

PROPORTION OF SPECIFIC RISK FACTORS FOR BREAST CANCER AMONG WOMEN AGE 25-65 YEARS OLD

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ABSTRACT

The number of women participating in early screening program for breast cancer in developing countries like Indonesia is considered low. This study aims to determine the proportion of specific risk factors for breast cancer among women age 25-65 years. Observational analytic method with case control design was used in this study. Sample was taken using simple random sampling technique. The sample size was 23 women in case group and 46 women in control group in working area of Gandus and Dempo, South Sumatera – Palembang sub-districts. Data was analyzed using chi square and fisher's exact, continued to multiple logistic regression. The results of this study found that there were 7 specific risk factors: age (OR: 0.6, 95%CI:0.53-0.79), menarche age (OR: 24, 95%CI:2.76-207.98), history of tumor (OR:3.2, 95%CI:2.28-4.75), family history of cancer (OR: 3.3; 95%CI:2.28-4.75), breastfeeding duration (OR:3.1, 95%CI:2.23-4.54), consumption of fatty foods (OR:0.2; 95%CI:0.07-1.00), and types of hormonal contraceptives (p value<0.05). The multiple logistic regression revealed that menarche was the primary breast cancer risk factor (p value<0.05; Exp (B) 0.05; 95%CI: 0.06-0.55). Nurse may use this study result to promote breast care early detection.

Keywords: factors, breast, cancer, risk

ABSTRAK

Wanita yang melakukan deteksi dini kanker payudara masih sedikit. Penelitian ini bertujuan untuk mengetahui proporsi beberapa faktor spesifik yang menyebabkan risiko kejadian kanker payudara pada wanita berusia 25-65 tahun dengan metode analitik observasional dengan desain *case control* menggunakan probability sampling melalui pendekatan teknik *simple random sampling*. Besaran sampel adalah 23 wanita pada kelompok kasus dan 46 wanita pada kelompok kontrol di wilayah kerja Gandus dan Dempo, Sumatera Selatan - Palembang kecamatan pada bulan Mei sampai September 2017. Data dianalisis menggunakan *chi square* dan *fisher's exact*, dilanjutkan dengan regresi logistik ganda. Hasil penelitian menemukan terdapat 7 faktor risiko spesifik, usia (OR: 0,6, 95% CI: 0,53-0,79), menarche (OR: 24, 95% CI: 2,76-207,98), riwayat tumor (OR: 3,2, 95% CI: 2,28-4,75), riwayat kanker dalam keluarga (OR: 3,3; 95% CI: 2,28-4.75), lama menyusui (OR: 3,1, 95%CI: 2,23-4,54), konsumsi makanan berlemak (OR:0,2; 95%CI: 0,07-1,00), jenis kontrasepsi hormonal (p value<0,05). Usia saat menstruasi pertama merupakan faktor resiko utama kanker payudara (p value<0,05; Exp (B) 0,05; 95% CI:0,06-0,55). Perawat bisa menggunakan hasil penelitian ini untuk melakukan upaya deteksi dini kanker payudara.

Kata kunci: faktor, payudara, kanker, risiko

BACKGROUND

Breast cancer was the second most common cancer in Indonesia after cervical cancer (0.5% compare to 0.8%). It is estimated that the incidence are not less than 1,050,346 per year worldwide. Of these, 580,000 cases occur in developed countries and the rest occur in developing countries. International Agency for Research on Cancer projected that there will be 1.15 million new cases of breast cancer with 411,000 deaths by 2020. It is predicted that approximately s 70% of new cases and 55% occur in developing countries (Rasjidi, 2010).

The number of women participating in early screening program for breast cancer is considered low. Early screening is important to detect any changes on the breasts. In Indonesia, early detection still becomes main issue. Approximately, 70% of new cases are found in stage three and stage four. Treatment management of breast cancer is determined by the stage when it is first discovered. Stage I cancer has about 80-90% chance of cure. In stage II where the cancer begins to spread to the lymph glands around the breast, the chances of cure decrease to 60-70%. The survival rate decreases to 30-40% in stage III patients and a stage IV patient has only less than 10% chance to survive (Purwanto, 2010)

Unknown changes on breast is one the signs of breast cancer. Consequently, late diagnosis of the disease results in greater demand of treatment compared to the earlier one. This study aims to determine the proportion of specific risk factors for breast cancer among women age 25-65 who exposed to risk factors in the working area of Gandus and Dempo sub-district, South Sumatera, Palembang.

METHOD

This research was an analytic observational research with case control design. Sample was collected using simple random sampling technique. Control group were randomly selected from the respondents who had abnormal results of CBE. Then this study obtained the number of cases and control ratio was 1: 2. There were 23 women in case group and 46 women in control group. Data were collected from May to September 2017.

RESULT

The proportion of women at risk of breast cancer was 33.3% from the total sample of 69 women aged 25-65 years old.

Tabel 1. Characteristics of respondents

| Variables | Case (n=23) | | Control (n=46) | |
|--------------------------------|-------------|-------|----------------|-------|
| | N | % | N | % |
| Level of education | | | | |
| Elementary school | 18 | 78,3% | 12 | 26,1% |
| Junior High School | 1 | 4,3% | 2 | 4,3% |
| High school /vocational school | 4 | 17,4% | 32 | 69,6% |
| Higher Education | 0 | 0% | 0 | 0% |
| Marital status | | | | |
| Married | 23 | 100% | 46 | 100% |
| Not Married | 0 | 0% | 0 | 0% |
| Menopause Status | | | | |
| Yes | 0 | 0% | 0 | 0% |
| No | | | | |
| Breast Cancer History | | | | |
| Yes | 0 | 0% | 0 | 0% |
| No | 23 | 100% | 46 | 100% |
| Stress Level | | | | |
| Normal | 0 | 0% | 0 | 0% |
| Low | 23 | 100% | 0 | 0% |
| Moderate | 0 | 0% | 0 | 0% |
| Severe | 0 | 0% | 0 | 0% |
| Awfully | 0 | 0% | 0 | 0% |
| Passive smoker | | | | |
| Yes | 23 | 100% | 46 | 100% |
| No | 0 | 0% | 0 | 0% |

The level of education was categorized into 4 categories. Majority of respondents in case group graduated from primary school (78.3%), while respondent in control group mostly graduated from high school (SMK / SMA / SMK) (69.6%). All of respondents were married and have not yet experienced menopause. All of respondents also experienced low level of stress and was a passive smoker. All respondents in this study both case and control group did not have a history of breast cancer.

Table 2. Bivariate Analysis

| Variables | <i>p</i> value | OR | 95% CI |
|--------------------------------------|----------------|------|-------------|
| Age | | | |
| 17-46 years old | 0,000 | 0,65 | 0,531-0,795 |
| Menarche | 0,000 | 24 | 2,76-207,98 |
| History of Benign Tumor In Breast | 0,04 | 3,19 | 2,23 – 4,54 |
| Family Cancer History | 0,012 | 3,3 | 2,28 – 4,75 |
| Breastfeeding duration | 0,042 | 3,19 | 2,23 – 4,54 |
| Consumption of Fatty Foods | 0,043 | 0,28 | 0,077-1,007 |
| Types of Hormonal Contraception * | 0,019 | | |
| Ovarian Cancer History | 0,154 | 3,09 | 2,19-4,359 |
| Consumption of Fibrous Foods | 0,843 | 1,12 | 0,35-3,551 |
| Physical Activity | 0,154 | 3,09 | 2,192-4,359 |
| Duration of Oral Contraceptive Use * | 0,134 | 0,41 | 0,12-1,34 |
| Weeks of Pregnancy while Miscariage | 0,28 | 2,21 | 0,49-9,78 |

*Fisher's Exact

The abnormal clinical breast examination results were found in case group at age ≥ 40 years. Mean of respondents' age in case group was 39.79 ± 5.71 , while in the control group

was 30.46 ± 5.33 . The majority of respondents experienced menarche at age at age ≥ 12 years old, both in the case group (65.2%) and control group (97.8%). In this study there was a significant relationship between menarche and breast cancer risk ($p < 0.05$). The results of chi-square analysis showed that in the history of benign tumors in breast ($p < 0.05$) with abnormal CBE examination (case group), 8.7% of respondents had a history of benign tumors in the breast.

The study result indicated that women with a breast benign tumors history 3.19 times will be at risk of breast cancer (2.23-4.54, 95% CI) compare with women who did not have a breast benign tumors history. The study results showed that 13% of cases had a cancer family history. Cancer family history was significantly associated with breast cancer risk ($p < 0,05$). In this study, only 8.7% of respondents breastfeed their baby < 6 months. The results of this study proved that there was a significant relationship between breastfeeding duration and breast cancer risk. There was no significant correlation between the consumption of fibrous foods with the risk of breast cancer ($p > 0,05$). The majority of respondents both in case groups (69.6%) and control group (89.1%) consumed high-fat diet. There was a significant relationship between fatty food consumption and risk of breast cancer ($p < 0,05$). The majority of respondents did physical activity ≥ 30 minutes per day both in cases group (95.7%) and control group (100%). The results of this study proved that there was no relationship between physical activity with risk of breast cancer incidence ($p > 0,05$). In addition, there was no association between the use of oral hormonal contraceptives and the risk of breast cancer incidence ($p > 0.05$). The

pregnancy age during abortion also did not associate with cancer risk ($p > 0.05$). The predictors of breast cancer were analyzed using multiple logistic regression statistic test.

Table 3. Multivariate analysis specific candidate factors in multiple logistic regression analysis

| Variable Specific Factors | <i>p value</i> |
|-----------------------------------|----------------|
| Age | 0,00 |
| 17-46 Years | 0,00 |
| Menarche | 0,04 |
| <12 years | 0,04 |
| ≥ 12 Years | 0,04 |
| History of Benign Tumor In Breast | 0,01 |

Table.4 Final model multiple logistic regression analysis of specific breast cancer risk factors

| Variables | B | P value | Exp (B) | 95% CI |
|-----------|-------|---------|---------|-----------|
| Menarche | -2,83 | 0,014 | 0,05 | 0,06-0,55 |
| Constant | 0,75 | 0,324 | 2,148 | |

Multivariate analysis using Multiple Logistic Regression found that age of first the menarche was the major risk factor of breast cancer (Exp (B): 0.05, $p < 0.05$, 95% CI: 0,06-0,55).

DISCUSSION

Abnormal Clinical Breast Examination (CBE) results mostly were found among women at age ≥ 40 years old. Previous research suggested that women age ≥ 40 years are 13.34 times more likely to have breast tumors compared with age group < 40 years old. Age group was found to be significantly associated to breast tumor (p value < 0.000) (Marince, 2013).

This study found that 34.8% of respondents experienced the first menstruation at age > 12 years. According to Indrati (2005), early menstrual age is associated with longer duration of exposure to estrogen and progesterone. These hormones affect proliferation of tissue, including breast tissue. Sirait et al

(2009) states that breast tissue is very sensitive to estrogen hormones. Long term exposure to estrogen will increase the risk of breast cancer.

Marice research (2014), found that menopause put women on risk of having breast tumor 3.55 times than women who have not yet experienced menopause. However, other studies suggest that early age of menopause is unrelated to breast cancer risk. Women who experience menopause at age < 55 years are 2 times more likely to have breast cancer those experiences menopause at age < 55 Years.

Dupont (2004) stated that women who had history of benign tumors in the breast are at risk for developing breast cancer. The increased risk appeared to associate with an excessive proliferation process. Proliferative events that occur in breast tissue without accompanied by the control of cell death programmed by apoptosis process cause malignancy because the body is unable to detect any damage to DNA.

Genetic factor also plays a role in breast cancer. Risk of breast cancer is also associated to mutation of genes BRCA1 and BRCA2 (Van de Velve et al, 1999). Yulianti (2016) found that person with a family history of cancer is 2.77 times more likely to have breast cancer. The function of BRCA gene in DNA is to control cell growth or inhibit proliferation. Women who inherit a mutated gene from their family will be at risk for developing breast cancer (Lanfranchi, 2005).

Breast cancer and ovarian cancer is found to be related. Women who have a previous history of breast cancer or ovarian cancer are at risk for developing breast cancer. Estrogen imbalance is likely to be the important risk factor (Indarati, 2005; Dupont, 2004; & Pherson, 2000).

The duration of breastfeeding is associated with the risk of breast cancer. Azamris (2006) stated that longer breastfeeding will decrease exposure of estrogen to the breasts. During breastfeeding, estrogen and progesterone production is decrease. As a result, proliferation process, which suggested causing breast cancer, is inhibited (Indrati, 2005, Tjindarbumi, 2003, & Wakai, 1995). However, it is contrary to Rianti (2012) which found that there is no relationship between history of breastfeeding and breast cancer incidence. It means that the link between history of breastfeeding and breast cancer incidence is still questionable. According to Lanfranchi (2005), from pregnancy to breastfeeding period, there is a change of cell type in breast tissue from type 3 to type 4 which later produce milk. Duration of breastfeeding has been identified to be the specific risk factor for developing breast cancer.

Marice (2014) found that there is relationship between stress levels and breast tumors (p value <0.05). Gautama (2014) in Chandra (2014) stated that stress can trigger breast cancer because estrogen is increase during stressful period. In severe stress conditions, body's cellular balance is disrupted. Stress can affect the cell to be hyperactive and to proliferate which then increases the risk of breast cancer. (KKP, MOH, 2017).

Eating fibrous foods such as vegetables can protect from or prevent the development of cancer, including breast cancer (Zhang et al, 2009). The high rate of cancer in Indonesia is identified to be associated to less fiber in diet (MOH, 2010). Fiber rich foods contain anticariogenic substances such as vitamin C, vitamin E, carotenoids, complementary Isoflavones (Mahan & Escott-Stump, 2008).

In the Willet's (2001) study, it is identified that not all foods containing fat is associated to breast cancer. Sutadyo (2011) states that eating foods high in calories and fat may increase the risk of cancer. Consumption of meat, preserved meat, french fries, sweet foods and sources of fat may increase the risk of breast cancer. Peter et al (2009) found that there is a correlation between physical activity and risk of breast cancer. Proliferation will be inhibited by physical activity or exercise through hormonal work system (Enger, 2000; Tjindarbumi, 2004; Wakai, 1995).

In a review conducted by Miller et al (2006), relationship between passive smokers with breast cancer incidence was identified in 10 case control study and 4 study cohort. Indrati (2005) note that female smokers have higher levels of estrogen. Herianto et al (2005) revealed that women who use hormonal contraceptives pill type combination has risk of breast cancer 1.8 times higher. Suryani (2016) found that women who use hormonal contraceptive ≥ 10 years are 5.7 times more likely to develop breast cancer. Estrogen and progesterone lead to cell proliferation continuously, which causing apoptosis and abnormal proliferation of cells (Wakai, 1995); Willet, 2001; Devita; 1989in Indrati.2005). In Indrati's study (2005), abortion in < 10 weeks of pregnancy was not related to risk of breast cancer incidence.

CONCLUSION

There were 7 specific risk factors of breast cancer including: age, menarche age, history of tumor, family history of cancer, breastfeeding duration, consumption of fatty foods, and types of hormonal contraceptives. The multiple logistic regressions revealed that menarche was the primary risk factor.

Nurse may use this study result to promote breast care early detection.

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