)> 1, smoking history was a risk factor for breast cancer incidence in women aged 15-65 years in Kendari City in 2018.

If menarche occurred above the age of 13 years, the risk of cancer dropped 35% compared to girls who menarche at the age of 12 years and under (Rosma, 2008). Early menstrual age is related to the length of exposure to the hormones estrogen and progesterone in women that affect the process of tissue proliferation including breast tissue. Early menarche will cause a large number of menstrual cycles and repeated estrogen reduction has a stimulatory effect on the mammary epithelium thereby increasing the likelihood of abnormal breast tissue. (Mulia & Conference, 2017)(Ma et al., 2010)

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 2.705 CI 95% = 1.040-7.036, this meant that women who had menarche <12 years would be 2.705 times more likely to develop breast cancer compared to women who had menarche at age > 12 years. Because of the value of OR (2.705)> 1, the history of menarche was a risk factor for breast cancer in women aged 15-65 years in Kendari City in 2018.

This study was in line with research by Priyatin (2013), the results of statistical analysis obtained OR> 1 = 2.638, which can increase the risk. This meant that the age of menarche with a risk category increased the incidence of breast cancer. Women of childbearing age at the age of menarche at risk (<12 years) had a risk of 2,638 times higher for breast cancer. (Wahyuni et al., n.d.)

This was consistent with the results of research of (Mulia & Conference, 2017) which stated that there was a significant relationship between early menstruation with breast cancer. Women with early menstruation had 9 times the risk of breast cancer compared with women who did not menstruate early. (Tutuncuoglu & Krogan, 2019)

Breastfeeding does not protect women from breast cancer but affects estrogen levels in a woman's body. The hormone estrogen in women is a major ingredient in breast cancer. Breastfeeding can reduce estrogen levels, so the risk of a woman suffering from breast cancer will decrease every time a woman is pregnant and breastfeeding. Breastfeeding will suppress the menstrual cycle and can help eliminate toxins in the breast. Breastfeeding can cause changes in breast cells that make female cells more resistant to cancer-related cell mutations. (Banudi, 2013)

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 3.551 CI 95% = 1.541-8.181, this meant that women who did not breastfeed their babies would have a risk of 3,551 times greater breast cancer than women who

breastfed their babies. Because of the OR value (3,551)> 1, breastfeeding history was a risk factor for breast cancer incidence in women aged 15-65 in Kendari City in 2018. This study was in line with research conducted by Priyatin (2013), the results of statistical analysis obtained OR = 2.118. This meant that breastfeeding with a risk category increased the incidence of breast cancer. The stronger suspicion of breastfeeding with risk categories was a risk factor for breast cancer. Women of childbearing age with risk categories (not breastfeeding) had a risk of 2.118 times higher for breast cancer.

This was consistent with the results of (Cowppli-Bony et al., 2019) that found that breastfeeding reduced the risk of breast cancer in women whose sisters, or mothers or daughters had the disease, so breastfeeding naturally reduced the risk of contracting the disease by 59 percent.

Family history is one of the most important factors considering that cancer can be influenced by genetic disorders. Some families may have a higher risk of developing certain breast cancer compared to other families. For example, a woman's risk of developing breast cancer increased 1.5-3 times if her mother or sister had breast cancer. (Cheng, Shen, & Id, 2019)

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 2.912 CI 95% = 1,290-6,571, this meant that women who had family member who suffered from breast cancer would be 2,912 times more likely to have breast cancer than those who did not have family members with breast cancer. Because of the OR value (2,912)> 1, family history was a risk factor for breast cancer in women aged 15-65 years in Kendari City in 2018.

This study was in line with research conducted by Priyatin (2013), the results of statistical analysis obtained OR = 6.938. The results of the analysis showed that OR> 1 = 6,938 which can increase the risk, this meant a family history with a risk category increased the incidence of breast cancer. Increasingly suspected family history of risk categories is a risk factor for breast cancer. Women of childbearing age with a family history of risk categories (there was a family history that had blood relations with respondents who had or were suffering from breast cancer) had a 6,938 times higher risk of developing breast cancer. (Maria, Sainal, & Nyorong, 2017).

The risk of breast cancer showed an increase along with an increase in the woman's age at first pregnancy or giving birth to a first child at a relatively older age (> 35 years), whereas in nulliparous had a 30% risk of developing into cancer compared to multiparous women.

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 0.516 CI 95% = 0.184-1.444, this meant that women who given birth to their first child at age> 35 years were 0.516 times more likely to develop breast cancer compared to women who given birth first child at age <35 years. Because the OR value (0.516) <1, the age of giving birth to the first child was not a risk factor for the incidence of breast cancer in women aged 15-65 years in Kendari City in 2018.

This was consistent with the results of research conducted by Briston (2008) in the United States with a cohort design that women who had the first pregnancy after 35 years had a 3.6 times greater risk of developing breast cancer than women whose first pregnancy was before 35 years (RR = 3,6).

Women who are pregnant at an older age will experience more menstrual cycles before becoming pregnant. In each menstrual cycle, FSH (follicle-stimulating hormone) is released by the anterior pituitary lobe which causes several primary follicles to develop in the ovary. Generally one follicle or even more than one follicle that develops into de Graff follicles that produce estrogen. (Fan et al., 2019)(Palmer et al., 2011)

The use of hormonal drugs for >5 years will increase the risk of cancer (Rasjidi, 2010). There is still controversy to date regarding the role of hormonal contraception in the development of breast cancer. However, several studies showed that hormonal contraception plays a role in increasing the risk of breast cancer in premenopausal women, but not in women in the post-menopausal period. (Banudi, 2013)

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 14.462 CI 95% = 3.3972-52,656, this meant that women who used hormonal contraception ≥ 5 years would have a risk of 14,462 times greater breast cancer than women who used hormonal contraception <5 years. Because the OR value (14.462)> 1, a history of hormonal contraceptive use was a risk factor for the incidence of breast cancer in women aged 15-65 years in Kendari City in 2018.

This research was in line with research conducted by (Rukmi & Handayani, 2013). The results showed that women who experienced breast cancer the most were women with a history of using hormonal contraception for 10 years totaling 16 more people than those without breast cancer. The test results obtained a p-value of 0.001 meaning p-value <0.05, so that Ha was accepted and Ho was rejected. The conclusion is that there was a relationship between the factors of hormonal contraceptive use and the

incidence of breast cancer in the Public Hospital of DadiKeluarga, Purwokerto. The odds ratio value of 7.43 meant that women with hormonal contraception for 10 years had a 7.43 times greater risk of developing breast cancer compared to women using hormonal contraception <10 years with 95% CI, meaning that the research can be trusted to truth 95%.

The risk of breast cancer showed an increase along with an increase in the woman's age at first pregnancy or giving birth to a first child at a relatively older age (> 35 years), whereas in nulliparous had a 30% risk of developing into cancer compared to multiparous women.

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 0.516 CI 95% = 0.184-1.444, this meant that women who given birth to their first child at age> 35 years were 0.516 times more likely to develop breast cancer compared to women who given birth first child at age <35 years. Because the OR value (0.516) <1, the age of giving birth to the first child was not a risk factorfor the incidence of breast cancer in women aged 15-65 years in Kendari City in 2018.

This was consistent with the results of research conducted by Briston (2008) in the United States with a cohort design that women who had the first pregnancy after 35 years had a 3.6 times greater risk of developing breast cancer than women whose first pregnancy was before 35 years (RR = 3,6). (Heena et al., 2019)

Women who are pregnant at an older age will experience more menstrual cycles before becoming pregnant. In each menstrual cycle, FSH (follicle-stimulating hormone) is released by the anterior pituitary lobe which causes several primary follicles to develop in the ovary. Generally one follicle or even more than one follicle that develops into de Graff follicles that produce estrogen. (Fan et al., 2019)

A smoker is seven times more susceptible to the type of cancer, including breast cancer when compared to non-smokers. Epidemiological investigations had found that the likelihood of passive smoking for breast cancer was greater than the risk of occurrence in women with a history of active smokers (Kemenkes, 2016). Cigarette smoke can increase the risk of breast cancer because cigarette smoke contains chemicals in high concentrations that can cause breast cancer. The chemicals in tobacco smoke reach the breast tissue and are found in breast milk. Cigarette smoke can also have different effects on the risk of breast cancer in smokers and those who are only exposed to cigarette smoke. (Maria et al., 2017)

The results of the analysis using the Odds Ratio test obtained the value of Odds Ratio (OR) = 10.615

CI 95% = 3.319-33,951, this meant that women who smoked or had family members who smoked would have a risk of 10,615 times more likely to develop breast cancer compared to women who did not smoke or non-smoking family members. Because of the OR value (10,615)> 1, smoking history was a risk factor for breast cancer incidence in women aged 15-65 years in Kendari City in 2018.

Table 3: Risk Factors Analysis of Breast Cancer Occurrence in Women Aged 15-65 Years in Kendari City.

No	Variables	Case n	Case %	Control n	Control %	Total N	Total %	Odds Ratio (CI 95%)
1	History of Menarche							
	Risky	17	17	8	8	25	25	2,705 (1,040–7,036)
	No-Risk	33	33	42	42	75	75	
2	History of Breastfeeding							
	Risky	29	29	14	14	43	43	3,551 (1,541–8,181)
	No-Risk	21	21	36	36	57	57	
3	History of Family							
	Risky	33	33	20	20	53	53	2,912 (1,290–6,571)
	No-Risk	17	17	30	30	47	47	
4	The Use of Hormonal Contraception							
	Risky	47	47	26	26	73	73	14,462 (3,972–52,656)
	No-Risk	3	3	24	24	27	27	
5	Age of Childbirth First Child							
	Risky	7	7	12	12	19	73	0,516 (0,184–1,443)
	No-Risk	43	43	38	38	81	27	
6	History of Smoking							
	Risky	46	46	26	26	72	72	10,615 (3,319–33,951)
	No-Risk	4	4	24	24	28	28	

This research was in line with research conducted. The results showed that based on the results of statistical tests using OR, it was known that smoking (p = 0.063, OR = 2.002; 95% CI: 1.020-3.930), so that it was statistically significant between smoking and the incidence of breast cancer. In other words, smoking is a risk factor for the incidence of breast cancer.

Based on the results of Suciawati's research (2016), there was a significant relationship between smoking history and the incidence of breast cancer. Based on OR, respondents who smoked had a 2.5 times greater chance of developing breast cancer compared to respondents who did not smoke. This was consistent with Maria's research (2017) that smoking was a risk factor for the incidence of breast cancer. Furthermore according to research by Hosseinzadeh et al in 2014 showed that there was a positive relationship between active and passive smokers against breast cancer. (Ayu et al., 2016).

4 CONCLUSIONS

History of menarche was a risk factor for breast cancer incidence in women aged 15-65 years in Kendari City in 2018. Breastfeeding history was a risk factor for breast cancer incidence in women aged 15-65 years in Kendari City in 2018. Family history was a risk factor for breast cancer events in women aged 15-65 years in Kendari City in 2018. History of hormonal contraceptive use was a risk factor for breast cancer incidence in women aged 15-65 years in Kendari City in 2018. The age of first childbirth was not a risk factor for breast cancer incidence in women age 15 -65 years in Kendari City in 2018. Smoking history was a risk factor for the occurrence of breast cancer in women aged 15-65 years in Kendari City in 2018.

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