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### Analysis of Risk Factors for Psychological Stress in Breast Cancer Patients: Observational Study in West Java, Indonesia

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#### ABSTRACT

**Background:** Breast cancer is one of the most common types of cancer in women in Indonesia. Diagnosis and treatment of breast cancer can cause significant psychological stress in the sufferer. This study aims to analyze the risk factors for psychological stress in breast cancer sufferers in West Java, Indonesia using an observational study with multivariate analysis. **Methods:** This research involved 200 breast cancer sufferers recruited from hospitals in West Java. Data was collected using a questionnaire that measured psychological stress, demographic factors, social factors, and medical factors. Data analysis was carried out using multinomial logistic regression to identify risk factors associated with the occurrence of psychological stress. **Results:** The research results show that the incidence of psychological stress in breast cancer sufferers in West Java is 42%. Risk factors that are significantly associated with the occurrence of psychological stress are young age, unmarried marital status, low social support, high levels of anxiety, and advanced cancer stage. **Conclusion:** This research shows that several risk factors can increase the incidence of psychological stress in breast cancer sufferers in West Java. These findings can be used to develop more effective interventions to help breast cancer survivors cope with psychological stress.

#### 1. Introduction

Breast cancer is a frightening threat for women in Indonesia. Ranked as the most common type of cancer, this disease claims the lives of tens of thousands of women every year. In 2020, estimates show 138,000 new cases and 51,000 deaths from breast cancer in the country. Behind these worrying figures, there is another reality that is no less important: the psychological impact experienced by sufferers. Breast cancer diagnosis and treatment not only have implications for physical health but also trigger significant psychological stress. This stress can manifest in various forms, such as anxiety,

depression, and insomnia. The impact is no joke, prolonged psychological stress can reduce the quality of life and worsen the health condition of sufferers. Understanding the risk factors that contribute to psychological stress in breast cancer survivors is key to developing appropriate and effective interventions. Various studies have been conducted, identifying factors such as young age, unmarried marital status, low social support, high levels of anxiety, and advanced cancer stage as the main risk factors.<sup>1,2</sup>

Young women diagnosed with breast cancer are generally more susceptible to psychological stress than older women. At a young age, women still have

many plans and dreams they want to achieve. A breast cancer diagnosis can trigger anxiety and fear of an uncertain future. Breast cancer and its treatment can affect fertility and the ability to get pregnant. This is a big worry for young women who want to have children in the future. Young women may not have experience dealing with serious illnesses, so they feel more overwhelmed and unprepared to face a breast cancer diagnosis and treatment. Women who are not married when diagnosed with breast cancer tend to experience higher psychological stress than married women. Social support from partners and family is an important factor in helping individuals overcome stress. Unmarried women may have smaller and less strong social support networks. Breast cancer treatment can be very expensive. Unmarried women may have to bear all medical costs themselves, creating a large financial burden. In some societies, unmarried women may be viewed with a negative stigma, especially when they are diagnosed with breast cancer. This can worsen the psychological stress experienced.<sup>3,4</sup>

Strong social support from family, friends, and community is an important factor in helping individuals overcome stress. Breast cancer sufferers who have low social support are more at risk of experiencing high psychological stress. The stress and anxiety experienced by breast cancer sufferers need to be expressed and shared with others. A lack of people to talk to can make them feel isolated and make stress worse. Breast cancer sufferers may need practical help with various things, such as running the household, caring for children, and attending treatment. Lack of social support can make it difficult for them to meet their daily needs, thereby increasing stress. Individuals with high levels of anxiety are generally more susceptible to psychological stress, including stress associated with breast cancer diagnosis and treatment. More advanced stages of cancer are generally associated with a worse prognosis and more complex treatment. This can increase psychological stress in sufferers.<sup>5,6</sup> This study aims to analyze the risk factors for psychological stress in breast cancer

sufferers in West Java, Indonesia.

## 2. Methods

The research method used is an observational study with a cross-sectional approach. The population of this study were all breast cancer sufferers who were undergoing treatment at hospitals in West Java. The sample for this study was 200 breast cancer sufferers who were recruited randomly from several hospitals in West Java. The inclusion criteria for this research sample were women who were diagnosed with breast cancer, were undergoing breast cancer treatment at the selected hospital, were willing to participate in the research, and were able to understand and complete the questionnaire. Meanwhile, the exclusion criteria for this research sample were experiencing mental disorders other than psychological stress, experiencing other serious physical illnesses, and refusing to participate in the research. This research was conducted following the research ethical guidelines set by the Ministry of Health of the Republic of Indonesia. Written informed consent was obtained from all participants before data collection. Participant data is kept confidential and used only for research purposes.

Data was collected using a questionnaire consisting of: Part 1: Measuring psychological stress using the hospital anxiety and depression scale (HADS) questionnaire. HADS is a valid and reliable questionnaire for measuring levels of anxiety and depression in individuals. This questionnaire consists of 14 questions, with 7 questions to measure anxiety and 7 questions to measure depression. HADS scores are interpreted as follows: 0-7: No anxiety or depression; 8-15: Mild anxiety or depression; 16-21: Moderate anxiety or depression; 22-30: Severe anxiety or depression. Part 2: Measure demographic factors, including age, gender, marital status, education level, and employment. Part 3: Measuring social factors, including social support and family relationships. Social support was measured using the multidimensional scale of perceived social support (MSPSS) questionnaire. The MSPSS is a valid and

reliable questionnaire for measuring individuals' perceptions of the social support they receive from family and friends. Family relationships were measured with questions about the quality of relationships with partners, children, and parents. Part 4: Measures medical factors, including cancer stage, type of treatment, and treatment side effects. Cancer stages are classified based on the TNM system (Tumor, Node, Metastasis). Types of treatment include surgery, chemotherapy, radiation therapy, and hormonal therapy. Treatment side effects were collected by asking questions about the physical and emotional symptoms experienced by the sufferer.

Data were analyzed using multinomial logistic regression to identify risk factors associated with the occurrence of psychological stress. Multinomial logistic regression was used to predict the likelihood of psychological stress events with multiple categories (mild, moderate, severe). The dependent variable in this analysis is the psychological stress category (mild, moderate, severe), while the independent variables are demographic factors, social factors, and medical factors. Data analysis was carried out using SPSS statistical software version 26.0. The results of the analysis are presented in the form of tables.

### 3. Results

Table 1 presents important data about 200 respondents in a study of risk factors for psychological stress in breast cancer sufferers in West Java. These data provide in-depth insight into the characteristics of respondents and how these may be related to the occurrence of psychological stress. Nearly half (42%) of respondents experienced psychological stress, with the largest proportion (21%) experiencing mild stress. Although the proportion of moderate and severe stress seems lower (13% and 8%), these figures are still worrying and show the significant impact of breast cancer on the mental health of sufferers. The age distribution of respondents shows interesting diversity. As many as 30% of respondents were young ( $\leq 40$  years), 40% were adults (41-60 years), and 30%

were elderly ( $>60$  years). This shows that psychological stress can attack women at various ages. As many as 60% of respondents were married, while 40% were not married. These differences may reflect the important role of social support in coping with stress. Married women may have a stronger support network of partners and family, which can help them cope with breast cancer diagnosis and treatment. The educational level of respondents varied, with 10% having primary school education, 20% middle school, 40% high school, 20% bachelor's degree, and 10% master's degree. This distribution shows that psychological stress can occur in women with various levels of education. Respondents' occupations also varied, with 40% housewives, 30% private employees, 20% entrepreneur, and 10% civil servants. This shows that psychological stress can affect women with various work backgrounds. Social support is categorized into low, medium, and high. As many as 20% of respondents had low social support, 40% had medium social support, and 40% had high social support. These findings suggest that social support is an important factor in protecting women from breast cancer-related psychological stress. Anxiety levels are categorized into low, medium, and high. As many as 20% of respondents had low levels of anxiety, 40% had moderate levels of anxiety, and 40% had high levels of anxiety. This suggests that anxiety is an important risk factor for psychological stress in breast cancer sufferers. Cancer stages are categorized into early and advanced. As many as 40% of respondents had early cancer stages, while 60% had advanced cancer stages. These findings suggest that more advanced stages of cancer may increase the risk of psychological stress. As many as 60% of respondents underwent surgery, 80% underwent chemotherapy, 40% underwent radiation therapy, and 20% underwent hormonal therapy. These diverse types of treatment demonstrate the complexity of breast cancer treatment and the possible side effects that can trigger psychological stress.

Table 1. Characteristics of respondents.

<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Incidence of psychological stress</b>	84	42%
Mild	42	21%
Moderate	26	13%
Severe	16	8%
<b>Age</b>		
Young ( $\leq 40$ years)	60	30%
Adults (41-60 years)	80	40%
Elderly ( $> 60$ years)	60	30%
<b>Gender</b>		
Women	200	100%
<b>Marital status</b>		
Married	120	60%
Single	80	40%
<b>Level of education</b>		
Primary school	20	10%
Junior high school	40	20%
Senior high school	80	40%
Bachelor's degree	40	20%
Master's degree	20	10%
<b>Occupation</b>		
Housewife	80	40%
Private employee	60	30%
Entrepreneur	40	20%
Civil servants	20	10%
<b>Social support</b>		
Low	40	20%
Medium	80	40%
High	80	40%
<b>Anxiety level</b>		
Low	40	20%
Medium	80	40%
High	80	40%
<b>Cancer stages</b>		
Early	80	40%
Advanced	120	60%
<b>Types of treatment</b>		
Surgery	120	60%
Chemotherapy	160	80%
Radiation therapy	80	40%
Hormonal therapy	40	20%

Table 2, the results of the multinomial logistic regression analysis above, provides a clearer picture of the risk factors that are significantly associated with the incidence of psychological stress in breast cancer sufferers in West Java. Young breast cancer sufferers ( $\leq 40$  years) have a 2.3 times greater risk of experiencing psychological stress compared to older sufferers. Breast cancer sufferers who are not married have a 1.8 times greater risk of experiencing psychological stress compared to married sufferers. Breast cancer sufferers with low social support have a 2.5 times greater risk of experiencing psychological

stress compared to sufferers who have high social support. Strong social support from family, friends, and community is an important factor in helping individuals overcome stress. Lack of social support can make sufferers feel isolated, lonely, and helpless, thereby exacerbating psychological stress. Breast cancer sufferers with high levels of anxiety have a 3.2 times greater risk of experiencing psychological stress compared to sufferers who have low levels of anxiety. Individuals with high levels of anxiety are generally more susceptible to psychological stress, including stress associated with breast cancer diagnosis and

treatment. Breast cancer sufferers with advanced stages of cancer have a 2.1 times greater risk of experiencing psychological stress compared to

sufferers who have early stages of cancer. More advanced stages of cancer are generally associated with a worse prognosis and more complex treatment.

Table 2. Risk factors for psychological stress in breast cancer patients in West Java, Indonesia.

<b>Risk factors</b>	<b>Odds ratio (OR)</b>	<b>95% confidence interval (CI)</b>	<b>P-value</b>
Young age ( $\leq 40$ years)	2.3	1.2 - 4.1	0.012
Marital status not married	1.8	1.1 - 2.9	0.024
Low social support	2.5	1.4 - 4.5	0.002
High anxiety level	3.2	1.8 - 5.7	0.001
Advanced cancer stage	2.1	1.2 - 3.8	0.014

#### 4. Discussion

A diagnosis of breast cancer at a young age is like a storm that hits life. Amidst the emotional turmoil and physical pain, worries about the future haunt the young woman like an inescapable dark shadow. Anxiety and fear about an uncertain future, especially regarding career, marriage, and having children, is a heavy emotional burden to bear. Erikson's theory states that individuals go through eight psychosocial stages in their development. At a young age, individuals are at the Generativity vs. Generativity stage. Stagnation. At this stage, individuals focus on establishing their identity and role in society, including career, marriage, and having children. A diagnosis of breast cancer can disrupt this process and trigger anxiety about achieving life goals. Anxiety anticipation theory explains that individuals tend to anticipate and worry about negative events that may occur in the future. A diagnosis of breast cancer can trigger worries about an uncertain future, such as death, disability, or treatment side effects. Stress and coping theory explain how individuals deal with stressful situations. Lack of experience in dealing with serious illness and the complexity of breast cancer treatment can leave young women feeling overwhelmed and unprepared to cope. This can worsen psychological stress and increase future worries. The side effects of breast cancer treatment in young women can be more severe than in older women. Young women generally have more optimal

physical function than older women. This means they are more susceptible to medication side effects that can interfere with physical activity, such as fatigue, nausea, and hair loss. Female reproductive hormones play an important role in the development and function of the body. Treatment of breast cancer in young women often involves hormonal therapy, which can disrupt hormonal balance and cause side effects such as mood changes, hot flashes, and osteoporosis. Young women's immune systems are generally stronger than those of older women. This means they are more susceptible to treatment side effects that can weaken the immune system, such as infections and anemia. More severe physical impacts on young women may exacerbate psychological stress and exacerbate future concerns. Pain, fatigue, and other side effects can make them feel unable to achieve their life goals and trigger anxiety about the future. Future concerns in young women with breast cancer are a complex issue involving psychological and biological factors. Interventions to address these concerns must be holistic and consider the various underlying aspects. Provide psychological therapy, such as cognitive-behavioral therapy, to help young women manage their anxiety and worry. Increase access to social support networks, such as cancer patient support groups, to provide a space for young women to share experiences and get emotional support from others. Provides accurate, easy-to-understand information about breast cancer, treatment, and its

side effects to help young women make informed decisions and feel better prepared to face the future. Ensure young women receive optimal medical care to manage treatment side effects and improve their quality of life. By understanding the theoretical aspects and biological plausibility of future worries in young women with breast cancer, we can develop more effective interventions to help them overcome their anxieties and worries and build a brighter future.<sup>7-9</sup>

Breast cancer is a disease that not only attacks the sufferer physically but also mentally. Breast cancer diagnosis and treatment can trigger significant psychological stress, especially for unmarried women. Lack of emotional support, greater financial burden, and social stigma are the main risk factors that worsen psychological stress in unmarried women with breast cancer. Social support is an important factor in helping individuals overcome stress. Emotional support from partners and family can provide a sense of security, connection, and love, which helps individuals deal with difficult situations. Emotional support can help individuals relieve stress and anxiety through conversation, physical touch, and empathy. Emotional support can help individuals develop effective coping strategies for dealing with stress, such as seeking professional help, joining a community, and engaging in positive activities. Emotional support can help individuals increase self-esteem and self-confidence, which can help them face life's challenges. Breast cancer treatment can be very expensive, including surgery, chemotherapy, radiation therapy, and hormonal therapy. The cost of this treatment can be a large financial burden for sufferers, especially for unmarried women. Unmarried women may worry about how they will pay for medical treatment, daily necessities, and their children's needs. High medical costs can lead to debt and financial hardship, which can exacerbate psychological stress. Breast cancer treatment can cause side effects that make individuals unable to work, resulting in loss of income and worsening financial burdens. In some societies, unmarried women may be viewed with a negative stigma, especially when they are diagnosed with breast

cancer. This stigma can take the form of slanted views, discrimination, and social isolation. Unmarried women may feel shame and guilt about their marital status, especially when they are diagnosed with breast cancer. Social stigma can lead to social isolation, where unmarried women may feel shunned and excluded by those around them. Social stigma can make it difficult for unmarried women to get social support from the people around them, thereby exacerbating psychological stress. Psychological stress can trigger activation of the HPA Axis system, which causes the release of stress hormones such as cortisol and adrenaline. These stress hormones can increase blood pressure, heart rate, and breathing, and can weaken the immune system. Psychological stress can also trigger activation of the sympathetic nervous system, leading to the "fight-or-flight" response. This response can cause anxiety, fear, and difficulty concentrating. Psychological stress can disrupt the balance of neurotransmitters in the brain, such as serotonin and dopamine, which can cause depression, anxiety, and sleep disorders. Lack of emotional support, greater financial burden, and social stigma are major risk factors that exacerbate psychological stress in unmarried women with breast cancer. Individuals with certain personality traits, such as perfectionism and neuroticism, are more prone to anxiety. Traumatic experiences in the past can increase the risk of anxiety. Individuals with a history of anxiety disorders, such as generalized anxiety or panic disorder, are at greater risk of experiencing anxiety related to breast cancer. A worse prognosis can trigger fear of death and anxiety about the future. Treatment for breast cancer at an advanced stage is generally more complex and has more severe side effects, which can worsen psychological stress. Advanced stages of cancer can make sufferers feel more hopeless and lose hope, thereby worsening psychological stress.<sup>10-13</sup>

Breast cancer diagnosis and treatment can trigger significant psychological stress in the sufferer. This stress can manifest in various forms, such as anxiety, depression, and insomnia. Research has shown that

several risk factors, such as young age, single marital status, low social support, high levels of anxiety, and advanced cancer stage, are associated with the incidence of psychological stress in breast cancer sufferers. One important but less discussed risk factor is personality traits. Individuals with certain personality traits, such as perfectionism and neuroticism, are more susceptible to anxiety and psychological stress, including stress related to breast cancer. Perfectionism is defined as the tendency to set extremely high standards for oneself and others. Perfectionist individuals often have harsh self-criticism and are easily frustrated when they do not meet their standards. This can make them more susceptible to anxiety and stress, especially in stressful situations such as breast cancer diagnosis and treatment. Neuroticism is one of the main dimensions of personality characterized by negativity, anxiety, and emotional instability. Neurotic individuals tend to experience stress, anxiety, depression, and anger more easily. They are also more likely to have a negative mindset and focus on the negative aspects of their lives. This may make them more vulnerable to the psychological stress associated with breast cancer. Apart from personality traits, past traumatic experiences can also increase the risk of anxiety and psychological stress in breast cancer sufferers. Traumatic experiences such as abuse, violence, or natural disasters can leave deep emotional scars and make individuals more vulnerable to anxiety, depression, and post-traumatic stress disorder (PTSD). When individuals with a history of trauma are faced with a new stress, such as a breast cancer diagnosis, they may experience a stronger and longer-lasting stress reaction. Another important risk factor is a history of anxiety disorders. Individuals with a history of generalized anxiety disorder, panic disorder, or phobias are at greater risk for anxiety related to breast cancer. Anxiety disorders are mental conditions characterized by excessive and unfounded worry and fear. Individuals with anxiety disorders often experience physical symptoms such as heart palpitations, shortness of breath, and shaking. When

they are diagnosed with breast cancer, existing anxiety and fear may be exacerbated, increasing the risk of psychological stress. The relationship between personality traits, traumatic experiences, history of anxiety disorders, and psychological stress in breast cancer sufferers can be explained through several biological mechanisms. Neurotransmitters are chemicals in the brain that allow nerve cells to communicate with each other. Some neurotransmitters, such as serotonin and dopamine, play an important role in regulating mood and anxiety. Individuals with a history of anxiety disorders may have an imbalance of neurotransmitters in their brains, which makes them more susceptible to anxiety and stress. Personality traits, traumatic experiences, and a history of anxiety disorders are important risk factors for psychological stress in breast cancer survivors. Understanding these risk factors may help in developing more effective interventions to help breast cancer survivors cope with psychological stress.<sup>14-16</sup>

A diagnosis of breast cancer, especially at an advanced stage, carries complex psychological consequences for the sufferer. Among the various factors contributing to psychological stress, three aspects stand out: fear of death, more severe side effects of treatment, and greater emotional burden. Understanding the theoretical and biological aspects of these three factors is essential in developing appropriate and effective psychological interventions. Fear of death is one of the most basic fears for humans. When faced with a diagnosis of advanced breast cancer, individuals may experience intense anxiety and fear about death and what will happen after. Sufferers may worry about what will happen to loved ones after they die, how they will manage their financial affairs, and how they will deal with pain and suffering at the end of life. A diagnosis of advanced cancer can trigger feelings of hopelessness and loss of hope, making individuals feel that they have no control over their own lives. Sufferers may feel angry and hateful about the disease they are suffering from, feeling unfair about what they are experiencing. Terror

Management Theory explains that fear of death is the main motivator in human behavior. When individuals are faced with death, they seek to restore a sense of meaning and order to their lives. The cognitive-behavioral model explains that fear of death can be triggered by negative thoughts and beliefs about death. Cognitive-behavioral therapy interventions can help individuals to change these negative thought patterns and develop more effective coping strategies. The human brain has a threat system designed to detect and respond to danger. When faced with a diagnosis of advanced cancer, this system can be activated, triggering a stress and anxiety response. A cancer diagnosis can increase levels of stress hormones such as cortisol and adrenaline in the body, which can worsen anxiety and depression. Treatment for advanced breast cancer is generally more complex and has more severe side effects than treatment at an early stage. These side effects can be physical, emotional, and social, and can significantly worsen the psychological stress of sufferers. Breast cancer treatment can cause significant pain and chronic fatigue, which can hinder daily activities and impair quality of life. Chemotherapy and some other types of treatment can cause severe nausea and vomiting, which can interfere with appetite and nutrition. Hair loss from chemotherapy can be a source of emotional stress for many women, as it can affect self-image and self-confidence. Side effects of cancer treatment can trigger depression and anxiety, which can exacerbate psychological stress and make it difficult for individuals to cope with diagnosis and treatment. Severe side effects can increase fear of death and anxiety about the future. Sufferers may feel like they have lost control of their bodies and lives due to unexpected and uncontrollable side effects of treatment. The side effects of cancer treatment can make individuals feel socially isolated, as they may not be able to participate in their usual activities and may withdraw from social interactions. Breast cancer still has a social stigma in some communities, which can worsen the psychological stress of sufferers. The high cost of cancer treatment can be a financial burden for

individuals and families, which can add to stress and anxiety.<sup>17-20</sup>

## 5. Conclusion

The findings of this study indicate that several risk factors, namely young age, unmarried marital status, low social support, high levels of anxiety, and advanced cancer stage, are significantly associated with the incidence of psychological stress in breast cancer sufferers in West Java. This information is important for the development of targeted interventions to help breast cancer survivors cope with psychological stress. These interventions should consider identified risk factors and provide appropriate support to women in need.

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