

HASIL CEK_Solikhah_Breast cancer, Indonesia, Lifestyle, Physical activity, Smoking

by Solikhah Lifestyle Breast Cancer Patients

Submission date: 21-Nov-2022 11:32AM (UTC+0700)

Submission ID: 1959925059

File name: lifestyle.pdf (318.14K)

Word count: 3548

Character count: 18716

Lifestyle breast cancer patients among Indonesian women: A nationwide survey

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Article Info

Article history:

Received Feb 26, 2021

Revised Aug 8, 2021

Accepted Aug 24, 2021

Keywords:

Breast cancer
Indonesia
Lifestyle
Physical activity
Smoking

ABSTRACT

Recently, cancer is a major health problem in the world. Lifestyle changes and growing urbanization likely led to increasing breast cancer incidence in such in Indonesia. Therefore, this study aimed to explore lifestyle breast cancer patients among Indonesian women. The investigation was a cross-sectional study distributed among 3,392 females drawn from 13 out of 27 provinces in Indonesia. Multiple binary logistic regressions were conducted to investigate breast cancer risk among Indonesian. A significance level of 0.05 was employed in all analysis. Of the 3,392 respondents included in the analysis, more than half (52.71%; n=1,788) was aged 40-49 years old. The most common marital status of the participants was married (98.20%; n=3,331), followed by no smoking (94.69%; n=3,212) and active exercise (62.12%; n=2,107). Education level was significantly associated with breast cancer (AdjOR_Junior high school=0.21; 95%CI=0.06 to 0.70; p<0.01 and AdjOR_senior high school=0.60; 95%CI=0.15 to 2.26; p<0.05). Education level was significantly related to breast cancer. Lifestyle such as smoking and physical activity was suspected to affect breast cancer indirectly.

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1. INTRODUCTION

Recently, cancer is a major problem globally, both in developed and developing countries and is most often found in women. Globally, breast cancer ranks second as the leading cause of death worldwide (11.6%) after lung cancer [1]. Among Southeast Asian countries, the highest incidence of breast cancer was in Indonesia 48,998 cases, which was then followed by the Philippines 18,327 cases, Thailand 13,653 cases, and Vietnam 11,067 cases [2]. The mortality rate from breast cancer is 35.5% of the 107,545 incidences of breast cancer in Southeast Asia [2].

The leading cause of breast cancer remains unknown, but it can be avoided by increasing knowledge about its risk factors. Several previous studies revealed that breast cancer risk factors could be divided into two factors that cannot be controlled, such as age [3]-[5] and gender [6]. Also, several factors can be controlled, such as physical activity [7], [8]; employment [9], [10]; knowledge of signs and symptoms of breast cancer [11] and smoking [12]. Meanwhile, Indonesia as the fourth most populous country globally remains ignorant of a healthy lifestyle with many people who lack exercise, smoking, high consumption of fast food, and less attention to balanced nutrition. Moreover, the government has no priority to provide mass breast cancer screening as a national program that led to most patients with breast cancer diagnosed in the

advanced stage. Also, public awareness to seek health care services is low due to lack of knowledge of breast cancer signs and symptoms [11]. Therefore, exploring lifestyle using the Indonesian family life survey (IFLS) data is needed for evaluating the community's lifestyle. IFLS-5 is one of big data sources of data from a longitudinal survey conducted in Indonesia that covered 80% of the total across the province and conducted every seven years that included many variables related to individual characteristics, the environment, and health care facilities.

2. RESEARCH METHOD

2.1. Sample and data collection

A secondary analysis of data collected by RAND and Survey Metter (<https://www.rand.org/well-being/social-and-behavioral-policy/data/FLS/IFLS/ifls5.html>) was used in this study. We used data in IFLS wave five conducted in this research. The sample size was taken as many as 3,392 females, drawn from 13 out of 27 provinces in Indonesia. The inclusion criteria were willing to participate and involved in the next phase of the study and aged ≥ 40 years. Missing data were excluded. A structured questionnaire was provided to respondents and taken by IFLS- wave 5.

All data in this study were obtained from four types of questionnaire books in the Household Survey Questionnaire Book, which can be assessed <https://www.rand.org/well-being/social-and-behavioral-policy/data/FLS/IFLS/download.html>. Based on IFLS-5 data, the variable of breast cancer was assessed using a mammogram by a medical doctor in oncology. Then, subjects were classified into the two categories of Yes and No based on the IFLS-5 data. Physical activity measured within seven days. Physical activity is classified into two categories namely "active", and "inactive". The category of "active" if the respondent met one of two criteria: i) physical activity is carried out with high intensity for at least three days and reached a total activity of at least 1500 MET-minutes/week, or; ii) A combination of walking activity at least seven days with moderate - vigorous intensity and achieve a total activity of at least 3000 MET-minutes/week; iii) high-intensity activity for minimum three days at least 20 minutes per day; iv) moderate-intensity activity for minimum five days and or/at least 30 minutes of walking activity per days; v) a combination of moderate-high intensity walking activity and the total activity of 600 MET-minutes/week. The category of "inactive" if the respondent carries out physical activity but is not included in the category of "active". Smoking is measured using a dichotomy nominal (Yes=if respondent chewed tobacco or smoking during the study or in the past; No= if the respondent did not chew tobacco or smoking during the study or past). Several demographic characteristics of participants were also measured, such as age, marital status, education level and occupation.

2.2. Ethical clearance

Approvals for this study were obtained from Universitas Ahmad Dahlan Ethics Committee for Health Research that Uses Humans as Research Subjects (Number: 011905053).

2.3. Data analysis

Sociodemographic data of participants were presented by the frequency and percentage of a categorical variable and mean following with standard deviation for continuous data. Statistical test using logistic regression was conducted to examine factors' influence on breast cancer risk. All analysis was performed using STATA version 15.0. A significance level of 0.05 was employed in all analysis.

3. RESULTS AND DISCUSSION

3.1. Results

Of the 3,392 respondents included in the analysis, more than half (52.71%; $n=1,788$) was aged 40-49 years old. The most common marital status of the participants was married (98.20%; $n=3,331$), followed by no smoking (94.69%; $n=3,212$) and active exercise (62.12%; $n=2,107$). The demographic characteristics of the participants are presented in Table 1.

The correlation of sociodemographic participants with breast cancer incidence are presented in Table 2. Women with low educational levels in Junior high school were significantly associated with lower breast cancer incidence (OR=0.31; 95%CI=0.07 to 0.77; $p<0.05$). Then, a multivariate binary logistic regression was used to evaluate the predictors of breast cancer incidence. The result of this study showed significant relationship between education level (elementary school) and breast cancer (AdjOR_Junior high school=0.21; 95%CI=0.06 to 0.70; $p<0.01$ and AdjOR_senior high school=0.60; 95%CI=0.15 to 2.26; $p<0.05$). However, there were no significant associations with age, marital status, occupation, physical activity, and smoking.

Table 1. Demographic characteristics of respondents

Items	n= 3,392	Percentage (%)
Breast cancer		
Yes	20	0.59
No	3,372	99.41
Age (years old)		
40-49	1,788	52.71
50-59	1,103	32.52
≥60	501	14.77
Marital status		
Unmarried	61	1.80
Married	3,331	98.20
Education level		
Elementary school	1,042	30.72
Junior high school	1,629	48.02
Senior high school	401	11.82
Higher education	320	9.43
Occupation		
Housewife	1,639	0.13
Civil servant/private sector/entrepreneurs	1,639	51.21
Physical activity		
Inactive	1,285	37.88
Active	2,107	62.12
Smoking		
Yes	180	5.31
No	3,212	94.69

Table 2. Adjusted ORs and 95%CI of a risk factor for breast cancer

Items	Crude OR	95%CI	Adjusted OR	95%CI
Age (ref: 40-49 years old)				
50-59	1.63	0.64-4.11	1.86	0.73-4.80
≥60	0.79	0.17-3.68	0.90	0.19-4.25
Marital status (ref: married)				
Unmarried	2.90	0.38-22.06	2.47	0.32-19.25
Education level (ref: higher education)				
Elementary school	0.31	0.09-1.06	0.28	0.08-0.98
Junior high school	0.31	0.07-0.77*	0.21	0.06-0.70**
Senior high school	0.31	0.17-2.38	0.60	0.15-2.26*
Occupation (ref: housewife)				
Civil servant/Private sector/entrepreneur	1.41	0.57-3.45	1.71	0.68-4.31
Physical activity (ref: active)				
Inactive	0.75	0.31-1.80	0.75	0.31-1.81
Smoking (ref: No smoking)				
Smoking	0.94	0.12-7.05	0.95	0.13-7.20

***: p<0.001; **: p<0.01; *: p<0.05; ref: reference

3.2. Discussion

Breast cancer is a malignant tumour that develops in the breast. If the cells in the mammary gland divide uncontrollably, they will become benign or malignant tumours [13]. Having breast cancer or receiving treatment, most patients with breast cancer have been experienced depression, anxiety and fear. The emotional problems can also arise after cancer treatments such as worry if it might return [14]. Other issues are also found for patients and families, such as the high cost of breast cancer treatment [15]. Increasing knowledge of breast cancer risk factors is needed as an effort to reduce the number of breast cancer cases, especially for low-middle income countries such as Indonesia. Age is well known as a risk factor for breast cancer that uncontrolled [3]-[5]; and gender [6]. Meanwhile, several factors can be modified to reduce the high prevalence of breast cancer, such as physical activity [7], [8]; occupation [9], [10]; and adopted lifestyle including smoking, high stress, obesity and high-fat food [12].

The findings showed that women with elementary school and junior high school were significantly associated with breast cancer. Educational level is known to relate to the knowledge and attitudes of breast cancer [16]. In line with the previous study, the lower educational level had lack of awareness and financial limitations to check their breast as early as possible when they felt something abnormal in their breast (e.g. pain, swelling, and nipple discharge) [17]. The low educational level among participants of this study affected their inadequate understanding of early signs and symptoms of a disease and early prevention efforts of the disease, including their lack of knowledge for early breast cancer screening. In addition, women feel

frightened abandoned by their spouse if they had breast cancer [18]. Meanwhile, higher education had a greater chance of being diagnosed with early-stage breast cancer [19].

This study also revealed that this result of this study inverse for married women. This is due to women who married and breastfed their children had a lower risk of breast cancer because they had fewer menstrual cycles to be exposed to shorter estrogen where estrogen triggers breast cancer [20]-[22]. This finding also reported that lifestyle such as physical activity had not significantly related to breast cancer. However, regular physical activity can reduce the risk of breast cancer [23]. Physical activity was associated with low body fat and low levels of all hormones that affect breast cancer and will be able to improve immune function [24]-[26] and decrease hormonal circulation to reduce the proliferation process and prevent breast cancer events [7]. The more prolonged heavy physical activity routinely carried out it can reduce the risk of breast cancer. The same pattern was found in this study for the smoking variable. Smoking affected increasing the risk of breast cancer because cigarette smoke/tobacco smoke contains high concentrations of Acetaldehyde which can be absorbed entirely in breast tissue and were found in breast milk. Acetaldehyde is a carcinogen that can cause cancer [12]. The risk of breast cancer is higher in women who are active smokers, but our respondents who did not smoke tended to be smaller due to smoking habits in women in Indonesia unlike in Western countries [27]-[30].

Some strength should be acknowledged. This study was conducted thoroughly in Indonesia with involved almost 80% of the total population. This study used a large sample that was spread across 13 provinces in Indonesia so that it represented Indonesia both economically and socio-culturally. However, this study's weakness noted that this study used secondary data so that it can only retrieve data following established inclusion criteria. In addition, the design used in this study was cross-sectional, where the design was not too robust for causal analysis, because it could not determine whether the cause precedes the effect. In addition, only a small number of participants incidence diagnosed with breast cancer in this study. The participants completed questionnaire in this study were all female, mostly married, and a had low-level education. As a consequence, selection bias may, in some way affect the generalizability of the findings since women and person with low-level education generally did not aware of breast cancer signs and symptoms. Consequently, the actual lifestyle of breast cancer patients in the population is most probably higher than estimated here.

4. CONCLUSION

Lifestyles such as smoking and physical activity were suspected to affect breast cancer indirectly; however, comparing breast cancer patients between healthy and unhealthy lifestyles needs to be proven future. Lifestyles such as smoking and physical activity were suspected to affect breast cancer indirectly; however, comparing breast cancer patients between healthy and unhealthy lifestyles needs to be proven future. Changes lifestyle such as quitting smoking, active exercise, reducing alcohol consumption, taking vitamin and minerals seem an effective, easy, and economical ways to help prevention of breast cancer.

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ACKNOWLEDGEMENTS

This study was supported by the fifth wave of the Indonesian Family Life Survey (IFLS-5) conducted by RAND and Survey Meter (<https://www.rand.org/well-being/social-and-behavioral-policy/data/FLS/IFLS/ifls5.html>). Authors thank RAND for providing permission to use the survey data and the study participants who provided the survey data.

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