Risk Factors of Breast Cancer

Anjar Nurrohmah[1]*, Anis Aprianti[2], Sri Hartutik[3]
[1,2,3] Nursing Department of University 'Aisyiyah Surakarta
*E-mail: anjarnurrohmah012@gmail.com

ARTICLE INFO	ABSTRACT
	Background: Ca mamae is a cancer with the highest incidence and mortality of women in Indonesia and the world. Infodatin (2019) found that in the Dharmais Hospital in 2018 breast cancer occupied 19.18%. At Dr. Moewardi Hospital, it was shown that during 2018 Ca mamae had the highest incidence of cancer. *Objective*: to determine the risk factors for Ca mamae in Dr. Moewardi Hospital. *Methods*: This study is a descriptive with a cross sectional approach with checklist instrument. Sampling with purposive sampling with as many as 82 people as subjects. *Results*: The study showed that 75 (91.5%) of 82 people suffering from Ca mamae factor were ≥ 40 years old, 61 (74.4%) had a family history of suffering from Ca mamae, consuming alcohol as much as 43 (52.4%).), were obese by 46 (56.1%), and experienced exposure to cigarette smoke as much as 65 (79.3%). *Conclusion*: Most of Ca mamae patients aged ≥ 40 years, have a family history of Ca mamae, consume alcohol, are obese and experience exposure to cigarette smoke. *Suggestion*: The importance of providing health education to women, so that they can find out the characteristics of Ca mamae patients so that prevention can be done.

INTRODUCTION

Cancer is a disease that is a threat to all countries in the world. One of the cancer threats in women is breast cancer. Breast cancer is a frightening disease for women, because breast cancer is often found at an advanced stage (Sulung *et al*, 2018). Breast cancer is a malignancy that occurs in the mammary glands, glandular ducts and breast supporting tissue. Breast cancer is the most

common cancer in women and is an important cause of death for them. (Momenimovahed and Salehiniya, 2019).

GLOBOCAN, Global Cancer Observatory also presented data on breast cancer cases in 2012. Overall, breast cancer cases that occurred in the world in 2012 reached 1,677,000 and the death rate reached 522,000 (Setiowati, 2015). In Indonesia, breast cancer is the cancer with the second highest incidence in women after cervical cancer and there is increase the incidence of breast cancer. The incidence of breast cancer in Indonesia is estimated at 100 patients per 100,000 population per year, 50% of them are found at an advanced stage (Guntari and Suariyani, 2016).

The cancer morbidity rate in Indonesia has the same pattern as the incidence of cancer in the world. Breast cancer in Indonesia occupies the highest data on cancer incidence in women. Data sourced from the Dharmais Cancer Hospital in 2018 showed that the most cancer cases were breast cancer at 19.18%, cervical cancer at 10.69%, and lung cancer at 9.89% (Infodatin, 2019). Whereas in Central Java, early breast cancer screening by trained personnel showed that 2.09 percent of WUS had tumors / lumps (Profil Kesehatan Jawa Tengah, 2017).

The cause of breast cancer is not known. Demographic factor, personal or family history of breast disease, genetic predisposition and environmental factors have been associated with an increased risk of developing breast cancer in women (Momenimovahed and Salehiniya, 2019).

Data from the medical records of Dr. Moewardi Hospital in 2018, it is known that Ca cases in Dr. Moewardi Surakarta is; Ca Mamae in 2018 totaling 1,958. Ca Servik as much as 1,641. Lung Ca as much as 1,501. Hepar Ca in 2018 as many as 180. Based on these data it is known that the incidence of Ca Mamae is the highest compared to other Caesareans.

METHODS AND MATERIALS

This type of research method used is descriptive. This study examines the risk factors that cause Ca Mamae in Dr. Moewardi Surakarta. The population used 480 patien of Ca Mamae at Dr Moewardi Hospital from October to March 2019. The sample obtained was calculated using the Slovin formula as many as 82 samples, data collection was carried out in June 2019. The inclusion criteria set were Patients. women diagnosed with Ca Mamae, Ca Mamae Patients at all stages and are willing to be respondents. The exclusion

criteria of this study were Ca mamae patients who experienced complications. Data collection tools in this study by primary data with check list instruments. The risk factors for Ca that were studied included: age, family history, history of alcohol consumption, obesity and exposure to cigarette smoke.

RESULTS AND DISCUSSION

1. Age of Ca Mamae Patient

    The frequency distribution of respondents by age can be seen in the table below:

    Tabel 1.1 Distribution of respondents based on age in Ca Mamae patients at RSUD Dr. Moewardi Surakarta.

Age	Frequency	Percentage
≥40 years	75	91.5
<40 years	7	8.5
Total	82	100.0

    Based on table 1.1, it shows that patients who experienced Ca Mamae based on age were mostly aged ≥ 40 years, as many as 75 respondents (91.5%).

    Age is an important factor related to Ca mamae. The majority of breast cancer cases occurred in women aged 40–44 and 45–49 years (77.3%). Among women aged < 45 years, breast cancer incidence was highest among black women (Shoemaker *et al*, 2018). It is estimated that the period between the onset of menarche and the time of first pregnancy is the window of initiation of Ca mamae development. As we age, the metabolism in the human body is weak and it is increasingly susceptible to the growth of cancer cells. This can be triggered by an unhealthy lifestyle or giving birth to more than 35 years (Ayudia, 2018).

    The highest incidence of breast cancer is found at the age of 40-49 years because at this time there is a decrease in the hormone estrogen in women. (Suardita *et. al* 2016). Meanwhile, on the other hand, the fat cells in the breasts tend to produce large amounts of the aromatase enzyme, which in turn will increase local estrogen levels. This locally produced estrogen is believed to play a role in triggering breast cancer (Nurhayati, 2018).

2. Family history

    The frequency distribution of respondents based on family history of Ca Mamae patients at RSUD Dr. Moewardi Surakarta can be seen in the table below:

Table 1.2 Distribution of respondents based on family history of Ca Mamae patients.

Family History	Frequency	Percentage
Ca mamae	61	74.4
Non Ca mamae	21	25.6
Total	82	100.0

Based on table 1.2, it shows that patients who experienced Ca Mamae based on their family history mostly had a family history of suffering from Ca Mamae, namely as many as 61 respondents (74.4%).

The risk of breast cancer is higher in women who have close blood relations to have this disease (Prabandari and Fajarsari, 2016). Azmi et al (2020) stated that having a positive family experience breast cancer is the biggest risk factor for breast cancer. Women with one family member who has Ca mamae will have twice the risk of suffering from Ca mamae and women with 2 families suffering from Ca mamae will have a 14 times greater risk of suffering from Ca mamae, while women with a long family history of suffering from Ca mamae 20% experienced Ca mamae.

Ca mamae have an increase cases with the historical family with incidence of Ca. Genetic studies show that Ca mamae is linked to certain genes. A number of inherited defective genes can increase the incidence of breast cancer in a person (Ayudia, 2018)

Half of Ca mamae syndrome comes from the presence of mutations in BRCA 1 and BRCA 2. Women with the BRCA 1 and BRCA 2 mutations are at a significantly higher risk of developing Ca mamae. (Zhang *et.al*, 2018). The existence of mutations in genes causes the function of genes as tumor suppressor genes to be disrupted so that cells can proliferate continuously without being controlled (Maysarah *et.al*, 2018). The BRCA gene can be the embryo for the growth of cancer cells, especially Ca mamae. Women with a history of Ca mamae can do Breast cancer gene test in the laboratory because the BRCA gene triggers the tumor (Ayudia, 2018).

3. History of Alcohol Consumption

The frequency distribution of respondents based on the history of alcohol consumption in Ca Mamae patients at RSUD Dr. Moewardi Surakarta can be seen in the table below:

Table 1.3 Distribution of respondents based on a history of alcohol consumption in Ca Mamae patients at RSUD Dr. Moewardi Surakarta.

History of Alcohol Consumption	Frequency	Percentage
Alcohol	43	52.4
Non alcohol	39	47.6
Total	82	100.0

The results of this study showed that patients who experienced Ca Mamae based on a history of alcohol consumption mostly consumed alcoholic drinks, namely as many as 43 respondents (52.4%).

Nurhayati (2018) explains that women who drink one glass of alcohol a day have a small increased risk compared to women who drink two to five glasses a day. The risk increases to one and a half times that of women who do not drink alcohol at all. Alcohol can cause obstacles in the metabolism of estrogen and progesterone levels in the blood. Excessive alcohol consumption can interfere with the function of the liver in estrogen metabolism, so that estrogen levels remain high in the blood and this can increase the risk of breast cancer. The increased risk of cancer depends on the dose/amount of alcohol consumed by a person. The process of breast cancer is caused by an increase in the concentration of estrogen in the body. When consuming 10 grams of ethanol a day, the risk increases to 8% in the postmenopausal women group; and increased to 9% in the group of pre-menopausal women (Umar, 2019).

Alcohol is converted into *acetaldehyde* by alcohol dehydrogenase in the human body, and further into acetate by *acetaldehyde dehydrogenase* and *xanthine oxidoreductase*. *Acetaldehyde* rapidly binds to DNA and proteins and produces DNA adducts, which result in DNA point mutations, DNA cross-linking and chromosomal aberrations. In addition, acetaldehyde inhibits the repair of oxidative DNA damage caused by alkylating agents (Liu *et al*, 2015).

Suardita *et. al* (2016) stated that women who like to consume alcohol either a little or a lot or who are addicted have a high risk of suffering from breast cancer. In everyday life, it is rare to find a woman consuming alcohol. But in reality it is not in accordance with the general public's thinking. There are several things that can influence women to

consume alcohol such as culture, lifestyle and environment. Women who consume 3 glasses of alcohol per day will increase the risk of breast cancer by 40% -50%.

4. Obesity

The frequency distribution of respondents based on obesity in Ca Mamae patients at RSUD Dr. Moewardi Surakarta can be seen in the table below:

Table 1.4 Distribution of respondents based on obesity in Ca Mamae patients at RSUD Dr. Moewardi Surakarta.

Obesity	Frequency	Percentage
Obesity	46	56.1
Non obesity	36	43.9
Total	82	100.0

The results of this study indicate the frequency distribution of the characteristics of ca mamae respondents based on obesity shows that most of the obesity occurs as many as 46 respondents (56.1%).

Women who are obese or overweight have a higher risk of suffering from breast cancer (Suryani *et al*., 2016). The risk of obesity will increase due to increased estrogen synthesis in fat deposits which affects the proliferation process of breast tissue. Excessive proliferation and no

cell death limit will cause cells to divide continuously. Through the process of progression, breast cancer occurs (Maysarah *et al*, 2018).

Maria et al (2017) explained that fat consumption is a risk factor for breast cancer. Consumption of saturated fats such as meat, fried chicken, fast food, full cream cheese, butter, eggs and fried milk increases a woman's risk of developing breast cancer. Women who have a habit of eating fatty foods can cause the body to produce more estrogen and trigger the process of abnormal cell division and become cancerous.

Women who have lost weight or maintained ideal weight have a lower risk of primary breast cancer or the potential for recurrence than women who have not (Ruiz *et al*, 2017). Genetically determined obesity and glucose/insulin-related traits have an important role in the etiology of breast cancer (Shu *et al*, 2019)

5. Exposure to Cigarette

The frequency distribution of respondents based on exposure to cigarette smoke in Ca Mamae patients at RSUD Dr. Moewardi Surakarta can be seen in the table below:

Table 1.5 Distribution of respondents based on exposure to cigarette smoke in Ca Mamae patients at RSUD Dr. Moewardi Surakarta.

Ciggarete exposure	Frequency	Percentage
Exposure	65	79.3
Non exposure	17	20.7
Total	82	100.0

The results of this study indicate the frequency distribution of the characteristics of ca mamae respondents based on cigarette smoke exposure shows that most of them are exposed to cigarette smoke as many as 65 respondents (79.3%).

Sunarti *et. al* (2018) stated that smoking is fun but has a harmful impact on the body. The proportion of smoking is mostly done by men. Women tend to inhale more cigarette smoke, causing them to be second-hand smoke. Cigarette smoke (tobacco) contains a dangerous carcinogen, namely *Polycyclic Aromatic Hydrocarbons* which can increase the risk of breast cancer. Therefore, women who are susceptible to various other risk factors for breast cancer need to avoid exposure to cigarette smoke for as long as possible in order to avoid breast cancer risk factors.

Exposure to cigarette smoke is very dangerous to health, where cigarette smoke exhaled by active smokers contains many substances and particles that harm the body such as carbon monoxida. The long duration of exposure to cigarette smoke will increase the adverse effects on health. The longer the exposure to cigarette smoke, the more particles of toxic substances and carcinogens that accumulate in the body and the risk of suffering from breast cancer is getting wider Suardita *et. al* (2016).

The smoking behavior of family members that is carried out every day has an effect on increasing the risk of breast cancer because cigarette smoke contains high concentrations of chemicals that can cause breast cancer. The chemicals in tobacco smoke reach the breast tissue. Smoke from burning tobacco (smoke coming from the burning tip of a cigarette) has a higher concentration of carcinogens than primary smoke (smoke exhaled by smokers). In addition, smoke from burning tobacco has smaller particles than the main smoke so that it easily enters the body's cells (Maria *et.al* 2017).

CONCLUSIONS AND SUGGESTIONS

The result of the research can be concluded that's: Age of Ca Mamae patients is mostly found in the age of ≥ 40 years, Most of Ca mamae patients have a family history of suffering from ca mamae, Most of the Ca Mamae patients have an alcohol consumption history, most of the Ca Mamae patients are obese and most of Ca Mamae patients are exposed to cigarette smoke. Sugestion: Women who have a family history of breast cancer can avoid modifiable risk factors for breast cancer such as obesity, alcohol consumption or exposure to cigarette smoke and perform breast self-examination. Health workers can provide education about Ca mamae and its risk factors to the community as well as recommendations for a healthy lifestyle and nutritious food for prevention.

REFERENCES

Azmi, AN., Kurniawan, B., Siswandi, A., Detty, AU. (2020). Hubungan Faktor Keturunan Dengan Kanker Payudara DI RSUD Abdoel Moeloek. *Jurnal Ilmiah Kesehatan Sandi Husada Volume 9, Nomor 2 Desember 2020, pp 702-707*

Ayudia, F. (2018). Faktor –Faktor Penyebab Terjadinya Ca Mamae Pada Wanita Usia Subur Di RSUP Dr. M.Djamil Padang. *Jurnal Ilmu Kesehatan* (JIK) Oktober 2018 Volume 2 Nomor 2 P-ISSN : 2597-8594

Dinas Kesehatan Provinsi Jawa Tengah. (2017). *Profil Kesehatan Jawa Tengah 2017*. Semarang.

Guntari, Suariyani. (2016). Gambaran Fisik Psikologis Penderita Kanker Payudara Post Mastektomi di RSUP Sanglah Denpasar Tahun 2014. *Arc. Com. Health 3 (1): 24-35*

Liu, Y., Nguyen, N., Colditz, G. (2015). Links between alcohol consumption and breast cancer: a look at the evidence. *Womens Health (Lond Engl). 2015 Jan; 11(1): 65–77.*

Maria, I.L., Sainal, A.A., Nyorong, M. (2017). Resiko Gaya Hidup Terhadap Kejadian Kanker Payudara pada Wanita. *Jurnal MKMI 13(2): 157-166.*

Maysaroh, D., Sarumpaet, S., Hiswani. (2018). Analisis Faktor Risiko Kanker Payudara Di Rumah Sakit Umum Pusat Haji Adam Malik Medan. *Jurnal Maternitas Kebidanan, Vol 3, No. 1, April 2018*

Momenimovahed Z., Salehiniya, H. (2019). Epidemiological Characteristics Of And Risk Factors For Breast Cancer In

The World. *Breast Cancer (Dove Med Press) 2019; 11: 151–164. Published online 2019 Apr 10. doi: 10.2147/ BCTT.S176070*

Nurhayati. (2018). Faktor-faktor yang Berhubungan dengan kejadian Kanker Payudara di RSUD Kota Padangsidimpuan Tahun 2016. *Jurnal Warta Edisi: 56: 1829-7463.*

Prabandari dan Fajarsari. (2016). Faktor-faktor yang Mempengaruhi Kejadian Kanker Payudara di RSU Dadi Keluarga Purwokerto. *Jurnal Ilmiah kebidanan 7(1): 105-118.*

Setiowati, D.A.I., Tanngo, E.H., Soebijanto, R.I. (2016). Hubungan antara Pemakaian KB Hormonal dengan kejadian Kanker Payudara di Poli Onkologi Atap RSUD Dr. Soetomo, Februari-April 2015. *Indonesian Jurnal of Cancer 10 (1): 11-17.*

Shoemaker, M.L., White, M.C., Wu, M. (2018). Differences in breast cancer incidence among young women aged 20–49 years by stage and tumor characteristics, age, race, and ethnicity, 2004–2013. *Breast Cancer Res Treat* 169, 595–606 (2018). https://doi.org/10.1007/s10549-018-4699-9

Shu, X., Wu, L, Khankari, N.K, Shu, X.O, Wang,T.J., Michailidou,K., Bolla, M., Wang,Q., Dennis,J., Milne,R.L., Schmidt,M.K., Pharoah,P., Andrulis,I., Hunter,D.J., Simard,J., Easton, D.F., Zheng,W. (2019). Breast Cancer Association Consortium, Associations of obesity and circulating insulin and glucose with breast cancer risk: a Mendelian randomization analysis. *International Journal of Epidemiology, Volume 48, Issue 3, June 2019, Pages 795–806,* https://doi.org/10.1093/ije/dyy201

Suardita, I.W., Chrisnawati., Agustina, D.M. (2016). Faktor-faktor Resiko Pencetus Prevalensi Kanker Payudara. *Jurnal Kesehatan 2(1): 1-14.*

Sulung, N., Yananda, R., Adriani. (2018). Determinan Kejadian Ca Mammae di Poli Rawat Jalan Bedah RSUD DR. Achmad Mochtar. *Jurnal Endurance 3 (3): 575-587.*

Sunarti, D.E., Yusran S., Pratiwi A.D., (2018). Analisis Faktor Risiko Yang Mempengaruhi Kanker Payudara Terhadap pasien RSUD Bahteramas Provisi Sulawesi Tenggara tahun 2017. *Jurnal Ilmiah Mahasiswa Kesehtan Masyarakat 3 (3): 1-11.*

Umar, M. (2019). Pencegahan Primer Pada Penyakit Kanker Payudara. *Prosiding Ilmiah Dies Natalis Fakultas Kedokteran Universitas Sriwijaya Vol 57, Tahun 2019*

Zheng, Y., Walsh, T., Gulsuner, S., Casadei, S., Lee, M. K., Ogundiran, T. O., Ademola, A., Falusi, A. G., Adebamowo, C. A., Oluwasola, A. O., Adeoye, A., Odetunde, A., Babalola, C. P., Ojengbede, O. A., Odedina, S., Anetor, I., Wang, S., Huo, D., Yoshimatsu, T. F., Zhang, J., … Olopade, O. I. (2018). *Inherited Breast Cancer in Nigerian Women. Journal of clinical oncology: official journal of the American Society of Clinical Oncology, 36(28), 2820–2825.* https://doi.org/10.1200/JCO.2018.78.3977