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Original Research

Relationship Between Personality and Relapse of Breast Cancer Patients at The Oncology Polyclinic Dr. Soetomo Academic General Hospital Surabaya

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Submitted : June 29, 2021
Revised : July 26, 2021
Accepted : May 22, 2022
Published : May 1, 2024

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Abstract

Introductions: Breast cancer is a major health problem that affects the lives of millions of women. Some patients have tried treatment, but cancer recurrence is still present. It is suspected that growth factors play a role in the occurrence of relapse. However, until now, it has been controversial. Finding out whether there is a relation between personality and the incidence of relapse in breast cancer and comparing the personalities of patients with relapsed breast cancer with those with non-relapsed breast cancer. **Methods:** Analytical research is an observational case-control study. The number of respondents is 56 patients who meet the criteria. It consists of 28 relapsed patients and 28 non-relapsed patients. The research was conducted at the Oncology Polyclinic of Dr. Soetomo General Hospital. Using an instrument to measure personality types that have been validated, namely the OCEAN—Big Five Questionnaire Inventory 44 and Demographic Questionnaire. **Results:** There is no relationship between personality and the incidence of relapse in breast cancer ($p > 0.05$). The type of personality in relapse with the most neuroticism (29%) and non-relapse with the most openness (32%), extraversion (36%). **Conclusions:** The incidence of relapse in breast cancer is not only caused by personality factors; it is possible that other factors play a role. However, the personality of neuroticism is quite prominent in relapse patients.

Keywords: Breast Cancer, Relapse, Personality

Cite this as: Adiwibawa. D. N., Konginan. A., and Purwanto. H."Relationship Between Personality and Relapse of Breast Cancer Patients at the oncology polyclinic Dr. Soetomo general hospital Surabaya". Jurnal Psikiatri Surabaya, vol. 13, no. 1, pp.19-29, 2024. doi: 10.20473/jps.v13i1.27854

Introductions

The incidence of breast cancer in the United States in 2014 was around 232,670 events or about 29%, with a mortality rate of about 40,000 cases or about 15% [1]. When diagnosed at an early stage it will only cause limited damage to that organ. The more severe stage of breast cancer is caused by metastases and drug resistance. If it has metastasized to other organs, very limited therapy can be done and prone to relapse. Breast cancer metastases can be to the lungs, bones, brain, and liver, wherein this phase, surgery should be combined with radiotherapy [2]. Relapse in breast cancer is a major clinical manifestation and can lead to death. Many factors cause relapse, including transformation of cancer cells, age, tumor location, disease course, genetics, stage, chemotherapy, radiation, or hormonal therapy [3]. Every woman will experience conflict when the diagnosis of breast cancer is made and cause significant stressors. These will all cause symptoms in everyday life, such as quickly feeling tired, pain, sleep disturbances, anxiety, and depression. Breast cancer causes psychological distress in patients, families, and health professionals who care about patients [4]. Personality is a complex combination of thoughts (cognition), feelings (affects), and behavior (behavior), which is a distinctive way of how a person is formed and adapts to changes that occur continuously in his environment, both internally and externally. Personality is formed through the process of natural talent, parenting patterns, and self-experience. Personality has a role in the etiology, manifestation, course of the disease, and how to treat its psychopathology. The relationship between personality and psychopathology consists of three forms, namely pathoplastic relationships, spectrum relationships, and causal relationships [5]. It was said in one study that the relationship between personality and relapse conditions was inconsistent. It is said that the highest score is Extraversion while the lowest score is Neuroticism [6].

We use OCEAN on Big Five Inventory 44 for the reason that the coverage is quite broad with a variety of more specific characteristics. The Big Five can explain the different traits in personality without overlapping. Empirical research has shown that the five personality traits show consistency in interviews, self-descriptions, and observations. In addition, this five-factor structure appears to be found in various participants of different ages and different cultures [7]. Each individual can be described through the trait component of his personality, namely the persistent patterns of thoughts, feelings, and behavior. This component can be measured. The personality domain includes five clear factors, when measured using many scales, with a wide range of measurements. The five factors are Openness (O), Conscientiousness (C), Extraversion (E), Agreeableness (A), Neuroticism (N). These five domains do not only appear in professional evaluations, but can be self-reported [7]. Personality type plays a role in coping. Coping is important in dealing with life stressors, for example in dealing with breast cancer [8]. Personality is a long hypothesis in terms of the causes of cancer cell growth. A.D., Galen (1975) stated that melancholic women are more often exposed to cancer than sanguine women. In 1962, Kissen and Eysenck in their study stated the relationship between personality and cancer in which it was reported that cancer patients became extroverts and very few became neurotic when compared to cancer patients who were hospitalized [9]. The role of personality in the emergence of relapse conditions is still controversial. As previous research conducted in Japan by Naoki Nakaya (2003) stated that there was no relationship between personality and the emergence of relapse conditions in breast cancer, the relationship between personality and relapse conditions may be the result but not the cause of the condition [10]. In Indonesia, data on the personality dimensions of the incidence of relapse in breast cancer have not yet been obtained. Thus,

the authors are interested in researching the relationship between personality and the incidence of relapse in breast cancer. Seeing the controversy of several studies, we want to further prove whether there is a relationship between personality and the incidence of relapse in breast cancer patients. In our preliminary study, it was found that the number of breast cancer patients did not relapse about 10% of the number of breast cancer patients who were controlled at the Oncology Polyclinic of Dr. Soetomo Surabaya. In one month, there were around 60 breast cancer patients who had routine control at the oncology polyclinic Dr. Soetomo general hospital Surabaya. The highest relapse rate in breast cancer was two years after initial treatment, but at that time the size of the cancer was large, thus the authors set one year after initial treatment with the aim of being the ideal time for relapse to occur, where the size of the cancer was still small.

Methods

This was an observational analytic case-control study with the aim to find the relationship between personality and the incidence of relapse in breast cancer patients who have undergone surgery and or complete response chemotherapy in 2014 who had routine control at the oncology polyclinic Dr. Soetomo general hospital Surabaya. OCEAN score measurement will depend on which one you choose. If you choose the one suggested above, it will give you a score for each of the five personality traits, and will let you know if you scored higher or lower than others who have taken the test. Other tests give you a score that is a series of letters and numbers – for example, O93-C74-E31-A96-N5. The letters stand for each dimension, and the numbers are the percentage of people who scored lower than you for each of these.

The population was 28 relapsed and 28 non-relapsed breast cancer patients who fit the inclusion and exclusion criteria as below. Sampling was performed by matching the age between the case and the control from 40 to 55 years old. The inclusion Criteria for Relapsed breast cancer research subjects were: (1) breast cancer patients (C50.9) who had been diagnosed by a surgical oncology supervisor and had information regarding the types of breast cancer, had undergone surgery, and or chemotherapy for a minimum complete response in the last year (2014); (2) relapsed at least one year after undergoing surgery and or complete response chemotherapy; (3) education at least graduated from Junior High School; (4) could read and write in Indonesian; (5) willing to participate in the research and signed the informed consent. The inclusion Criteria for non-relapsed (control) breast cancer research subjects were not relapsed for at least one year after surgery and/or complete response chemotherapy. The exclusion criteria was any communication disorders that made them cannot communicate with the examiner (Psychotic). The data was collected and processed in the form of several distribution tables which will then be further presented in the form of diagrams according to their respective distributions. The data were analyzed using Chi-Square test with a significance level of 5%.

Results

The research subjects obtained by matching the ages of 40-55 years were 28 relapsed patients and 28 non-relapsed patients who met the inclusion and exclusion criteria.

	Relapsed	Non-relapsed	p
Age:			
40 - 49 years	14 (50.0)	15 (53.6)	**1.000**
50 – 55 years	14 (50.0)	13 (46.4)	
Education:			
Junior High School	16 (57.1)	12 (42.9)	**0.482**

	Relapsed	Non-relapsed	p
Senior High School	8 (28.6)	9 (32.1)	
College	4(14.3)	7 (25.0)	
Profession:			
Working	7 (25.0)	10 (35.7)	**0.561**
Not Working	21 (75.0)	18 (64.3)	
Marital Status:			
Married	26 (92.9)	27 (96.4)	**1.000**
Divorced/Widow	2 (7.1)	1 (3.6)	
Income/month (In rupiah):			
< 2,500,000	22 (78.6)	19 (67.9)	**0.546**
≥ 2,500,000	6 (21.4)	9 (32.1)	
Physical Complications:			
Yes	20 (71.4)	8 (28.6)	**0.003**
No	8 (28.6)	20 (71.4)	

The respondents were 56 patients. Respondents were divided into two groups: 40-49 years age group with 50% relapsed patients and 53.6% non-relapsed patients, while the 50-55 age group had 50% relapsed patients and 46.4% non-relapsed patients, thus the number was almost the same between relapsed and non-relapsed.

Most respondents' education level were junior high school (57.1% relapsed patients and 42.9% non-relapsed), high school students (28.6% relapsed and 32.1% non-relapsed), and universities (14.3% relapsed patients and 25% non-relapsed). From the aspect of education, most of them graduated from junior high school.

Most of the respondents did not work (75% relapsed patients and 64.3% non-relapse patients), while those who worked were 25% of relapsed patients and 35.7% of non-relapsed patients. From the aspect of work, there were more people who did not work.

Most respondents were married (92.9% relapsed patients and 96.4% non-relapsed), while those who were divorced/ widowed were 7.1% relapsed patients and 3.6% non-relapsed. From the aspect of marriage, more people were married.

Most respondents whose income was < 2,500,000 were 78.6% relapsed patients and 67.9% non-relapsed, while those with income above > 2,500,000 were 21.4% relapse patients and 32.1 non relapses. From the aspect of income, the research subjects mostly came from the weak economic group/ income below the minimum wage.

Most respondents who have physical complications are 71.4% patients relapse and 28.6% non-relapse while there are no physical complications of 28.6% relapse patients and 71.4% non-relapse. From the aspect of physical complications, most of the patients experienced relapsed.

All variable data in table 1 shows p value > 0.05, only the physical complication variable shows p value < 0.05, meaning that there is a relationship between the incidence of physical complications and the occurrence of relapse in breast cancer patients, whereas physical complications in relapsed patients was 71.4% higher than 28.6% non-relapse patients.

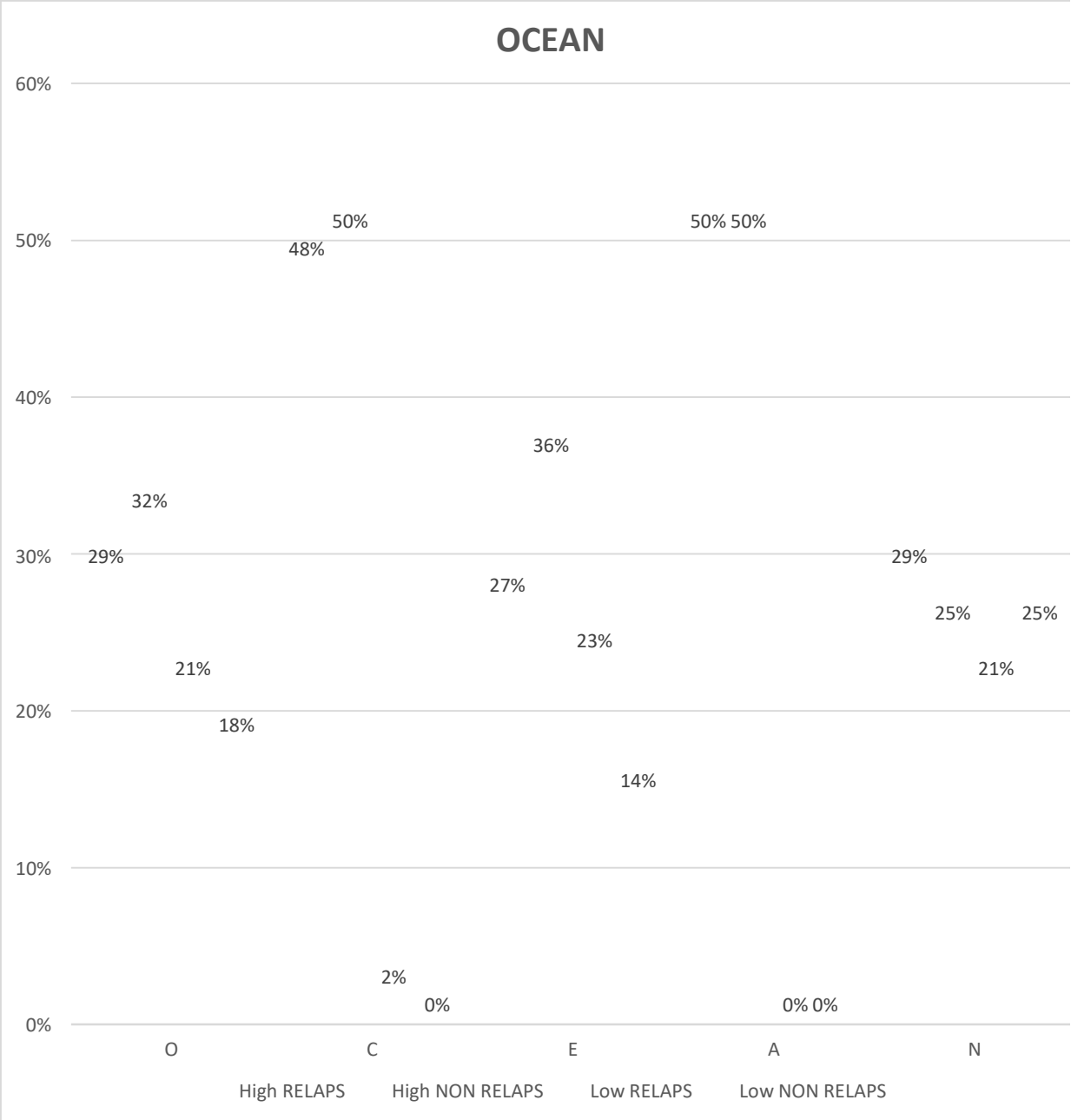

Figure 1. OCEAN Personality Distribution of Breast Cancer Patients by Condition

From the OCEAN personality distribution, in patients with relapsed and non-relapsed breast cancer, more people had agreeableness and consciousness personalities (+50%). In neuroticism personality, the percentage of high scores in relapsed breast cancer patients was higher than non-relapsed (29%), while in other personality dimensions, the percentage of high scores in relapsed breast cancer patients was lower than non-relapsed breast cancer patients. In neuroticism personality, non-relapse breast cancer patients had the lowest score (25%) compared to other personality dimensions.

Table 2. Relapse Incidence of Breast Cancer Patients with Various OCEAN Personality Dimension

Personality		Relapse	NonRelapse	p-Value	Phi	OR (CI 95%)
Openness	High	16 (57.1)	18 (64.3)	0.784	0.073	0.741 (0.253-2.173)
		12 (42.9)	10 (35.7)			
Conscientiousness	High	27 (96.4)	28 (100.0)	1.000	0.135	NA
	Low	1 (3.6)	0 (0.0)			
Extraversion	High	15 (53.6)	20 (71.4)	0.270	0.184	0.462 (0.153-1.395)
	Low	13 (46.4)	8 (28.6)			
Agreeableness	High	28(100.0)	28 (100.0)	NA	NA	NA
Neuroticism	High	16 (57.1)	14 (50.0)	0.789	0.072	1.333 (0.465-3.822)
	Low	12 (42.9)	14 (50.0)			

The Openness personality with a high value was higher in non-relapsed (64.3%) than relapsed (57.1%), while those with low scores were higher in relapsed (42.9%) than non-relapsed (35.7%). However, the p value was 0.784, which means that there was no relationship between Openness personality and the incidence of relapse in breast cancer patients. The Conscientiousness personality had a high value in both relapsed and non-relapsed. However, the p value was 1,000, which means there was no relationship between Conscientiousness Personality and the incidence of relapse in breast cancer patients. The Extraversion personality had a higher high value on non-relapsed (71.4%) than relapsed (53.6%), while those with low scores were higher in relapsed (46.4%) than non-relapsed (28.6%). However, p value was 0.270, which means that there was no relationship between Extraversion Personality and the incidence of relapse in breast cancer patients.

On the Agreeableness personality, all respondents had the same high score (100%) for both relapsed and non-relapsed patients. Because all respondents had high scores and none had low values, no p-value could be obtained, thus it could not be known whether or not there was a relationship between Personality Agreeableness and the incidence of relapse in breast cancer patients.

The Neuroticism personality who had a high score was higher in relapsed (57.1%) than non-relapsed (50.0%), while those who had a low score were higher in non-relapsed (50.0%) than relapsed (42.9%). However, p value was 0.789, which means that there was no relationship between Neuroticism Personality and the incidence of relapse in breast cancer patients.

Discussions

Characteristics of Research Subjects

The average age of the study subjects was almost the same in relapsed and non-relapsed patients. The frequency of breast can-

cer, especially at the age of 30-35 years and increases at the age of 40-55 years. In Indonesia, breast cancer in women ranks second after cervical cancer [11].

Most of the research subject education was junior high school graduates. This is probably because most of the patients who seek treatment at the RSDS are the lower middle class who have low education and another possibility is that patients who only graduated from junior high school do not know the early symptoms of breast cancer, so most of them are checked when they are in an advanced stage.

Lack of knowledge about cancer is the cause of patients not understanding the initial symptoms and handling where they should go for treatment. This statement supports Mirza in his research in Pakistan. He suggested that sociodemographic factors associated with increasing prevalence include low levels of education [12].

Kind's opinion reinforces the previous statement, that respondents who have higher education are reported to have lower levels of anxiety compared to respondents who do not receive education after leaving junior high school [13]. Most of the research subjects are housewives who do not work. It is possible for those who do not work according to Gupta who states that housewives pay less attention to the health of their female organs [14]. Besides, it is possible that the current illness caused the patient to stop working. Most of the research subjects were married women.

The respondents are old adults, so by that age, many are already married. Sometimes there is a refusal to do medical check-up on unmarried women, where they consider themselves healthy and have no abnormalities. Like research conducted by Akhtar-Danesh, which states that after marriage, women often do medical check-up [15]. Most of the research subjects earn <2,500,000. Most of the research subjects are using BPJS insurance.

Where the majority of research subjects have income below the minimum wage. In another study, it was also stated that financing problems also affect the process of breast cancer treatment [16]. Most of the research subjects experienced physical complications, such as swelling of the arms, dizziness, limited movement of the arms. Patients who experience physical complications are the majority of patients who relapsed.

This can all be caused because breast cancer has metastasized so that the complaints can vary depending on the organs affected by the spread. This spread can be in the area around the breast or to other organs far from the breast, depending on the cancer itself [17].

Breast Cancer Patient Personality Dimension

From the results of the research, we got on breast cancer patients at the Oncology Poly using OCEAN personality dimensions, where the most personality dimensions were Agreeableness (100%), Conscientiousness (100%), Extraversion (71.4%), Openness (64.35) and Neuroticism (57.1%).

This is in accordance with the research conducted by Greer which states in his study that cancer patients will become Extraversion and very few will have Neuroticism (Greer et al., 1975). However, the percentage has shown that certain personality types are higher so that they can be used as a warning for the treatment of cancer patients.

Of the 56 research subjects, which consisted of 28 subjects as cases and 28 subjects as controls, most showed differences in personality dimensions between relapsed and non-relapsed patients, although statistically this difference was not significant. Breast cancer patients in the relapsed group had a personality dimension of Neuroticism which was 7.1% higher than the non-relapsed group. Although this difference is not significant, at least the Neuroticism personality which has emotional characteristics, anxiety, negative thoughts, instability, tem-

perament, neurotic, and cowardice affects the patient's physical condition more.

Meanwhile, patients in the non-relapsed group had higher personality dimensions of Openness and Extraversion by 7.2% and 17.8% compared to the relapsed group. In accordance with the theory which says that those with personality dimensions of Openness and Extraversion tend to have a nervous system that quickly inhibits overstimulation, therefore they can tolerate intense social activities and they may even seek or make these social activities.

Individuals with low Openness, low Conscientiousness, low Extraversion, low Agreeableness, and high Neuroticism have different strategies in terms of education. Where the low openness has a simple, conservative, closed, psychotic, traditional, practical nature. Low conscientiousness has the nature of being careless, untidy, careless, forgetful, procrastinating, hyperactive, unfocused. Low extraversion has a quiet nature, aloof, shy, withdrawn, lazy, easily tired. Low agreeableness has the nature of finding fault, stubborn, cold, arrogant, selfish, uncaring, high neuroticism has emotional traits, anxiety, negative thoughts, temperament, neurotic, timid.

The patient is still in the denial or anger phase of his illness which is often found in relapsed breast cancer patients. In Neuroticism personality, there is a decrease in social function and emotional problems arise which later can lead to depressive symptoms, thus requiring the role of psychopharmaceuticals in addition to psychotherapy in these patients [18]. Psychotherapy from a therapist in which there are stages of catharsis, reassurance, and suggestion. Where catharsis, the patient can tell all the complaints experienced either caused by the disease or life stressors experienced during this illness, so that the patient's feelings become relieved and relaxed. Reassurance is needed so that patients get assurance and confidence if with regular control and following the doctor's recommendations, the patient's condition will get better. Suggestions are given to strengthen the patient's belief that the patient can get through this condition comfortably like non-relapsed breast cancer patients. Psychoeducation is also needed for caregivers so that patients are always motivated so that they can pass this phase and finally become accepting their illness.

Meanwhile, non-relapsed breast cancer patients have high openness, high conscientiousness, high extraversion, high agreeableness, and low neuroticism. Where high openness has the nature of imaginative, intelligent, wise, open, original, lots of ideas. Conscientiousness is consistent, organized, reliable, efficient, responsible, precise. High extraversion has an expressive nature, easy to get along with, friendly, positive thinking, dominant, straightforward, assertive. Agreeableness is sympathetic, warm, trustworthy, gentle, affectionate, empathetic, adaptive. Low neuroticism is stable, mature, calm, tough, grateful, patient.

This is all possible because patients easily reach the acceptance phase of their illness, have mature coping and can motivate fellow patients to be able to get through breast cancer optimistically and continue to strive for regular control [19]. So that one patient with a patient can motivate and encourage him to get through his pain comfortably.

By forming a therapy group which is led by a non-relapsed breast cancer patient, sharing their personal experiences when the patient was diagnosed with breast cancer, what is the strategy to get through difficult times so that they can survive until now with the hope that other breast cancer patients can experience the same fate the spirit of life grows again, remains optimistic in facing life and continues to work in the community.

Psychologically, the patient is initially at the stage of adjusting to a severe illness diagnosis, as well as a difficult and long treatment plan. The adjustment process becomes more difficult because of the monitoring of treatment which requires patients

to come for routine check-ups which results in changes in temporary residence and/or changes in habits, and daily activities [20].

The process of adaptation to stress runs according to the duration of time which can be influenced by personality traits. In this study, it appears that there are differences in personality dimensions in general between relapsed breast cancer patients and non-relapsed breast cancer patients, although not statistically significant.

Often times we meet the breast cancer community where some patients motivate other patients because they feel that they share the same fate. This is a manifestation of the Extraversion and Openness dimensions which are a compensatory mechanism for breast cancer patients to switch their illness condition [21].

Relationship Between Personality and Relapse Incidence in Breast Cancer Patients

The relationship between personality and the incidence of relapse is not consistent as research conducted by Morris, which states that the relationship between personality and inconsistent relapse conditions. It is said that the highest score is Extraversion while the lowest score is Neuroticism [6]. From the results of this study, the highest personality dimension in relapsed patients was Agreeableness, a different result from research conducted by Morris, where the highest was Extraversion. So that the possibility of a relapse condition in breast cancer is not only a personality factor that plays a role, but there are other factors that play a role. However, the less favorable personality (Neuroticism) is quite high at 57.1%.

Although the causes of some types of cancer are clear, there are still some types of cancer with no known risk factors. This has led some experts to believe that personality conditions play a role in the situation [22]. It is stated that there is a possibility that personality affects cancer risk through the interaction between personality and life stressors, thus opening the possibility for preventive interventions for certain personalities who may be susceptible to life stressors [23].

From 56 research subjects, which consisted of 28 subjects as cases and 28 subjects as controls, there was no relationship ($p > 0.05$) between personality and the incidence of relapse in breast cancer patients. This is possible because the role of personality in the emergence of a relapse condition is still a matter of controversy, whether there are other factors that play a role. As previous research conducted in Japan by Naoki Nakaya (2003) stated that there was no relationship between personality and the emergence of relapse conditions in breast cancer, the relationship between personality and relapse conditions may be the result but not the cause of the condition [10]. This study only uses personality parameters that are thought to be associated with recurrence factors. It is necessary to explore the stressor factors experienced, it can be internal or external. Future researchers need to consider internal and external factors that cause stress. Internal factors are age, temperament, physical condition and level of fatigue, motivation and work discipline. Meanwhile, external factors are physical condition, lighting atmosphere, rest time, length of work, wages and incentives, organizational form and social and family environment.

According to the researcher, it is possible that personality dimensions consisting of aspects of Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism have a role in relapse events where the patient in addition to facing his illness condition also has to go through his life which may have stressors that have an impact on the patient, thereby aggravating the patient's condition, while of course there is a change in habits, work and maybe even a place to live which requires patients to have regular check-ups in the hospital. It takes quite a long time in terms of adapting to the condition of the illness [20].

Conclusions

In this study, the personality of breast cancer patients with the highest level was Agreeableness (100%). There was no relationship between personality and the incidence of relapse, thus it was suspected that there might be other factors that play a role other than personality, like physical condition, lighting atmosphere, rest time, length of work, social and family environment. Other factors that influence can be internal, namely neurotransmitter imbalances and external factors, namely stressors from outside, can be from the support system, environment or work. The more variables studied, the more clear it is whether personality is the cause or effect of recurrence

Acknowledgments

Not declarated

Fundings

None

Conflict of Interest

There is no conflict of interest regarding the publication of this article.

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