

Prevention Behavior Among Family of Breast Cancer Patients

Retnayu Pradanie^{1*}, Lailatun Ni'mah¹, Evi Nur Laili Rahma Kusuma¹

Abstract--- Health screening, avoiding cigarette smoke, routine exercise, a healthy diet, adequate rest, and managing stress are included in a cancer prevention behavior program launched by the Ministry of Health of the Republic of Indonesia. Families of women patients with breast cancer are at greater risk of developing breast cancer and as such are expected to perform the behavior. The Health Belief Model Theory (HBM) is used to assess a person's perception of performing health behaviors. This study aimed to analyze the factors related to breast cancer prevention behavior among families of women patients with breast cancer based on HBM. This research used a descriptive-analytic design with a cross-sectional approach. The independent variables were factors on HBM theory, while the dependent variable was cancer prevention behavior. Data collection used questionnaires with a sample size of 59 respondents. The samples were recruited using a total sampling technique. The data were analyzed using spearman-rho ($\alpha \leq 0.05$). There was a relationship between perceived severity ($p=0.012$), perceived benefits ($p=0.029$), and perceived barrier with breast cancer prevention behavior in these women's families ($p=0.031$). On the other hand, perceived susceptibility ($p=0.388$), perceived self-efficacy ($p=0.064$) and cues to action ($p=0.054$) were not correlated with breast cancer prevention behavior in female breast cancer patients' families. These have to maintain their perceived severity, perceived benefits and perceived barriers, and improve their perceived susceptibility, perceived self-efficacy and cues to action to improve their breast cancer prevention.

Keywords--- Prevention behavior, breast cancer, family, health belief model

I. INTRODUCTION

Breast cancer is a disease that occurs due to abnormal growth of breast tissue cells that turn into cancer cells. There are no specific causes of breast cancer, but there are several aspects that are considered to have a strong influence including age, genetic, and history of benign tumors [1]. Women with a family history of breast cancer in the mother, such as mother's sister, sister/older sister, or daughter are at 2 to 3 times higher risk [2]. Research by [3] explains that women who have a high risk of developing breast cancer, those with a family history of this disease should make prevention efforts by performing mammography examinations and magnetic resonance imaging of the breast. But the fact is, the female family members of breast cancer patients do not do these examinations for several reasons.

Breast cancer is one of the malignancies that often occur in women and is one of the leading causes of cancer deaths worldwide with an estimated 1.7 million cases and a total of 521,900 deaths since 2012 [4]. The Center for Data

¹ Faculty of Nursing, Universitas Airlangga, Indonesia

Corresponding Author:
Retnayu Pradanie
Email: retnayu-p@fkip.unair.ac.id

and Information of the Ministry of Health [5] explained breast cancer in Indonesia was the cancer with the highest percentage of new cases, 43.4%, with a death percentage of 12.9%. In East Java, the number of people with breast cancer was 9,688 (estimated absolute number). This figure is ranked second after Central Java Province with a total of 11,511 (estimated absolute amount). Data from the Ministry of Health of the Republic of Indonesia (2016) explains that public awareness to conduct early breast cancer testing is still very low, reaching only 4.34% of the minimum target of 10% of people who do early detection of breast cancer. An initial study conducted by researchers found that 1 out of 5 (20%) women were female families of breast cancer patients who did breast cancer prevention, but 4 (80%) of them claimed not to engage in breast cancer prevention behavior.

The most common cause of breast cancer is a hereditary factor, in which the Breast Cancer Susceptibility Gene (BRCA) 1 mutation is considered to have a risk of $\geq 80\%$ while the BRCA 2 mutation has a risk of $\approx 45\%$ [4]. This can be interpreted that when there are close family members who suffer from cancer this will increase the risk of cancer, so increasing awareness to be able to perform early breast cancer prevention behavior is needed.

The comprehensive breast cancer prevention efforts promoted by the Government of Indonesia are regular health checks, eliminating cigarette smoke, routine physical activity, a healthy diet, adequate rest and managing stress appropriately. Whereas the preventive behavior that should be performed by a female family of breast cancer patients is doing a health check with mammography and magnetic resonance imaging of the breast. One model developed to look at the factors that influence one's actions to look for healthy living efforts is the Health Belief Model (HBM) [6]. The HBM theory can be used to study a person's health behavior based on their perception and belief in the disease, which includes perceived susceptibility, perceived seriousness, perceived barrier, cues to action, and self-efficacy [7]–[9]. This research aimed to analyze the factors related to breast cancer prevention behavior in female families of breast cancer patients integrated with the health belief model theory.

II. METHOD

The research design used was analytic descriptive research with a cross-sectional approach. The samples used in this study were all female families of women with breast cancer patients in the working area of 3 Public Health Centers (PHCs) in Surabaya who have not been diagnosed with breast cancer. They were mothers of the patients, mother's sisters, and patients' sisters aged ≥ 19 years. The number of samples in this study, 59 respondents, was obtained by using a total sampling technique.

The independent variables in this study were factors from the HBM theory which include: perceived severity, perceived susceptibility, perceived benefits, perceived barriers, self-efficacy and cues to action, while the dependent variable was breast cancer prevention behavior. The instruments used were questionnaires modified from the study of [10], [11]. The data collection process was carried out in June 2018 through door-to-door after getting a permit from the PHCs. This study passed the ethical clearance from the Health Research Ethics Committee Faculty of Nursing Universitas Airlangga with certificate No. 946-KEPK.

III. RESULTS

The respondents' demographic characteristics data describes the family characteristics of female breast cancer patients based on age, recent education, occupation, family relationships, sources of information about health and risk factors for breast cancer.

Nearly half of the respondents are aged 21-35 years (49.2%). More than half had a high school education (57.6%), working as housewives (54.2%), while the status of family relationships with breast cancer patients was as sisters (69.5%). The majority of the respondents obtained health information specifically about breast cancer from health services (50.8%). All the respondents understood that as mother/sisters/daughter of cancer patients they had a risk of breast cancer, whereas only a few respondents had other risk factors for breast cancer, including having lumps in the breast and nulliparous (8.5%), menarche at the age of <12 years (8.5%), history of chest radiation (8.5%), and smoking or consuming alcohol (5.1%).

Table 1. Distribution of Respondents Based on Demographic Characteristics

Characteristics		f (n=59)	%
Age	<21 years old	2	3.4
	21-35 years old	29	49.2
	36-45 years old	12	20.3
	46-65 years old	14	23.7
	>65 years old	2	3.4
Education	Drop out of Elementary School	2	3.4
	Elementary School	8	13.6
	Junior High School	1	1.7
	Senior High School	34	57.6
	Higher Education	14	23.7
Occupation	State Civil Apparatus	2	3.4
	Private Employees	11	18.7
	Merchant	14	23.7
	Housewife	32	54.2
Family	Mother	6	10.2
Relationship	Sister	41	69.5
	Daughter	12	20.3
Source of Health Information	Friends	22	37.3
	Health Services	30	50.8
	Printed media	9	15.3
	Internet	23	39.0

Characteristics	f (n=59)	%
Electronical media (TV, radio)	14	23.7

Table 2. The Correlation between Factors in Hbm Theory and Prevention Behavior of Breast Cancer (N=59)

Variable	Breast Cancer Prevention Behavior			Total	Spearman Rho
	Good	Moderate	Poor		
Perceived Severity					p=0.01 r=0.32
High	5 (8.47%)	6 (10.16%)	0	11 (18.64%)	
Fair	6 (10.16%)	10 (16.94%)	4 (6.77%)	20 (33.89%)	
Low	5 (8.47%)	13 (22.03%)	10 (16.94%)	28 (47.46%)	
Perceived Susceptibility					p=0.39 r=0.11
High	1 (1.69%)	1 (1.69%)	1 (1.69%)	3 (5.08%)	
Fair	5 (8.47%)	8 (13.55%)	2 (3.39%)	15 (25.42%)	
Low	10 (16.94%)	20 (33.89%)	11 (18.64%)	41 (69.49%)	
Perceived Benefits					p=0.02 r=0.28
High	13 (22.03%)	13 (22.03%)	6 (10.17%)	32 (54.23%)	
Fair	3 (5.08%)	16 (27.12%)	8 (13.55%)	27 (45.76%)	
Low	0	0	0	0	
Perceived Barriers					p=0.03 r=-0.28
High	8 (13.55%)	12 (20.33%)	3 (5.08%)	23 (38.98%)	
Fair	7 (11.86%)	7 (11.86%)	5 (8.47%)	19 (32.20%)	
Low	1 (1.69%)	10 (16.94%)	6 (10.17%)	17 (28.81%)	
Perceived Self-Efficacy					p=0.06 r=0.24
High	12 (20.33%)	18 (30.51%)	6 (10.17%)	36 (61.01%)	
Fair	4 (6.77%)	10 (16.94%)	7 (11.86%)	21 (35.59%)	
Low	0	1 (1.69%)	1 (1.69%)	2 (3.39%)	

Perceived Cues to Action					p=0.05
High	16 (27.11%)	26 (44.06%)	11 (18.64%)	53 (89.83%)	r=0.25
Fair	0	2 (3.38%)	2 (3.38%)	4 (6.78%)	
Low	0	1 (1.69%)	1 (1.69%)	2 (3.38%)	
Total	16 (27.11%)	29 (49.15%)	14 (23.72%)	59 (100%)	

The majority of respondents have low perceived severity (47.5%), low perceived susceptibility (69.5%), high perceived benefit (54.2%), high perceived barriers (39%), high perceived self-efficacy (61%), and high cues to action (89.9%) toward breast cancer. Whereas for breast cancer prevention behavior, the majority of respondents have sufficient behavior (49.2%).

The majority of female family members of breast cancer patients have sufficient breast cancer prevention behavior and a low severity. i.e. 13 respondents (44.8%), adequate prevention behavior and moderate perceived benefits, 16 respondents (55.2%), perceived barriers high and sufficient prevention behavior, \ 12 respondents (41.4%), low perceived susceptibility and adequate breast cancer prevention behavior, as many as 20 respondents (69.0%), high perceived self-efficacy and sufficient prevention behavior, 18 respondents (62.1%), high cues to action and adequate prevention behavior, 26 respondents (89.7%).

Based on the Spearman rho statistical test data, perceived severity, perceived benefits and perceived barriers have a significant relationship to breast cancer prevention behavior in female families of breast cancer patients with a sufficient correlation value. Perceived severity and perceived benefits have a one-way relationship, while perceived barriers have an opposite relationship to breast cancer prevention behavior in female families of breast cancer patients. Respondents' perceived severity and high perceived benefits will be followed by good breast cancer prevention behavior; conversely high perceived barriers are followed by low breast cancer prevention behavior. The Spearman rho statistical test analysis for the variable perceived susceptibility, perceived self-efficacy and cues to action showed no significant relationship with breast cancer prevention behavior.

IV. DISCUSSION

Perceived severity is a feeling that is seriously affected by a disease which will then encourage a person to perform certain health behaviors. The perception of high severity will make a person take preventative measures or early detection of certain diseases [12]. An increase in perceived severity is followed by an increase in good behavior. The results of research and theory show the same thing, namely, respondents' low perceived severity is followed by bad behavior in preventing breast cancer and on the other hand, respondents' had high perceived severity was followed by adequate breast cancer prevention behavior. Previous research by [13] found that high perceived severity could be followed by poor health behavior. This is the same as the findings of this study, that female families of breast cancer patients with low perceived severity still have breast cancer prevention behavior, and some have low perceived severity but have low preventive

behavior. This data shows that even with low perceived severity, respondents still carry out breast cancer prevention behavior. This can be caused by the maturity of thinking that healthy behavior is indeed best done without being triggered by things such as the perception of severity. Female family members of breast cancer patients do not need to have high perceived severity to be willing to engage in breast cancer prevention behavior. The majority of respondents who behave in this way are respondents with a high school education level. [14] states that education is a supporting factor for the formation of certain health behavior, not a major factor forming behavior. These respondents have their own understanding to decide which behavior should be done even if it is contrary to what they think.

Perceived susceptibility refers to an individual's assessment of the likelihood of being stricken with a disease [15]. In this study, the female family members of breast cancer patients assumed that they were not susceptible to breast cancer. Statements that respondents most disagreed with were statements about "I feel that I will get breast cancer in the future" and "it could be that there is currently a malignant lump developing in my breast", while the statement that received the most doubtful answers is "there is a possibility I will get breast cancer". The high perceived susceptibility will lead to the emergence of good risk prevention behavior. This study found that there was only 1 respondent who had a high perceived susceptibility with good preventive behavior [16]. On the contrary, there were respondents with low perceived susceptibility and had poor breast cancer prevention behavior, also respondents who had poor perceived susceptibility still conducting preventive behavior even though it was in the moderate category. Someone wants to take action or does not want to do a certain health action depending on their respective assessments. The family of women with breast cancer patients who have high perceived susceptibility is also there who do breast cancer prevention behavior properly or sufficiently [6]. This data indicates that the perceived high and low susceptibility of the family of women with breast cancer patients does not affect breast cancer prevention behavior. Research respondents continue to conduct breast cancer prevention behavior even though their perceived susceptibility is low.

The results showed the majority of female family members of breast cancer patients have a high perceived benefit. Almost all respondents agreed that breast cancer prevention behavior has many benefits. There are no respondents who have the perception that performing breast cancer prevention behavior has low benefits, but there is still 1 respondent who thinks that performing breast cancer prevention behavior is not cheap, coupled with other factors that cause the prevention behavior to be even included in the bad category. Perceived benefits are feelings where individuals will benefit from the actions to be taken to prevent the threat of an illness [17]. Anything that is considered beneficial will stimulate the individual to take action [18]. However, if the perceived benefits of a disease prevention action are lacking, then the possibility of action being taken for prevention will be smaller [19]. The families of women with breast cancer want to have breast cancer prevention behavior because they think that doing so can benefit them, for example, to detect lumps in the breast from the beginning before the lump develops into advanced breast cancer. The study found that there were respondents who had high perceived benefits but poor breast cancer prevention behavior. This can occur because of other factors that influence a person to conduct breast cancer prevention behavior, which can be in the form of obstacles to do so such as easy to forget, no time, feeling nervous, or other factors.

The majority of female family members of breast cancer patients have high perceived barriers. They think that the cancer prevention program is difficult to implement. If someone has a perception of a greater obstacle, then the behavior carried out tends to be poor [20]. Likewise, if readiness to act is high and obstacles are low it is likely to take greater action [21]. The result of the research shows that the female family members of breast cancer patients have significant obstacles in conducting breast cancer prevention behavior using the method recommended by the Government. Female families with high perceived barriers tend to have poor preventive behavior; however, there are few respondents with high perceived barriers who have good breast cancer prevention behavior.

The study found that the majority of female family members of breast cancer patients have a high perceived self-efficacy. The majority agree with the statement "I feel confident that I can do breast cancer prevention using the method as recommended regularly" and "I think the behavior of breast cancer prevention by the method is quite easy to do". An important factor influencing a person's health behavior is the feeling of fear of not being able to do it right [13]. Regarding the statement of perceived self-efficacy, "I can do breast cancer prevention behavior with the method correctly", there are still some respondents who chose a doubtful answer, this can describe that the female family members of breast cancer patients are still unsure of their ability to conduct breast cancer prevention behavior. The higher the level of education, the easier to get information and ultimately influence one's behavior [22]. Perceived self-efficacy of female family members of breast cancer patients dominated by high perception can be related to their level of education. Families of women with a high level of education, from high school or higher, tend to get health information from more than one source. Sufficient information and sufficient social support can increase one's perceived self-efficacy [23].

In addition to education, the respondents' age also affects their confidence to carry out breast cancer prevention behavior. The majority of the respondents aged >35 years have high confidence to conduct breast cancer prevention behavior. The more mature the respondent, the more life experiences they have. This increases the respondent's confidence in breast cancer prevention behavior. But unfortunately, the high perceived self-efficacy in female family members of breast cancer patients is not followed by their good health behavior.

V. CONCLUSION

Someone who has high perceived severity and perceived benefits will tend to practice good breast cancer prevention behavior. High perceived barriers to respondents will be followed by low breast cancer prevention behavior. Perceived susceptibility, perceived self-efficacy and cues to action have no significant relationship with breast cancer prevention behavior in female family members of breast cancer patients. The results of this study indicate that health education about the importance of breast cancer prevention efforts is still needed. A good level of knowledge can increase self-efficacy and cues to action as well as reduce barriers in breast cancer prevention behavior.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ACKNOWLEDGMENT

The author would like to thank all the respondents who have voluntarily participated in this research.

REFERENCES

- [1] Winchester, W. Hudis, and Norton, *Breast Cancer*, 2nd ed. USA: Walsworth Publishing Company, 2013.
- [2] E. Surbakti, "Hubungan Riwayat Keturunan Dengan Terjadinya Kanker Payudara Pada Ibu Di RSUP H Adam Malik Medan," *J. Precure*, vol. 1, no. April, pp. 15–21, 2013.
- [3] L. D. Barke and M. E. Freivogel, "Breast Cancer Risk Assessment Models and High-Risk Screening," *Radiol. Clin. North Am.*, vol. 55, no. 3, pp. 457–474, 2017.
- [4] Peairs, K. S., Y. Choi, R. W. Stewart, and H. F. Sateia., "Screening for Breast Cancer," *Semin. Oncol.*, vol. 44, no. 1, pp. 60–72, 2017.
- [5] Kementerian Kesehatan Republik Indonesia, "Bulan Peduli Kanker Payudara," Jakarta, 2016.
- [6] J. Hayden, *Introduction to Health Behavior Theory*, 3rd ed. Burlington: Jones & Bartlett Learning, 2017.
- [7] Shadan Shirazi Zadeh Mehraban, Azam Namdar, and Mohammad Mehdi Naghizadeh, "Assesment of Preventive Behavior for Cervical Cancer with Health Belief Model," *Asian Pacific J. Cancer Prev.*, vol. 19, no. 8, pp. 2155–2163, 2018.
- [8] A. I. Aldohaian, S. A. Alshammari, and D. M. Arafah, "Using the health belief model to assess beliefs and behaviors regarding cervical cancer screening among Saudi women: a cross-sectional observational study," *BMC Womens. Health*, vol. 19, no. 1, p. 6, Dec. 2019.
- [9] J. Hayden, "Health Belief Model," in *Introduction of Health Behavior Theory*, Burlington: Jones & Bartlett Learning, 2009, pp. 31–44.
- [10] K. J. Toomey, "Breast Self-Examination Among College-Aged Females An Intervention Study," Appalachian State University, Boone, 2011.
- [11] C. Ulazuharo, "Hubungan Pengaruh Interpersonal dan Situasional dengan Upaya Preventif Kanker Payudara pada Perempuan di Wilayah Kerja Puskesmas Kenjeran Surabaya," Universitas Airlangga, 2016.
- [12] S. S. Tavafian, "Predictors of Cervical Cancer Screening: An Application of Health Belief Model," in *Topics on Cervical Cancer With an Advocacy for Prevention*, Rajamanickam Rajkumar, Ed. InTech, 2012.
- [13] N. Andrianti, "Analisis Faktor Praktik Pemeriksaan Payudara Sendiri (SADARI) berdasarkan Teori Health Belief Model pada Mahasiswi Program Sarjana Keperawatan UNAIR," Universitas Airlangga, 2015.
- [14] R. Febri, "Analisis Faktor Dominan Perilaku Tes HIV Berdasarkan Teori Health Belief Model pada Ibu Hamil di Puskesmas Mulyorejo Surabaya," Universitas Airlangga, 2015.
- [15] K. Glanz, B. Kimer, and K. Vismanath, *Health Behavior and Health Education: Theory, Research, and Practice*, 4th ed. San Francisco: Jossey-Bass, 2008.
- [16] Champion and Skinner, *The Health Belief Model*. San Fransisco, 2008.

- [17] K. Janz, V. . Champion, and V. . Strecher, *The Health Belief Model*. San Fransisco: Jossey-Bass, 2002.
- [18] S. Notoatmodjo, *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta: Rineka Cipta, 2012.
- [19] R. Orji, J. Vassileva, and R. Mandryk, "Towards an effective health interventions design: an extension of the health belief model.," *Online J. Public Health Inform.*, vol. 4, no. 3, 2012.
- [20] G. Suwandaru, "Analisis Faktor Kepatuhan Ibu Hamil dalam Kunjungan Antenatal Care Berdasarkan Health Belief Model," Universitas Airlangga Surabaya, 2016.
- [21] Nursalam, *Metodologi Penelitian Ilmu Keperawatan*, 3rd ed. Jakarta: Salemba Medika, 2013.
- [22] S. Notoatmodjo, *Ilmu Perilaku Kesehatan*. Jakarta: Rineka Cipta, 2010.
- [23] W. et. al Susilowati, "Self Efficacy Of Woman Aged 35 – 44 Years In Breast Cancer Prevention Effort," *Promkes*, vol. 4, no. 2, p. 221, 2009.