*IOSR Journal of Nursing and Health Science (IOSR-JNHS)*
*e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 12, Issue 3 Ser.4 (May. – June. 2023), PP 59-62*
*www.iosrjournals.org*

# Stress And Fatigue In Breast Cancer Patients Undergoing Chemotherapy

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***Abstract***
***Background****: The prevalence of breast cancer has surpassed lung cancer as the most commonly diagnosed cancer and causes disruption to various functions of the patient's life. One of the therapies undertaken by breast cancer patients is chemotherapy. This therapy has an impact on patients, namely fatigue which is the most common problem experienced and greatly interferes with normal function in breast cancer patients. Many factors cause fatigue and among them is stress. The purpose of this study was to determine the relationship between stress and fatigue in breast cancer patients undergoing chemotherapy.*
***Materials and methods****: This study used a cross sectional study design on 153 breast cancer patients undergoing chemotherapy and selected by purposive sampling. Data were collected using the Perceived Stress Scale (PSS) and Cancer Fatigue Scale (CFS). Data were analyzed using descriptive statistics and Pearson Correlation.*
***Results****: The analysis showed that stress (P = 0.614) was not associated with fatigue in breast cancer patients undergoing chemotherapy.*
***Conclusion****: Fatigue in breast cancer patients undergoing chemotherapy is not caused by stress, but there are other factors that contribute to it.*

***Keywords****: stress, fatigue, breast cancer, chemotherapy.*

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Date of Submission: 02-06-2023 Date of Acceptance: 12-06-2023

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## I. Introduction

The most common type of cancer in the world is breast cancer which has surpassed lung cancer as the most commonly diagnosed cancer and there are an estimated 2.3 million new cases (11.7%). Worldwide breast cancer mortality is 6.9%. Breast cancer death rates are higher in developing countries [1].

New cancer cases in Indonesia in 2020 based on the highest type of cancer are also breast cancer, which is 65,858 cases. The death rate from breast cancer in Indonesia is 22,430 cases [2].

Breast cancer causes disruption in various functions of the patient's life. One of the most common problems experienced and greatly interferes with the normal functioning of patients is fatigue, which is one of the most common symptoms experienced by adult patients with cancer. Fatigue associated with cancer is defined as a phenomenon that is subjective in nature and is experienced as a feeling of fatigue or lack of energy that varies in degree, frequency and duration that is not proportional to physical activity and does not disappear with sleep or rest. Patients often describe cancer-related fatigue as feelings of fatigue, weakness or unusual loss of activity, with sequelae of emotional and cognitive functioning [3].

The impact of fatigue for breast cancer patients, especially those undergoing chemotherapy, includes depression, anxiety and stress. Depression and anxiety are also associated with fatigue in cancer patients [4]. Anxiety and depression, uncertainty and perceived stress directly affect fatigue in breast cancer patients undergoing chemotherapy [5].

Stress is thought to be associated with fatigue in breast cancer patients. The purpose of this study was to determine the relationship between stress and fatigue in breast cancer patients undergoing chemotherapy.

## II. Materials and methods

Study **Design:** Cross-Sectional Study
**Study Location**: This research was conducted in one of the hospitals in Aceh.
**Study Duration:** 1 April 2 to May 20, 2023.
**Sample size:** 153 breast cancer patients undergoing chemotherapy.

**Sample size calculation:** The sample size in the study was determined proportionally using the Slovin formula with a population of 341 patients and a confidence level of 95%, resulting in a sample size of 153 respondents.
**Subjects & selection methods**: The sampling technique used is purposive sampling
**Instrument:** Data collection on stress in breast cancer patients using the Perceived Stress Scale (PSS) consisting of 10 questions about feelings and thoughts over the past month. PSS is used to measure stress levels in hospitalized patients. Alternative answers in the form of five *Likert* scales, namely 0 = Never 1 = Almost Never 2 = Sometimes 3 = Often Enough 4 = Very Often. Especially for questions number 4, 5, 7 and 8 the scores are reversed, namely 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0. Scores 0-13 are low stress, scores 14-26 are moderate stress and scores 27-40 are high perceived stress PSS reliability for breast cancer patients has reliability coefficients for scores on both PSS factors (perceived helplessness and *perceived self-efficacy*) are 0.87 and 0.73 respectively. PSS is an adequate instrument to measure perceived stress in the context of breast cancer and may be useful for identifying women at risk for psychological adjustment disorders. Data on fatigue in breast cancer patients were collected using the Cancer Fatigue Scale (CFS) which consisted of 15 questions with alternative answers in the form of *Likert* scale, namely no = 1, little = 2, somewhat = 3, very = 4 and very much = 5. CFS measurement results in the form of scores between 16-44. CFS also has high reliability with the value of *the Cronbach alpha* coefficient for 15 items is 0.88.

**Inclusion criteria**:
1. Breast cancer patients.
2. Patients undergoing chemotherapy.
3. Compos mentis awareness.
4. Cooperative.

**Exclusion criteria**:
1. Breast cancer patients who are experiencing impaired consciousness.
2. Breast cancer patients who are experiencing severe pain.
3. Breast cancer patients who do not agree to be studied.

**Procedure methodology**

The research procedure was carried out after obtaining ethical permission from the hospital (No.041/ETIK-RSUDZA/2023). Samples were selected by *purposive sampling* technique. The study data collection was carried out by waiting for breast cancer patients undergoing chemotherapy in the Oncology department until the number of samples was met. Data collection was assisted by two enumerators, nurses who work in the Oncology department to collect data from patient *medical records*.

**Statistical Analysis**
The data were analyzed using descriptive statistics (central tendency) and Pearson Correlation ($r^2$ test).

## III. Result

**Table 1. Demographic Characteristics**

| No | Characteristic | F | % |
|---|---|---|---|
| Age: mean= 49.14; sd = 7,052 | | | |
| Socioeconomic Status | | | |
| 1 | Intermediate | 35 | 22,9 |
| 2 | Low | 118 | 77,1 |
| Marital Status | | | |
| 1 | Unmarried | 8 | 5,2 |
| 2 | Marry | 112 | 73,2 |
| 3 | Widow | 33 | 21,6 |
| Work | | | |
| 1 | Civil servants | 42 | 27,5 |
| 2 | Contract Employee | 16 | 10,5 |
| 3 | Private Employees | 13 | 8,5 |
| 4 | Laborer | 6 | 3,9 |
| 5 | Farmer | 35 | 22,9 |
| 6 | Not Working | 41 | 26,8 |

Tabel 1 show that of the 153 breast cancer patients undergoing chemotherapy, the average age was 49.14 years (SD= 7,05), 118 people (77.1%) had socioeconomic status at a low level, 112 people (73.2%) were married and 42 people (27.5%) woreked as civil servants

**Table 2. Average Stress and Fatugue**

| Variable | Mean | SD | Min | Max |
|---|---|---|---|---|
| Stress | 27,82 | 4,015 | 18 | 38 |
| Fatigue | 33,01 | 4,736 | 24 | 44 |

Table 2 shows that from 153 breast cancer patients undergoing chemotherapy, the average stress score = 27.82 (sd = 4.015) and fatigue = 33.01 (sd = 4.736).

**Table 3. Correlation of Stress with Fatigue**

| Variable | $r^2$ | p |
|---|---|---|
| Stress | 0,041 | 0,614 |

The results of the Pearson Correlation analysis found that stress (p = 0.614) was not associated with fatigue in breast cancer patients undergoing chemotherapy.

## IV. Discussion

**Fatigue**

The results showed that breast cancer patients who underwent chemotherapy obtained an average fatigue score of 33.01 which was between the minimum and maximum scores. These results mean that breast cancer patients undergoing chemotherapy experience moderate fatigue. Some studies say among them are cancer patients undergoing chemotherapy with fatigue mostly at moderate levels as many as 72 people (50%) [6]. Other studies also suggest that 55.2% of breast cancer patients have a history of fatigue [7].

Especially for breast cancer, fatigue is reported by most patients during initial treatment (surgery, radiation, and/or chemotherapy). About 33% of individuals with breast cancer report persistent fatigue for up to ten years after surviving. Complicating the situation is the fact that breast cancer patients generally complain of drowsiness and fatigue simultaneously. These terms are often used interchangeably and both relate to declines in various aspects of health-related quality of life and with daytime activity restrictions [8].

Some studies now show that women with breast cancer complain of fatigue even before starting treatment. Women diagnosed with breast cancer experienced increased fatigue, sleep disturbances and increased daily dysfunction before starting chemotherapy and that patients with sleep-deprived fatigue and prechemotherapy depression experienced more fatigue and poor quality of life during chemotherapy than women with fewer pre-treatment symptoms. These data show that fatigue is not only due to radiation or chemotherapy, but multifactorial [9].

Estimates of cancer-related fatigue during initial treatment range from about 60% to 90% with the highest frequency reported in patients undergoing chemotherapy (80% to 96%) compared to those treated with radiation (60% to 93%). For example, in one study it was said that patients undergoing adjuvant chemotherapy were twice as likely to report cancer-related fatigue during treatment compared to patients receiving adjuvant radiation therapy [10].

A study says that the prevalence of fatigue in breast cancer patients is 46.3% of all cases [8]. Other studies say the prevalence of fatigue that interferes with the quality of life of breast cancer patients is 43% [11]. Other studies further also mentioned that as many as 26.6% of breast cancer patients experienced symptoms of fatigue [12].

Fatigue in breast cancer is a common problem, both during treatment and during rehabilitation. Most patients consider fatigue to be a major problem with major consequences for women's quality of life [13]. The impact of fatigue for breast cancer patients, especially those undergoing chemotherapy, including moderate to severe fatigue levels can cause breast cancer patients to stop treatment. It has been found that quality of life among breast cancer patients is significantly and negatively affected from the time of diagnosis with cancer or after they hear the word cancer. Research shows a strong link between fatigue and poor quality of life in breast cancer patients undergoing chemotherapy [14].

Fatigue in breast cancer differs from other manifestations of fatigue in that it generally does not diminish with sleep or rest, usually with greater duration and severity, often associated with high levels of distress and disproportionate to the level of exertion. Breast cancer-related fatigue often occurs along with other troubling symptoms such as pain, sleep disturbances and depression. Thus, the impact of breast cancer fatigue on health-related quality of life can be substantial, reducing patient involvement in work, personal and social activities [10].

Therefore, it can be concluded that fatigue in breast cancer patients undergoing chemotherapy can reduce the quality of life of patients. Nurses are expected to take on more roles to reduce fatigue symptoms in

breast cancer patients undergoing chemotherapy by creating a comfortable care environment and meeting all the basic needs of patients during chemotherapy.

**Stress and Fatigue**

The results showed that the average stress score of breast cancer patients undergoing chemotherapy was 27.82 which was between the minimum and maximum scores. The results of the partial analysis found that stress was not associated with fatigue in breast cancer patients undergoing chemotherapy. The statement of the results of this study is different from previous studies, namely the perception of stress has a direct effect on fatigue in breast cancer patients undergoing chemotherapy [5]. An article also mentions that depression, anxiety and stress are associated with fatigue in cancer patients [4].

The difference in the results of this study can be caused because most breast cancer patients have undergone chemotherapy more than one cycle, so that psychological adaptation has been formed. The stage of breast cancer also contributes to stress levels and disease acceptance [15].

The relationship between stress and cancer is complex. There is a possible link between the chronic stress response, which may predispose patients to depression and the risk of dying from cancer. The typical cancer diagnosis and treatment regimen and uncertainty associated with cancer are, by nature, very stressful psychologically and this impacts the body. How well a person can adjust psychologically can determine how he or she is doing in the long run [4].

The patient's perception of stress can affect the severity of fatigue during chemotherapy. Differences in perception and evaluation of external events create variability in perceived stress variable levels that can affect variability between individuals in fatigue severity [16]. Other results also showed that cancer patients who underwent chemotherapy and experienced very high fatigue reported higher numbers and impacts of previous stressful life events and higher Perceived Stress Scale scores [17].

## V. Conclusion

The results of this study can be concluded that stress is not a factor associated with fatigue conditions in breast cancer patients undergoing chemotherapy.

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