ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

Determination of the Relationship Between Fatigue Levels and Self Care Behaviors in Patients with Breast Cancer: A Descriptive Study

Meme Kanserli Hastaların Yorgunluk Düzeyleri ile Öz Bakım Davranışları Arasındaki İlişkinin İncelenmesi: Tanımlayıcı Çalışma

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ABSTRACT Objective: The aim of this study was to determine the fatigue levels and self-care behaviors (SCB) of patients with breast cancer (BC) and the relationship between fatigue levels and SCB. **Material and Methods:** This descriptive and correlational study was conducted with 132 individuals diagnosed with BC between November 2022-February 2023. Introductory Information Form, Cancer Fatigue Scale and Self-Care Behavior Scale According to Self-Care Deficit Theory in Chemotherapy Patients were used as data collection tools in the study. **Results:** The majority of the participating patients (90.9%) experienced symptoms of weakness and fatigue. Mean Cancer Fatigue Scale score was 21.29±8.23 and the mean Self-Care Behavior Scale According to Self-Care Deficit Theory in Chemotherapy Patients score was 76.44± 11.19. A weak, significant, negative correlation was found between Cancer Fatigue Scale and Self-Care Behavior Scale according to Self-Care Deficit Theory in Chemotherapy Patients scores (r=-0.344, p<0.01). **Conclusion:** In conclusion, the results obtained in the present study revealed that the fatigue level and SCB of patients with BC were at a moderate level. As fatigue levels increased, SCB decreased. Patients receiving cancer treatment should be monitored for symptoms, and their SCB should be tracked and evaluated at regular intervals.

Keywords: Nursing; breast neoplasms;
                self-care; fatigue

ÖZET Amaç: Bu çalışmanın amacı, meme kanserli [breast cancer (BC)] hastaların yorgunluk düzeylerini ve öz bakım davranışlarını [self-care behaviors (SCB)] belirlemek ve yorgunluk düzeyleri ile SCB arasındaki ilişkiyi araştırmaktır. **Gereç ve Yöntemler:** Tanımlayıcı ve korelasyonel tipteki bu çalışma Kasım 2022-Şubat 2023 tarihleri arasında BC tanısı almış 132 birey ile yürütülmüştür. Çalışmada veri toplama aracı olarak Tanıtıcı Bilgi Formu, Kanser Yorgunluk Skalası ve Kemoterapi uygulanan hastalarda Öz Bakım Yetersizliği Kuramına Göre Öz Bakım Davranışları Ölçeği kullanılmıştır. **Bulgular:** Çalışmaya katılan hastaların çoğunluğu (%90,9) halsizlik ve yorgunluk semptomları yaşamaktadır. Kanser Yorgunluk Skalası puan ortalaması 21,29±8,23 ve Kemoterapi Hastalarında Öz Bakım Eksikliği Kuramına Göre Öz Bakım Davranışları Ölçeği puan ortalaması 76,44±11,19 idi. Kanser Yorgunluk Skalası ve Kemoterapi Uygulanan Hastalarda Öz Bakım Yetersizliği Kuramına Göre Öz Bakım Davranışları Ölçeği puanları arasında zayıf, anlamlı, negatif bir korelasyon bulundu (r =-0,344, p<0,01). **Sonuç:** Sonuç olarak, bu çalışmada elde edilen bulgular BC'li hastaların yorgunluk düzeylerinin ve SCB'nin orta düzeyde olduğunu ortaya koymuştur. Yorgunluk seviyeleri arttıkça SCB azalmıştır. BC tedavisi alan hastalar semptomlar açısından izlenmeli ve hastaların SCB düzenli aralıklarla takip edilmeli ve değerlendirilmelidir.

Anahtar Kelimeler: Hemşirelik; meme neoplazileri;
                       öz bakım; yorgunluk

The most common type of cancer in women is breast cancer (BC). While the global incidence of BC is 47.8 per 100,000, in Türkiye, this rate is 46.62 per 100,000.[1] Surgical intervention, radiotherapy, hormonal therapy, and chemotherapy are the treatment combinations for BC. Chemotherapy drugs can cause side effects depending on the type of drug, dosage, and duration of treatment. Side effects include, vomiting, diarrhea, mouth sores, nausea, hair loss and fatigue.[2]

Cancer-related fatigue (CRF) is defined as "subjective weakness and exhaustion that is not proportional to the activity performed, impedes the execution of activities, and continuously imparts a distressing feeling associated with cancer treatment".[3] Approximately 80% of patients undergoing chemotherapy for BC have reported experiencing severe fatigue.[2] CRF is cannot be alleviated by rest and sleep and more severe and persistent than ordinary fatigue.[4] CRF is a common symptom that negatively affects quality of life.[5] Fatigue affects the quality of life of BC patients and their adaptation to normal daily life.[6] Fatigue, which is physically and emotionally distressing, may affect patients' self-care behaviors (SCB) by causing functional impairments.[7] A negative relationship has been found between chemotherapy side effects and SCB in patients with BC.[2]

"The process of preserving health and managing diseases through health-promoting practices" is defined as self-care.[8] Patients with BC exhibit moderate levels of SCB, and these SCB are associated with their levels of self-efficacy.[9] Self-efficacy beliefs and self-care positively affect patients' quality of life.[10] Self-care mediates the relationship between symptom management, self-efficacy, and quality of life in patients with BC.[11] Better self-care is associated with higher quality of life and an increased chance of longer survival.[12,13]

Fatigue affects patients' daily living activities and well-being.[14] SCB may decrease in patients whose daily living activities and quality of life are negatively affected. Therefore, determining the relationship between fatigue and self-care activities is important in managing the treatment process of BC

patients. Nurses have responsibilities such as assisting patients in managing treatment side effects, coping with symptoms, and providing support for self-care.[15] Patients coping with the symptom of fatigue and engaging in SCB is a crucial aspect of the treatment process. The study aimed to determine the fatigue levels and SCB of patients with BC and explore the relationship between fatigue levels and SCB.

Research Questions

■ What are the fatigue levels of individuals with breast cancer?

■ What is the level of SCB of individuals with breast cancer?

■ Is there a difference between fatigue and SCB of individuals with BC according to their sociodemographic characteristics?

■ Is there a relationship between fatigue levels and SCB levels of individuals with BC?

MATERIAL AND METHODS

TYPE OF RESEARCH

This is a descriptive and correlational study and the data was collected in the inpatient and outpatient units of the medical oncology clinic of a faculty of medicine hospital.

POPULATION AND SAMPLE OF THE RESEARCH

Individuals diagnosed with BC who were receiving cancer treatment at the medical oncology clinic of the faculty of medicine hospital constituted the population. The sample size of the study was unknown. The study sample consisted of individuals diagnosed with BC who were receiving cancer treatment in the same clinic, met the inclusion criteria, and volunteered to participate in the study. The sample size was determined through power analysis using the statistical program G*Power 3.1.9.4.[16] Using the F test, minimum sample size was determined as 132 with a power of 0.90, effect size of 0.10, and a significance level of 0.05.[17] Patients aged ≥18 years, who were literate, who knew that they had been diagnosed with BC, who received chemotherapy treatment and/or radiotherapy treatment were in-

cluded in the study. Patients with self-reported mental illnesses were excluded.Terminally ill patients were excluded because the self-care activities were performed by their caregivers and nurses. Terminal stage patients were learned from the physicians who were provided their treatment. The research was completed with the participation of 132 BC patients.

DATA COLLECTION METHODS AND TOOLS

The data were collected by "Introductory Information Form", "Cancer Fatigue Scale (CFS)" and "Self-Care Behavior Scale" according to "Self-Care Deficit Theory in Chemotherapy Patients (SCBS-SCDT-CP)". Data were collected in inpatient and outpatient clinics from patients receiving adjuvant and neoadjuvant chemotherapy.

Introductory Information Form: The form was created in accordance with the relevant literature.[18] The form consisted of a total of 18 questions, encompassing sociodemographic characteristics and treatment-related details of individuals diagnosed with BC.

Cancer Fatigue Scale: CFS was developed to assess the severity of fatigue in patients with BC.[19] Şahin et al. conducted the Turkish validity and reliability study of CFS in 2018.[20] The scale is a Likert-type measurement consisting of 15 items, evaluated on a scale ranging from 5 (Very Much) to 1 (Not at All). The scale has 3 sub-dimensions: physical, emotional, and cognitive factors. Physical factors were evaluated by items 1, 2, 3, 6, 9, 12, and 15th emotional factors are evaluated by items 5, 8, 11, and 14th cognitive factors were evaluated by items 4, 7, 10, and 13th sub-dimensional scores were calculated as (item 1+2+3+6+9+12+15)-7 for physical factors, (item 5+8+11+14)-4 for emotional factors, and (item 4+7+10+13)-4 for cognitive factors. The total score was derived from the sum of scores obtained from the 3 sub-dimensions. The total score that can be obtained from this scale was determined by the total score of the items in each factor.[20] A high score indicates high CRF (fatigue severity). CFS Cronbach's Alpha value was 0.74 for the entire scale and 0.746 in the present study. [20]

Self-Care Behavior Scale According to Self-Care Deficit Theory in Chemotherapy Patients: The measurement tool was developed by Karadağlı and Alpar in 2017 to assess the extent to which patients undergoing chemotherapy can perform SCB. The scale consists of 24 items. The scale evaluated on a scale ranging from 1 (Never) to 5 (Always). While responses to the positive statements on the scale are coded as "Always: 5", "Often: 4", "Sometimes: 3", "Rarely: 2", and "Never: 1", responses to the negative statements are reverse coded, ranging from "Always: 1" to "Never: 5". Items 11, 20, and 23 are reverse coded. The scale consists of 6 sub-dimensions: individual care (11, 13, 14, and 23), sleep pattern (3, 5, 12, and 20), maintaining respiration (8, 15, 16, and 18), activity and movement (4, 19, 22, and 24), dietary habits (1, 7, 9, 10, and 17), and coping with problems (2, 6, and 21). The total score of the scale varies between 24-120. As the scale scores increase, individuals' SCB also increase positively. The Cronbach's Alpha value of the entire scale was 0.88 and 0.794 in the present study.[21]

DATA COLLECTION

The researcher collected the data between November 2022-February 2023 through face-to-face interviews. Data were collected in inpatient and outpatient units, from patients receiving BC chemotherapy and/or radiotherapy. Patients receiving chemotherapy were not asked whether they were in the adjuvant or neoadjuvant treatment phase. Patients receiving treatment at any stage of the disease or number of cure were included in the study. Fatigue levels of patients prior to cancer treatment are unknown. Of the patients 33.3% of the received Surgery+Chemotherapy+Radiotherapy, 30.3% received Surgery+Chemotherapy, 15.9% received Surgery+Chemotherapy+ Radiotherapy+ Hormone therapy, 9.8% received Chemotherapy, 4.5% received Chemotherapy+Radiotherapy. The researcher explain the purpose of the study. After the researcher obtained the informed consent through a written consent form, the researcher conducted the interviews and collected data by asking survey questions. Data collection took approximately 15-20 min. The interviews were conducted under coronavirus diseases-2019 measures and restrictions.

ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Necmettin Erbakan University Health Sciences Scientific Research Ethics Committee on October 5, 2022, with the decision number 285. Additionally, institutional permission was obtained from the university faculty of medicine on October 21, 2022. Permission for both scales was obtained from the authors via e-mail. Individuals who agreed to participate in the study were informed both verbally and in writing before data collection forms were distributed. Their verbal and written consent was obtained, and only those who volunteered were included in the study. This research was conducted in accordance with the principles of the Declaration of Helsinki 2008.

STATISTICAL ANALYSIS

SPSS 22.0 software package program (IBM Corporation, Armonk, NY, USA) was used to analyze the data. Mean, standard deviation, number, percentage, median, minimum and maximum values were used for descriptive statistics. Skewness and Kurtosis values, histograms and Q-Q plot values were examined for the normality analysis of the data. Skewness and Kurtosis values were accepted as normal distribution between -1 and +1. The independent samples t-test was used for data with a normal distribution, while the Mann-Whitney U test was performed for non-normally distributed data to test the difference between 2 groups. To test the difference between more than 2 groups, for normally distributed data analysis of variance was performed. For non-normally distributed data and Kruskal-Wallis test was performed. For "post hoc" analysis, Bonferroni test was used for normally distributed data and Tamhane "post hoc" tests were used for non-normally distributed data. To assess the correlation between scale scores Pearson correlation analysis was used. In the correlation analysis, $r \leq 0.25$ was considered very weak, $0.26 \leq r \leq 0.49$ was considered weak, $0.50 \leq r \leq 0.69$ was considered moderate, $0.70 \leq r \leq 0.89$ was considered strong, and $0.90 \leq r < 1$ was considered very strong.[22] The reliability of the scales was assessed using the Cronbach's Alpha coefficient. For all analyses, p value <0.05 was accepted as statistically significant in all analyses, margin of error was taken as 0.05, and 95% confidence interval was calculated.

RESULTS

Findings regarding the sociodemographic characteristics of the patients are presented in Table 1. The mean age of the patients is 54.69±11.86, 97.7% are female, 87.9% are married, 66.7% are primary/secondary school graduates, 72% are housewives, and 78% have an income equal to their expenses.

Patients in stage IV cancer had significantly higher CFS total scores than those in stage II cancer. CFS total scores were significantly higher in patients with metastases than those without metastases (p<0.05). SCBS-SCDT-CP total scores were significantly higher in patients who were employed with a salary than those who were unemployed or housewifes. SCBS-SCDT-CP total scores were significantly higher in patients without a family history of cancer than those with a family history of cancer (p<0.05). SCBS-SCDT-CP total scores were significantly higher in patients without additional chronic diseases than those with additional chronic diseases (p<0.05) (Table 1).

Patients most commonly experienced symptoms of fatigue, hair loss, and nausea/vomiting (Table 2).

The patients' total mean CFS score was 21.29±8.23, and the total mean SCBS-SCDT-CP score was 76.44±11.19 (Table 3).

There was a significant negative weak correlation (r=-0.344) between SCBS-SCDT-CP total score and CFS total score, a significant negative weak correlation (r=-0.487) between SCBS-SCDT-CP total score and the physical fatigue sub-dimensional score of CFS, a significant positive moderate correlation (r=0.510) between SCBS-SCDT-CP total score and the emotional fatigue sub-dimensional score of CFS, and a significant negative weak correlation (r=-0.254) between SCBS-SCDT-CP total score and the cognitive fatigue sub-dimension score (Table 4).

DISCUSSION

In this study, patients experienced a moderate level of fatigue. Approximately 4 out of 5 patients undergo-

TABLE 1: CFS and SCBS-SCDT-CP total scores according to the descriptive characteristics of the patients

Descriptive Characteristics	n	%	CFS Total Score X̄±SD	SCBS-SCDT-CP Total score Minimum-maximum
Gender				
Female	129	97.7		
Male	3	2.3		
Marital status				
Married	116	87.9	21.69±8.31	76.62±11.55
Unmarried	16	12.1	18.38±71.9	75.12±8.35
			t=1.517	t=0.502
			p=0.132	p=0.616
Education				
Literate	16	12.1	18 (8-28)	75 (42-90)
Primary/secondary education	88	66.7	22 (9-42)	76 (55-94)
High School	9	6.8	20 (6-42)	81 (71-106)
University and above	19	14.4	21 (10-34)	80 (63-103)
			KW=6.398	KW=4.461
			p=0.094	p=0.216
Working				
Not working[a]	8	6.1	21.5 (9-34)	68.5 (55-84)
Working with salary[b]	10	7.6	26 (11-28)	85 (72-97)
Retired[c]	19	14.4	21 (6-27)	78 (63-106)
House wife[d]	95	72.0	20 (8-42)	75 (42-94)
			KW=2.041	KW=10.091
			p=0.360	**p=0.018**
				b>a,d
Income				
Income exceeds expenses	12	9.1	16 (13-32)	85.5 (61-97)
Income equals expenses	103	78	21 (6-42)	77 (42-106)
Income is less than expenses	17	12.9	25 (11-36)	71 (55-90)
			KW=1.935	KW=5.740
			p=0.380	p=0.057
Family history of cancer				
Yes	53	40.2	21.15±7.92	73.15±12.64
No	79	59.8	21.37±8.48	78.65±9.57
			t=-0.156	t=-2.844
			p=0.876	**p=0.005**
Cancer stage				
Stage 1[a]	28	21.2	20.82±8.84	77.96±9.81
Stage 2[b]	56	42.4	18.98±7.26	78.28±12.29
Stage 3[c]	21	15.9	22.47±7.05	73.47±9.67
Stage 4[d]	27	20.5	25.62±7.66	73.37±10.62
			F=4.474	F=1.885
			p=0.005	p=0.135
			d>b	
Metastasis				
No	79	59.8	19.54±7.79	77.63±10.01
Yes	53	40.2	23.88±8.25	74.67±12.65
			t=-3.065	t=1.493
			p=0.003	p=0.138
Chronic disease				
Yes	66	50.0	21.03±8.34	73.80±10.72
No	66	50.0	21.54±8.17	79.09±11.71
			t=-0.358	t=-2.872
			p=0.721	**p=0.006**
Living with				
Alone	10	7.6	16 (8-34)	74 (42-79)
Spouse	39	29.5	22 (10-42)	74 (57-103)
Children	11	8.3	22 (9-33)	77 (57-88)
Spouse and children	64	48.5	19 (10-39)	77 (58-97)
Other (mother, father, sister-in-law)	8	6.1	21 (6-25)	81 (71-106)
			KW=1.632	KW=9.089
			p=0.228	p=0.059
	X̄±SD	Minimum-maximum		
Age	54.69±11.87	27-80		
Average disease duration (months)	22.97±34.69	1-216		
Number of Cures	11.75±12.03	0-60		

CFS: Cancer Fatigue Scale; SCBS-SCDT-CP: Self-Care Behavior Scale-Self-Care Deficit Theory in-Chemotherapy Patients; SD: Staandard deviation; KW: Kruskal-Wallis test

TABLE 2: Symptoms experienced by patients					
Symptoms	**n**	**%**	**Symptoms**	**n**	**%**
Hair loss	111	84.1	Bleeding	41	31.1
Nausea/vomiting	105	79.5	Anxiety	100	75.8
Loss of appetite	97	73.5	Dyspnea	64	48.5
Mouth Ulcer	71	53.8	Change of taste	99	75.0
Diarrhea	74	56.1	Changes in skin and nails	88	66.7
Weakness/fatigue	120	90.9	Numbness in hands and feet	84	63.6
Pain	107	81.1	Constipation	66	50.0

TABLE 3: CFS and SCBS-SCDT-CP Total scores		
Scale	**X̄±SD**	**Minimum-maximum**
CFS total score	21.29±8.23	6-42
SCBS-SCDT-CP Total score	76.44±11.19	42-106

SD: Staandard deviation; CFS: Cancer Fatigue Scale; SCBS-SCDT-CP: Self-Care Behavior Scale-Self-Care Deficit Theory in-Chemotherapy Patients

ing chemotherapy for BC report experiencing severe fatigue.[2] Fatigue levels are affected by many factors, including cancer itself, the effects of cancer treatments, depression, pain, sleep disturbances, physical inactivity. Managing fatigue is complicated by the misconception that it is an inevitable consequence of cancer and its treatment.[23,24] Fatigue is not just a symptom of disease or a side effect of treatment, but has negative effects on all aspects of quality of life.[25] In order to maintain quality of life among patients with BC, the level of fatigue must first be determined and appropriate interventions to reduce fatigue must be planned and implemented together with the healthcare team members.

In this study, the level of fatigue does not differ according to the sociodemographic characteristics of the patients. The similarity of the sociodemographic characteristics of the participants can be associated with this situation. The results show that the fatigue experienced by patients receiving cancer treatment is mostly affected by disease characteristics that affect treatment and prognosis, such as the stage of the cancer or metastasis. Patients in stage IV cancer had a higher fatigue levels than patients in stage II cancer. Patients in advanced-stage cancer perceive a higher intensity of fatigue than those in other stages.[26] The risk factors for fatigue are young age, female sex, insomnia, pain, anxiety,depression, low physical activity level, chemotherapy, surgery, clinical stage III or IV.[27] As the disease stage advances and the treatments administered increase, the level of fatigue tends to rise. Patients with metastases had higher levels of fatigue than those without metastases in the study. In patients with cancer with untreatable metastasis, fatigue is known to be the most distressing symptom.[28] During the process of metastasis, as the disease spreads to distant organs, the increased tissue damage may contribute to a progressive intensification of fatigue because of the escalating impact of symptoms exhibited by the disease.

The SCB of the participants were at a moderate level, the level of SCB was higher in patients employed with a salary than those who were unemployed or homemakers in the present study. Employed patients, because of their social environment and relationships in the work setting, as well as

TABLE 4: The relationship between the patients' CFS and SCBS-SCDT-CP total scores								
	CFS Total		**Physical fatigue**		**Emotional fatigue**		**Cognitive fatigue**	
	r value	**p value**	**r value**	**p value**	**r value**	**p value**	**r value**	**p value**
SCBS-SCDT-CP Total score	-0.344	**0.000**	-0.487	**0.000**	0.510	**0.000**	-0.254	**0.003**

CFS: Cancer Fatigue Scale; SCBS-SCDT-CP: Self-Care Behavior Scale-Self-Care Deficit Theory in-Chemotherapy Patients

the roles and responsibilities they undertake, may benefit from a motivating and supportive environment, which positively reflects on their level of self-care. Research conducted on patients with BC has reported that employed individuals have a better quality of life than nonemployed individuals, and homemakers exhibit lower levels of healthy lifestyle behaviors than working female patients.[11,29] Patients without a family history of cancer had a significantly higher total score in self-care needs than those with a family history of cancer in the present study. Women with close relatives who have BC have a higher risk of developing cancer.[30] Individuals who had a family cancer history exhibit a sense of hopelessness and negative attitudes in displaying health-promoting behaviors, which may be attributed to their prior experiences of encountering and witnessing the symptoms caused by the disease and the challenges during the treatment process.

In the present study, individuals without additional chronic diseases exhibited significantly higher levels of SCB than those with additional chronic diseases. Individuals with an additional chronic disease may have to cope with multiple illnesses during cancer treatment, potentially leading to an increase in symptoms. Thus, the process of cancer treatment and adaptation to symptom management may be negatively affected and patients may have difficulty in performing SCB. Patients receiving chemotherapy with an additional chronic illness have lower quality of life and poorer self-care habits.[31] Furthermore, as the number of chronic illnesses increase, individuals tend to have worse compliance and lower quality of life.[32] The symptoms induced by chronic illnesses and individuals' coping levels can lead to differences in SCB.

In the present study, as the fatigue levels of participants increased, their SCB decreased. A negative relationship between fatigue levels and daily life activities has been reported, indicating that as patients' fatigue levels increase, they experience difficulties in performing SCB.[33-34] A negative relationship has been found between the side effects of chemotherapy and SCB in patients with BC.[2] Fatigue also negatively affects quality of life.[35] Thus, SCB can be enhanced by controlling fatigue in patients with BC. Interventions supporting SCB have been reported to reduce the physical and psychological side effects of chemotherapy, leading to positive changes in SCB.[36]

LIMITATIONS

The study was conducted in a single hospital. So that the results obtained in the present study cannot be generalized to the entire population.

CONCLUSION

Patients with BC experienced moderate levels of fatigue and exhibited SCB at a moderate level, and SCB decreased as fatigue increased. Because of the high levels of fatigue in patients in advanced-stage and with metastatic cancer, it is recommended to prevent fatigue in these patient groups by incorporating progressive relaxation exercises, such as yoga, supporting SCB that facilitate daily life activities and raising awareness among nurses to educate patients in these aspects.

Furthermore, patients receiving chemotherapy should be monitored for symptoms, their self-care should be evaluated, and SCB should be monitored at regular intervals.

IMPLICATIONS FOR PRACTICE

The results of this research reveal that fatigue is a symptom that reduces SCB in patients with BC receiving chemotherapy. SCB are an important issue in cancer treatment and can change the course of treatment.It is clear that fatigue is not an ordinary symptom seen only during the cancer treatment process. Fatigue level should be evaluated in BC patients receiving cancer treatment who cannot perform SCB and nursing practices are recommended to reduce fatigue.

bers of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

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