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Determinants of Depression Levels in Breast Cancer Survivors

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Abstract

Background: Breast cancer is one type of malignancy in breast tissue that is experienced by many women throughout the world, including in Indonesia. Breast cancer shows high morbidity and mortality rates. The East Java Provincial Health Office noted that breast cancer cases have increased every year. The conditions and the process of cancer treatment can lead to psychological problems, including depression.

Objective: This research aims to analyze the determinant factors that influence depression levels in breast cancer survivors.

Methods: This correlation study was conducted in a city of East Java. 158 respondents were selected using a purposive sampling technique. The instrument used in this research was a Hamilton Rating Scale for Depression (HAM-D7) that has been tested for validity and reliability. The data collection method used was face-to-face. Data analysis was carried out using SPSS software, including cross-tabulation and multivariate linear regression test with alpha 0.05.

Results: Research findings show that marital status (p=0.021) is related to social support (p=0.002), physical condition (p=0.003), and the level of depression, but there was no relationship between age (p=0.281), the level of education (p=0.752) and the length of illness (p=0.265) and depression levels in breast cancer survivors.

Conclusion: It is concluded that the determinants of factors that influence the level of depression are marital status, social support, and physical condition in survivors of breast cancer. Breast cancer survivors are expected to maintain their enthusiasm and not give up to avoid depression, which can reduce their health status.

Keywords: breast cancer; depression levels; determinants

INTRODUCTION

World Health Organization (WHO) stated that the number of people diagnosed with cancer in the last two decades increased from about 10 million in 2000 to 19.3 million in 2020 (Sumartiningtyas, 2021), with a mortality rate of 10 million. This number has increased considerably since 2018, when 18.1 million cases and 9.6 million deaths were recorded (Syarief, 2021). Cancer affects around one in five people worldwide. As a result of aging and population growth, as well as changes in the incidence and distribution of major cancer risk factors, the worldwide cancer burden is rising rapidly.

Breast cancer is one type of malignancy in breast tissue that can originate from the ductal epithelium or its lobules, one of the main causes of death worldwide. Breast cancer is the most prevalent malignancy among women worldwide. In 2020, it is expected that 2,3 million new cases of breast cancer in women will be diagnosed, representing 11.7% of all new cancer cases (Sumartiningtyas, 2021 and Syarief, 2021). Breast cancer is the most common type of cancer among Indonesian women. WHO states that people living with cancer throughout the world are predicted to increase by 77 percent or reach 35 million

sufferers in 2050 (CNN Indonesia, 2024). Estimates suggest that about one in five men or women develop cancer in a lifetime. Globally, female breast cancer (11.6%) is the most frequently diagnosed type of cancer in 2022 after lung cancer (12.4%). The death rate due to breast cancer is 6.9% (Bray et al., 2024).

According to data issued by the East Java Provincial Health Office, the number of breast cancers reached 12.186 in 2019. According to the 2018 Basic Health Research, the cancer prevalence in East Java is 2.2 per 1.000 people. When adjusted to the East Java population, the number of cancer patients is 86,000, indicating an increase over 2013, when the rate was 1.6 per 1.000 people (Jatim, 2020). The Malang City Health Service recorded 388 cases of breast cancer throughout 2022, including 275 old cases and 113 new cases. This number has increased from previous years. In 2021, there were 360 cases recorded while in 2020, there were 359 cases of breast cancer (Wicaksana, 2023).

The severity of the illness and the treatment regimen used by breast cancer patients may influence the incidence of numerous medical problems, which can lead to a variety of psychological issues. Some of the most common side effects of chemotherapy, according to the American Cancer Society, are fatigue, alopecia, hematoma, infections, anemia, presence of nausea and vomiting, changes in appetite, complaints of constipation, diarrhea, mouth, tongue, and throat problems such as sores and pain when swallowing, peripheral neuropathy or other nerve problems such as numbness, paresthesia, and pain, skin and nail become dry skin and discoloration, changes in urine (Regnard & Kindlen, 2019).

Cancer patients who experience these physical problems really need social support. Research by Khanuun found that family support can have a positive impact on the lives of people living with breast cancer. This support has been felt since the patient was first diagnosed with breast cancer (Khanuun, 2021).

Not everyone has the same adverse effects after chemotherapy; in fact, some people have no side effects at all. The degree of side effects of chemotherapy also varies widely across individuals (Regnard & Kindlen, 2019). This condition, however, may affect the incidence of psychological disorders in patients. According to the findings of research conducted by Salem and Daher (Salem & Daher-Nashif, 2020), breast cancer survivors suffer anxiety, humiliation, and poor self-esteem as a consequence of gender dynamics and a predisposition to fatalism.

Researchers are interested in knowing the determinant factors such as "age, education level, marital status, the length of illness or duration of illness experience, the patient's physical condition, and social support " on depression levels in survivors of breast cancer as this phenomenon has significant implications for the patient's psychological well-being.

One relevant study was conducted by Beadle et al. (2011), revealing that breast cancer patients' age could be a risk factor for experiencing higher levels of depression (Beadle et al., 2011). One relevant study conducted by Maharani et al. (2023) showed that factors that affect the quality of life of breast cancer patients include age, level of education, presence of social support, conditions of psychological stress and anxiety, economic conditions, depression, and physical symptoms (Maharani et al., 2023). Additionally, in a study conducted by Zhai et al. (2019), it was found that breast cancer patients who were married and single had a better prognosis than those who were divorced/separated/widowed (DSW) counterparts (Zhai, 2019). Research by Foster and Niedzweidz (2021) showed that multi-morbidity usually occurs among breast cancer survivors, with 32.9% of women experiencing one disease and 30.1% experiencing two or more chronic health conditions. Hypertensive disorders (25.8%), pain conditions (18.3%), and asthma disease (11.6%) were the three most common co-morbid conditions. 5.3% of participants were currently depressed (Niedzwiedz, 2021). Breast cancer can also affect the mental health, quality of life (QoL), physical and cognitive functioning, social conditions, and work life of surviving patients (Fresno-Alba et al., 2023).

Based on these issues, it is critical to explore the link between determining variables and depression levels in breast cancer survivors. It is

important because it can provide valuable insight for the development of more holistic and integrated interventions to improve the well-being of these patients. The goal of this research was to study the relationship between age, education level, marital status, duration of illness, physical condition, social support, and depression levels in breast cancer survivors.

METHOD

The design of this research is correlational, aiming to analyze the correlation between age, education level, marital status, length of illness, physical condition, and social support with depression levels in survivors of breast cancer. The research was carried out in 2022 at a hospital in Malang City, East Java, which has an oncologist.

The population of this research were all breast cancer patients who attended medical therapy at the Malang City Hospital, East Java. The sample is part of the population that meets the criteria of inclusion. The sample size is determined based on the table with an alpha of 5% (Sugiyono, 2010), which is 158 people. Samples are determined by the purposive sampling technique. The criteria of inclusion are as follows: female gender with breast cancer patients proven by medical records, have and are currently undergoing medical therapy at the Hospital, and willing to participate in research. The exclusion criteria are as follows: decreased awareness in critical/emergency conditions and hearing and speech impairment. There were no respondents who dropped out of this study. The independent variables of this study are 1) age, 2) education levels, 3) marital status, 4) length of illness, 5) physical condition, and 6) social support. The dependent variable is the level of depression. The operational definition is as follows: 1) Age is the number of years an individual has lived; 2) Education level is an individual's graduation rate from formal education; 3) Marital status is the condition of an individual's marriage within the family; 4) Length of illness is the period from when individuals are diagnosed with breast cancer until the time this study takes place; 5) Physical condition is a physical problem or complaint experienced by breast cancer survivors during the assessment related to the disease and the effects of breast cancer therapy; 6) Social support is an action given by family or other close people that is beneficial for breast cancer survivors so that survivors realize that other people care, appreciate, and love them; 7) The level of depression is a disorder of affect, emotion and behavior of breast cancer survivors in the form of feelings of helplessness accompanied by decreased motivation in daily activities. The research hypothesis is that there is a relationship between age, education level, marital status, length of illness, physical condition, and social support with depression levels in survivors of breast cancer. This research used instruments that measure about 1) age, 2) education levels, 3) marital status, 4) length of illness, 5) physical condition, 6) social support (emotional, rewarding, instrumental, informative), and 7) depression levels that were measured using the standard 7-item Hamilton Rating Scale for Depression (HAM-D7) questionnaire. The instrument has been tested for validity and reliability (Cronbach's Alpha 0.793). The data collection method used was face-to-face. Data analysis was carried out using SPSS software, including cross-tabulation and multi-variate linear regression tests with alpha 0.05 to test the research hypothesis. Prior to the research, this research protocol had passed the health research ethics test at the Health Research Ethics Commission of Health Polytechnic of Malang with Registered No: 339/KEPK-POLKESMA/2022 and the Health Research Ethics Commission of Regional Public Hospital dr. Saiful Anwar Malang No: 400/088/K.3/102.7/2022. This study was carried out with consideration for the safety and well-being of the participants in compliance with health research ethics.

RESULT

Relationship Between Age and Depression Levels in Breast Cancer Survivors

Table 1. Age and Depression Levels Cross tabulation of Survivor Respondents of Breast Cancer

		Depression Levels (n and %)			Total	p
		Full Remission	Mild	Moderate		
Age	31-40 Years Old	9 (12.9%)	7 (9.9%)	3 (17.6%)	19 (12.0%)	
	41-50 Years Old	23 (32.9%)	26 (36.6%)	8 (47.1%)	57 (36.1%)	
	51-60 Years Old	24 (34.3%)	24 (33.8%)	3 (17.6%)	51 (32.3%)	0.281
	61-70 Years Old	9 (12.9%)	10 (14.1%)	3 (17.6%)	22 (13.9%)	
	71 Years or More	5 (7.1%)	4 (5.6%)	0 (0%)	9 (5.7%)	
Total		70 (100%)	71(100%)	17(100%)	158(100%)	

In Table 1, it is known that the majority of respondents are aged 41-50 years. There were 57 people (36.1%). In that age group, most experienced mild depression (26 people or 36.6%). It was followed by the 51-60-year age group, 24 people (33.8%) had mild depression, and 24 people (34.3%) had full remission.

The statistical regression analysis result shows that the p-value = 0.281 is greater than alpha 0.05, indicating there was no relationship between age and depression levels in breast cancer survivors.

Relationship Between Education Level and Depression Levels in Breast Cancer Survivors

Table 2. Level of Education and Depression Levels Cross tabulation of Survivor Respondents of Breast Cancer

		Depression Levels (n and %)			Total	p
		Full Remission	Mild	Moderate		
Level of Education	Elementary School	19 (27.1%)	21 (29.6%)	6(35.3%)	46 (29.1%)	
	First High School	11 (15.7%)	13 (18.3%)	1 (5.9%)	25 (15.8%)	0.752
	High School	22 (31.4%)	21 (29.6%)	7 (41.2%)	50 (31.6%)	
	Bachelor	18 (25.7%)	16 (22.5%)	3 (17.6%)	37 (23.4%)	
Total		70 (100%)	71(100%)	17(100%)	158(100%)	

In Table 2, it is known that the majority of respondents have a high school education, namely 50 people (31.6%). Most of the respondents with high school education have experienced full remission or did not experience depression (22 people or 21.4%) and were at a mild depression level of 21 people (29.6%). It is the same as respondents with elementary school education, which is at the level of mild depression in 21 people (29.6%).

The statistical regression analysis result showed that the p-value = 0.752 is greater than alpha 0.05, indicating there was no relationship between the level of education and depression levels in breast cancer survivors.

Relationship Between Marital Status and Depression Levels in Breast Cancer Survivors

Table 3. Marital Status and Depression Levels Cross tabulation of Survivor Respondents of Breast Cancer

		Depression Levels (n and %)			Total	p
		Full Remission	Mild	Moderate		
Marital Status	Marry	68 (97.1%)	67(94.4%)	14 (82.4%)	149 (94.3%)	
	Not Married	2 (2.9%)	3 (4.2%)	1 (5.9%)	6 (3.8%)	0.021
	Divorce	0 (0%)	1 (1.4%)	2 (11.8%)	3 (1.9%)	
Total		70 (100%)	71(100%)	17(100%)	158(100%)	

In Table 3, it is known that the majority of respondents were married with a total of 149 people (94.3%), and more than half of the respondents experienced full remission or did not experience depression (68 people or 97.1%) and were at the level of mild depression with a total of 67 people (94.4%).

The statistical regression analysis result showed that the p-value = 0.021 is smaller than alpha 0.05, indicating a relationship between marital status and depression levels in breast cancer survivors.

Relationship Between Length of Illness and Depression Levels in Breast Cancer Survivors

Table 4. Length of Illness and Depression Levels Cross tabulation of Survivor Respondents of Breast Cancer

		Depression Levels (n and %)			Total	p
		Full Remission	Mild	Moderate		
Length of Illness	1-12 Months	47 (67.1%)	49(69.0%)	5(29.4%)	101(63.9%)	
	13-24 Months	9 (12.9%)	13(18.3%)	4(23.5%)	26(16.5%)	
	25-36 Months	3(4.3%)	5(7.0%)	3(17.8%)	11(7.0%)	0.265
	37-48 Months	4(5.7%)	2(2.8%)	2(11.8%)	8(5.1%)	
	49-60 Months	1(1.4%)	1(1.4%)	2(11.8%)	4(2.5%)	
	61 Months & Over	6(8.6%)	1(1.4%)	1(5.9%)	8(5.1%)	
Total		70(100%)	71(100%)	17(100%)	158(100%)	

In Table 4, it is known that the majority of respondents experienced pain for one month to 1 year. Almost half of the respondents experienced full remission or did not experience depression (47 people or 67.1%) and were at the level of mild depression with a total of 49 people (69.0%).

The statistical regression analysis result showed that the p-value = 0.265 is greater than alpha 0.05, indicating no relationship between the length of illness and depression levels in breast cancer survivors.

Relationship Between Physical Condition and Depression Levels in Breast Cancer Survivors

Table 5. Physical Condition and Depression Levels Cross tabulation of Survivor Respondents of Breast Cancer

		Depression Levels (n and %)			Total	p
		Full Remission	Mild	Moderate		
Physical Condition	No Complaints	3 (4.3%)	1(1.4%)	0(0%)	4(2.5%)	
	Few Complaints	39(55.7%)	21(29.5%)	5(29.4%)	65(41.1%)	0.003
	Moderate Complaints	28(40.0%)	45(63.4%)	10(58.8%)	83(52.5%)	
	Serious Complaints	0(0%)	4(5.6%)	2(11.8%)	6(3.8%)	
Total		70(100%)	71(100%)	17(100%)	158(100%)	

In Table 5, it can be seen that most of the respondents had quite a lot of complaints (52.5%), and most of the respondents who had these complaints were at the level of mild depression

(63.4%). It should be stated here that the medical therapy process undertaken by most of the respondents (150 people or 94.6%) was chemotherapy, and most of them had undergone mastectomy surgery (124 people or 78.5%).

The statistical regression analysis result shows that the p-value = 0.003 is smaller than alpha 0.05, which means there was a relationship between physical condition and depression levels in breast cancer survivors.

Relationship Between Social Support and Depression Levels in Breast Cancer Survivors

Table 6. Social Support and Depression Levels Cross tabulation of Survivor Respondents of Breast Cancer

		Depression Levels (n and %)			Total	p
		Full Remission	Mild	Moderate		
Social Support	A Little	1 (1.4%)	1 (1.4%)	0 (0%)	2 (1.3%)	
	Enough	4 (5.7%)	19 (26.8%)	8 (47.1%)	31 (19.6%)	0.002
	Good	65 (82.9%)	51(71.8)	9 (52.9%)	125(79.1%)	
Total		70 (100%)	71(100%)	17(100%)	158(100%)	

In Table 6, it can be seen that most of the respondents have good social support (79.1%), and most of the respondents who have good social support are at the level of not depression or full remission (82.9%).

The statistical regression analysis result shows that the p-value = 0.002 is smaller than alpha 0.05, indicating a relationship between social support and depression levels in survivors of breast cancer.

DISCUSSION

Breast cancer is a malignancy that happens a lot to women globally (Mokhtari-Hessari & Montazeri, 2020). Breast cancer is the fifth cause of death from cancer and the main cause of death from cancer in the world (Fresno-Alba et al., 2023). Some individuals find the term cancer to be terrifying. Many people assume that if they acquire cancer, it will be tough to treat and end up dying. When a person is diagnosed with breast cancer, at first, he will be stunned, unbelieving, and maybe reject the diagnosis. Many breast cancer patients report severe distress shortly after the conclusion of initial treatment (Park et al., 2021). Depression is one of the most prevalent psychological symptoms among breast cancer patients (Pilevarzadeh et al., 2019).

Depression often accompanies chronic medical disease and is linked to higher morbidity, hospital length of stay, and total impairment. Depression in patients with breast cancer imposes substantial costs on patients, families, and healthcare systems (Pilevarzadeh et al., 2019). Recent developments in the molecular study of "breast cancer" indicate that breast cancer is a biologically distinct class of disease; although these molecular differences are important, other factors also influence outcome and influence prognosis. One of the most important factors for these patients is the age of the patient at diagnosis. Some studies have shown breast cancer outcomes vary widely; younger women typically have more aggressive tumors that are more likely to recur both loco regionally and distantly, and older women more often have less aggressive disease (Beadle et al., 2011). According to Table 1, the majority of respondents (57, or 36.1%) were aged 41 to 50 years, followed by those aged 51 to 60 years (32.3%). It indicates that more than half of the respondents are in the age bracket at risk for breast cancer, yet according to the findings of this research, there is no correlation between age and depression levels among breast cancer survivors (0.28). Therefore, breast cancer survivors' sadness is unrelated to their age. Due to their condition, breast cancer survivors of any age might develop sadness. This study's findings also indicate that there was no correlation between the amount of education and the prevalence of depression among breast cancer survivors (0.752).

Incidences of depression or anxiety and suicide among individuals who have recovered from cancer have also been identified in a number of research. According to the statistics, the anxiety levels of cancer patients in lengthy remission are comparable to those of individuals with active illness. This research suggests that anxiety in cancer survivors may need ongoing treatment since there was no correlation between the duration of sickness and the amount of depression in breast cancer survivors (0.265). 27% of cancer

survivors. The severity of the event depression has also been observed to be more prevalent among cancer patients in remission than among those with terminal disease. Breast cancer survivors who experience ongoing physical problems, such as chronic fatigue or chronic pain, tend to have higher rates of depression. Research by Fresno (2023) stated that breast cancer can affect mental health, quality of life (QoL), physical and cognitive functioning, and the patient's social and work life to survive (Fresno-Alba et al., 2023). These findings suggest the need to pay attention to patients' physical condition as a potential factor that may influence their psychological well-being. The prevalence of depression in cancer patients seems to be proportional to the severity of the illness and the patient's degree of impairment. This research demonstrated that there was an association between physical health and the amount of depression in breast cancer survivors (0.003). (0.003). There are a variety of therapies used by cancer survivors. 124 respondents (78.5%) had a surgical procedure known as mastectomy. Based on interview findings, the majority of respondents had their whole breasts removed along with the cancerous tissue. Breasts are a highly significant component of a woman's body. The choice to have mastectomy surgery may be a challenging one for breast cancer patients to make. Loss of a portion or all of the breast may result in psychological issues in patients, including embarrassment, reduced self-image, low self-esteem, and even despair. The majority of respondents in this research (94.6%) also received chemotherapy as a systemic treatment.

Chemotherapy is used to suppress or halt the proliferation of oncogene (cancer) cells in the body of the patient. Chemotherapy is the use of cytostatic medications containing chemicals to treat cancer. The working premise of chemotherapy medications is to target particular stages or all phases of mitotic division in fast-replicating or developing cells, which are thought to be oncogene cells that multiply. Chemotherapy medications sometimes damage hair cells and other rapidly dividing cells when their mitotic cycle falls within the target range of the chemotherapy drugs but have essentially little effect on resting (non-dividing) cells (RI, 2022). According to Regnard and Kinden (2019), cancer cells tend to proliferate rapidly, and chemotherapeutic agents eliminate these cells.

These medications disperse throughout the body, therefore affecting normal and healthy cells that are also proliferating rapidly. Damage to healthy cells creates a negative impact. The normal cells most likely to be harmed by chemotherapy include blood-forming cells in the bone marrow, follicles of hair, and a number of cells in the mouth, digestive tract, and reproductive system. Certain chemotherapy medications may harm the heart, kidneys, bladder, and lungs, as well as the neurological system (Regnard & Kindlen, 2019). Several of the usual adverse effects of chemotherapy were also seen in the participants of this research. Complaints are felt, particularly hair loss, even to the point where the head becomes bald, and feelings of weakness or fatigue. It was shown that more than half of the respondents suffered moderate physical issues (52.3%), and almost half had mild/few physical complaints (41.1%).

This degree of depression levels was tested by the standard 7-item HAM-D7 questionnaire, which covered the following factors: 1). Depressed sentiments; 2). Guilt; 3). Attention, enjoyment, and activity level; 4). Tense, restless (anxious); 5). Physical indicators of worry; 6). Energy level; 7). Suicide. These findings reveal that many respondents had moderate depression (mild), comprising 44.9%, and not depressed/full remission, comprising 44.3%, with a mean depression score of 4.88, indicating that respondents were at a low depression level (mild). This study's findings are almost identical to those of Widiyono et al. (2018), in which 25.71% of cancer patients suffered low depression, 45.71 % experienced moderate depression, and 28.58% had severe depression (Widiyono et al., 2018). The initial recurrence of breast cancer is very challenging for patients and is often accompanied by psychological stress, including elevated rates of anxiety and depressive disorders (more than 40 percent).

Due to the absence of social support for cancer survivors, cancer patients may have psychosocial

issues. Social support is the most often researched psychosocial variable, according to Culbertson's (2000) study of the scientific literature (Culbertson et al., 2020). The family is the smallest unit (Friedman & Vicky R. Bowden, 2010); therefore, the patient's immediate surroundings are crucial. The healing process of ailing family members needs the help of their families. A strong family unit will boost the health of its members (Husni et al., 2012). Anxiety and depression-afflicted patients have a strong demand for family support. This familial, social support is anticipated to minimize the depressive symptoms of survivors of breast cancer. The presence of a spouse (husband) becomes a vital component of the clients' support system. This research revealed that there was a correlation between breast cancer survivors' marital status and their degree of depression (0.021). Therefore, having a support system is essential for cancer survivors.

Motivation and passion for healing are really crucial. The results of this study show that almost all of the respondents were married, 149 people (94.3%), so they received much support from their husbands, and there is a close relationship between social support and the degree of depression among breast cancer survivors (0.002). It is consistent with the findings of Yuliati et al. (Yuliati et al., 2020) that there is a strong association between support from family and depression in breast cancer patients, with the degree of depression decreasing as family support increases.

Cancer patients sometimes also need non-pharmacological therapy to treat anxiety or depression. The most frequently implemented interventions were health education, relaxation, psychological intervention, naturopathy, yoga, healthy diet, consultation, physical activity, and entertainment activities (Hanh et al, 2022).

According to the WHOQOL field-test instrument, one of the domains for assessing quality of life is the dimension of social connections (Division Of Mental Health And Abuse, Prevention Of Substance Organization, 2012). Social assistance is an integral element of the domain. With strong social support, living quality will improve. On the other hand, with excellent social support, it is predicted to lessen the degree of depression. Survivors of breast cancer report experiencing physical pain, but with excellent social support from family and the will to recover, they may lower their degree of sadness throughout treatment. The results of this research reveal that there is a correlation between social support and the amount of depression. It is in line with the findings of the study by Yuliana et al. (Yuliana et al., 2020), which also showed a correlation between social support and depression in patients with breast cancer (p=0.000).

The limitation of this research is that sampling did not use random techniques because it is difficult to do this on patients who are undergoing therapy in a hospital.

CONCLUSION

There was a relationship between marital status (0.021), physical condition (0.003), and social support (0.002) with the depression levels in survivors of breast cancer. There was no relationship between age (0.28), the level of education (0.752), and the length of illness (0.265) with depression levels in breast cancer survivors, and the determinants of factors that influence the level of depression are marital status, physical condition and social support in breast cancer survivors.

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