



Evaluation of Fatigue and Comfort in Patients with Breast Cancer

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OBJECTIVE

This study aimed to evaluate fatigue and comfort levels in patients with breast cancer.

METHODS

This research was conducted between November 2021 and April 2022. The sample consisted of 218 breast cancer patients undergoing chemotherapy treatment in a medical oncology clinic. Data were collected using a questionnaire form, the Fatigue Severity Scale (FSS), and the General Comfort Scale (GCS).

RESULTS

Patients had a mean age of 53.93 ± 11.0 . Active employment status, income level, smoking, presence of chronic diseases, continuous medication use, metastasis status, ECOG performance score, and sleep duration affected patients' FSS scores ($p < 0.05$). Patients had a mean GCS score of 140.61 ± 11.42 . Active employment status, income, tobacco use, continuous drug use, metastasis status, ECOG performance score, number of chemotherapy cycles and sleep duration affected patients' GCS scores ($p < 0.05$). There was a negative correlation between FSS and GCS scores ($p < 0.05$). Disease status, ECOG performance score, sleep duration, and GCS relief and superiority subscale affected fatigue. Tobacco use, ECOG performance score, number of chemotherapy cycles, sleep duration, and fatigue severity affected comfort ($p < 0.05$).

CONCLUSION

Patients were generally tired but had high comfort levels. There is a negative correlation between fatigue and comfort. Sociodemographic and disease-related characteristics affect fatigue and comfort.

Keywords: Breast cancer; chemotherapy; comfort; fatigue; nursing care.

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INTRODUCTION

Cancer remains one of the most pressing health challenges of our era and exerts biological, social, financial, and psychological impacts. According to the WHO, in 2022, there were 19.9 million new cancer diagnoses worldwide, with breast cancer being the most prevalent in women.[1] In Türkiye, 240.013 individuals received their initial cancer diagnosis in 2022, with lung cancer

being the most prevalent cancer among men and breast cancer among women.[1,2] Based on global data from 2022, there were 2.296.840 new cases of breast cancer, during that year. In 2022, Türkiye reported a total of 25.249 new cases of breast cancer. Both the global and local data indicate that the incidence of breast cancer remains notably high and that there is an expectation of a continued increase in the number of breast cancer cases, similar to other cancer types.[1,2]

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Many cancer patients require treatment that may involve one or more of the following approaches: Chemotherapy, surgery, radiotherapy, biotherapy (immunotherapy), and hormone therapy. Chemotherapy can lead to various side effects, fatigue, nausea, vomiting, shortness of breath, loss of appetite, and insomnia. These symptoms can have a detrimental impact on the patient's quality of life and functional abilities, often posing challenges to their ability to adhere to the treatment regimen.[3,4]

Fatigue is a common symptom of cancer treatment. [3] Most patients with cancer (50%–90%) encounter CRF, which can manifest as weakness, diminished attention span, weight loss, reduced engagement in activities, sleep disturbances, and restlessness.[5–7] CRF has a detrimental impact on patients' quality of life and functional abilities, ultimately resulting in decreased comfort levels.[3,4]

Researchers have explored the concept of comfort by considering various dimensions, including physical, environmental, psychospiritual, and sociocultural aspects. Physical comfort is related to bodily sensations. Environmental comfort is about the impact of external factors and situations on the individual. Psychospiritual comfort encompasses the spiritual elements that provide meaning and purpose to an individual's life. Sociocultural comfort encompasses factors such as not feeling isolated, receiving support from spouses and relatives, being able to engage in cultural traditions, having access to information, and fostering positive interpersonal relationships.[8,9] Cancer patients who experience high levels of comfort tend to have fewer unmet needs, enjoy a higher quality of life, and exhibit greater adherence to their treatment regimens. Research has demonstrated that healthcare professionals who effectively manage symptoms and assess the quality of life can significantly assist their cancer patients in addressing physical, psychological, and social challenges. This approach contributes to an improved overall quality of life for individuals dealing with cancer.[10,11] While numerous researchers have explored symptoms and related factors arising from cancer or cancer treatment, there has been relatively limited research attention dedicated to the comfort levels of cancer patients.[8] Hence, it is crucial to assess and understand the physical, psychological, social, and environmental comfort levels of cancer patients, particularly those diagnosed with breast cancer. Such evaluations can provide valuable insights into the well-being and support needs of these individuals, ultimately enhancing the quality of care and life for breast cancer pa-

tients and potentially serving as a foundation for future research and interventions in this area. In this context, assessing the severity of CRF, understanding how it impacts the individual, and evaluating the overall comfort level of cancer patients in a multidimensional manner are of paramount importance. Such comprehensive evaluations can aid in improving the quality of life for these patients by ensuring that treatment is carried out effectively and addressing the physical, psychological, social, and environmental aspects that contribute to their comfort and well-being.[5,6,8,11–13] Therefore, this study investigated the cancer-related fatigue and comfort levels of patients with breast cancer.

MATERIALS AND METHODS

Study Design

This study was a cross-sectional and descriptive.

Sample of the Study

The purpose of this study was to investigate the CRF and comfort levels of patients with breast cancer. The study was carried out in the University Hospital's Medical Oncology Unit from November 2021 to April 2022. Data were gathered through face-to-face interviews with patients. The research involved 324 breast cancer patients. The known sample calculation formula (5% tolerance and 99% confidence level) was used to determine the sample size. The sample consisted of 218 breast cancer patients. Inclusion criteria were: Diagnosed with breast cancer, continuing chemotherapy and had undergone at least four cycles of chemotherapy had an ECOG performance score of ≤ 2 , knew the diagnosis and expressed it verbally, volunteering and had no communication problems or any other health problems that might prevent participation.

Measures and Tools

The data were interviews using a sociodemographic questionnaire, the Fatigue Severity Scale, and the General Comfort Questionnaire.

Research Questions

- What is the fatigue and comfort level of patients?
- Do demographic and disease-related characteristics affect the CRF and comfort levels of patients with breast cancer?
- Is there a relationship between the CRF and comfort levels of patients with breast cancer?

Patient Characteristics Information Form: The sociodemographic characteristics questionnaire con-

sisted of two parts: Personal characteristics and disease and treatment-related characteristics. The “personal characteristics” part consisted of items on sociodemographic characteristics (gender, age, marital status, education, occupation, tobacco and alcohol use, income, etc.). The “disease and treatment-related characteristics” part consisted of items on disease status, year of diagnosis, ECOG performance score, cancer-related surgery, radiotherapy, and treatment course, etc.

Fatigue Severity Scale (FSS): Krupp et al.[14] developed FSS, which Armutlu et al.[15] adapted to Turkish. The instrument consists of nine items rated on a seven-point Likert-type scale. The total score is the average of all items. The mean score ranges from 1 to 7 (“1=strongly disagree” to “7=strongly agree”). The scale has a cut-off score of 4. A mean score <2.8 indicates no fatigue. A mean score of 2.8 to 6.1 indicates mild fatigue. A mean score of 6.1 indicates chronic fatigue. The total score varies from 9 to 63, with higher numbers indicating more acute weariness. The original scale has a Cronbach’s alpha of 0.80.[14] The Turkish version has a Cronbach’s alpha of 0.79 which was 0.97 in the present study.[14,15]

General Comfort Questionnaire (GCQ): GCQ was developed by Kolbaca.[16] This questionnaire adapted to Turkish by Kuşuoğlu and Karabacak.[17] The questionnaire consists of 48 items and three subscales; relief 16 items, relaxation 17 items, and overcoming problems 15 items. The items are rated on a four-point Likert-type scale. The scale has positive and negative items. The negative items are reverse-scored. Higher scores on the positive items indicate higher comfort levels, while higher scores on the negative items indicate lower comfort levels. The total score is the sum of all scores divided by the number of items. The total score ranges from 48 to 192. A mean score of 0 to 48 indicates low comfort levels. A mean score of 49 to 96 indicates moderate comfort levels. A mean score of 97 to 144 indicates high comfort levels. A mean score of 145 to 192 indicates very high comfort levels. The original questionnaire has a Cronbach’s alpha score of 0.88. The Turkish version has a Cronbach’s alpha score of 0.85 which was 0.84 in the present study.[16,17]

Statistical Analysis

Descriptive, graphical, and statistical methods were used. Normality was tested using the Kolmogorov-Smirnov test. Percentages, numbers, means, medians, standard deviations were used for categorical variables. The independent sample t-test was used to compare two groups, while the one-way Analysis of Variance (ANOVA) was used to compare more than two groups.

Scheffé’s test was used to make post-hoc comparisons between the groups to determine significant differences. Pearson’s correlation coefficients were used to determine the relationship between two continuous variables. The dependent variables were comfort and fatigue levels, while the independent variables were demographic and disease-related characteristics. A multivariate linear regression model was used to determine the effect of the independent variables on the dependent variables. A multiple linear regression model (enter method) was constructed to pinpoint independent variables associated with the overall comfort level. The model included variables that exhibited statistical significance ($p < 0.05$) or were nearly significant in the initial univariate analyses. Durbin Watson (D-W) statistics were used to determine autocorrelation between variables. The D-W statistical score was 1.860 (1.5–2.5), indicating no autocorrelation. Therefore, basic assumptions were thoroughly examined and confirmed, demonstrating the model’s viability and reliability. According to the regression analysis results, the coefficient of determination of the model (R^2) was 0.30, suggesting that 30% of the variance of the dependent variable was explained by the independent variables. Since the p-value in the model ($F(11-206)=7.914$, $p < 0.001$) was smaller than α , the model was significant at a 95% confidence level.

Ethical Considerations

The study was approved by the Scientific Research and Ethics Committee of Trakya University Faculty of Health Sciences, Faculty of Medicine Dean’s Office (Date: 15.11.2021 and No: TUTF-BAEK 2021/430). The Trakya University Faculty of Health Sciences and Application Center provided written consent. All patients provided informed consent. The research followed the ethical guidelines specified in the World Medical Association’s Declaration of Helsinki.

RESULTS

Patients had a mean age of 53.93 ± 11.0 years. More than half of the patients were older than 50 (59.6%). Most patients were married (90.4%). More than half of the patients were housewife (61.5%). Only seventeen patients were employed (7.8%). Half of the patients had chronic diseases (50.5%). Less than half of the patients were on medication (48.6%). Twenty-three patients were smokers (10.6%). More than half of the patients had primary school (68.6%) degrees. Less than a quarter of the patients had middle school degrees (21.1%). Only twenty-two patients had bachelor’s de-

Table 1 Personal, diagnosis and treatment characteristics of patients (n=218)

Features	n	%	Features	n	%
Age			Presence of a constantly used medication		
>50	130	59.6	No	112	51.4
Marital status			Disease state		
Married	197	90.4	Primer	125	57.3
Educational status			Disease diagnosis time		
Primary	150	68.8	<5 year	166	76.1
Profession			ECOG performance score†		
Housewife	134	61.5	I	105	48.2
Employment status			Radiotherapy		
Unemployed	201	92.2	No	115	52.8
Income status			Total chemotherapy cycle		
Income equals expenses	147	67.4	≤8 cycle	142	65.1
Smoking			Receiving an additional systemic treatment protocol		
No smoking	139	63.8	No	161	73.9
Chronic disease			Sleep duration		
Yes	110	50.5	<8 hour	119	54.6

SD: Standard deviation; ECOG: Eastern Cooperative Oncology Group

Table 2 Patients' fatigue severity scale and general comfort scale scores (n=218)

Scales	n	%	Mean±SD	Min-Max	Importance level scores
FSS	218	100	48.29±10.22	17-63	5.37±1.14
<36	31	14.2			
≥36	187	85.8			
GCS	218	100	140.61±11.42	106-174	2.93±0.24
Relief	218	100	44.76±5.46	27-60	2.80±0.34
Relaxation	218	100	49.16±4.83	38-63	2.89±0.28
Superiority	218	100	46.70±3.09	36-55	3.11±0.21

SD: Standard deviation; FSS: Fatigue severity scale; GCS: General comfort scale

grees (10.1%). More than half of the patients had neutral incomes (income = expense) (67.4%). More than a quarter of the patients had negative incomes (income < expense). Only fourteen patients had positive incomes (6.4%). More than half of the patients were diagnosed with primary breast cancer (57.3%), while less than half were diagnosed with metastatic breast cancer (47.2%). Less than a quarter of the patients were diagnosed more than five years ago (23.9%). Less than half of the patients received radiotherapy (47.2%), while more than a quarter of the patients received additional chemotherapy (26.1%). 28.4 % patients had an ECOG score of 0. 48.2% patients had an ECOG score of I. 23.4% patients had an ECOG score of II. More than half of the patients slept less than eight hours (54.6%) (Table 1).

Patients had a total mean FSS score of 48.29±10.22 (out of 63), while they had a mean significance score

of 5.37±1.14 (out of 7). The scale had a Cronbach's alpha score (α) of 0.97, indicating high reliability (0.8-1) (Table 2).

Patients had a mean GCQ score of 140.61±11.42. They had mean GCQ "relaxation," "relief," and "overcoming problems" subscale scores of 49.16±4.83, 44.76±5.46, and 46.70±3.09, respectively. Given the GCQ subscale significance scores, patients had the highest score on the "overcoming problems" subscale (3.11±0.21), while they had the lowest score on the "relief" subscale (2.80±0.34). The scale had a Cronbach's alpha score of 0.84, indicating high reliability (0.8-1) (Table 2).

Employed patients had a lower mean FSS score than their unemployed counterparts ($t=2.888$; $p=0.004$). Patients with positive incomes had a lower mean FSS score than those with negative incomes ($F=3.391$; $p=0.035$). Smokers had a higher mean FSS score than

Table 3 Fatigue severity scale and general comfort scale score averages according to patients' personal, diagnostic and treatment characteristics (n=218)

Features	FSS Mean±SD	Relief Mean±SD	Relaxation Mean±SD	Superiority Mean±SD	GCS-Total Mean±SD
Working status					
Working	4.61±1.33	2.99±0.37	3.06±0.24	3.23±0.16	3.09±0.22
No working	5.43±1.10	2.78±0.33	2.88±0.28	3.10±0.21	2.92±0.23
p	0.004 ^{aa}	0.014 [*]	0.010 [*]	0.013 [*]	0.003 [*]
Income status					
Income is less than expenses	5.44±1.12	2.79±0.35	2.91±0.29	3.09±0.20	2.92±0.23
Income equals expenses	5.41±1.12	2.78±0.32	2.87±0.28	3.11±0.21	2.92±0.23
Income exceeds expenses	4.61±1.22	3.07±0.41	3.03±0.34	3.21±0.25	3.10±0.31
p	0.035 ^{ab}	0.007 [*]	0.145	0.162	0.022 [*]
Smoking					
Does not smoke	5.08±1.15	2.90±0.34	3.08±0.28	3.17±0.19	3.05±0.23
Smokes	5.53±1.06	2.76±0.33	2.86±0.27	3.09±0.20	2.90±0.22
Ex-smoker	5.09±1.26	2.86±0.36	2.90±0.29	3.14±0.22	2.96±0.26
p	0.022 ^{ab}	0.046 [*]	0.002 [*]	0.135	0.008 [*]
Chronic disease					
Yes	5.57±1.10	2.78±0.32	2.86±0.29	3.09±0.21	2.91±0.23
No	5.16±1.13	2.82±0.36	2.92±0.27	3.13±0.20	2.95±0.24
p	0.007 ^{aa}	0.344	0.129	0.129	0.132
Presence of a constantly used medication					
Yes	5.56±1.10	2.77±0.32	2.85±0.29	3.08±0.21	2.90±0.23
No	5.18±1.14	2.82±0.36	2.93±0.27	3.14±0.20	2.96±0.24
p	0.015 ^{aa}	0.273	0.029 [*]	0.039 [*]	0.045 [*]
Disease state					
Primer	5.17±1.14	2.84±0.30	2.93±0.29	3.14±0.19	2.97±0.22
Metastatic	5.62±1.08	2.74±0.38	2.83±0.26	3.08±0.22	2.88±0.25
p	0.003 ^{aa}	0.036 [*]	0.010 [*]	0.042 [*]	0.007 [*]
ECOG performance score ^t					
0	4.59±1.16	3.05±0.30	2.94±0.33	3.20±0.19	3.06±0.24
I	5.41±0.98	2.77±0.26	2.92±0.25	3.13±0.17	2.94±0.19
II	6.23±0.68	2.55±0.34	2.78±0.25	2.96±0.22	2.76±0.23
p	<0.001 ^{ab}	<0.001 [*]	0.003 [*]	<0.001 [*]	<0.001 [*]
Sleep duration					
<8 hour	5.53±1.06	2.74±0.31	2.85±0.25	3.10±0.18	2.89±0.20
≥8 hour	5.16±1.19	2.87±0.37	2.94±0.32	3.12±0.23	2.97±0.27
p	0.016 ^{aa}	0.004 [*]	0.039 [*]	0.466	0.014 [*]
Total chemotherapy cycle					
<8 cycle	5.30±1.07	2.82±0.33	2.95±0.29	3.14±0.18	2.97±0.23
≥8 cycle	5.49±1.24	2.75±0.36	2.78±0.24	3.06±0.24	2.86±0.24
p	0.246 ^a	0.164	<0.001 [*]	0.009 [*]	0.001 [*]

* p: Statistically significant

non-smokers (F=3.908; p=0.022). Patients with chronic diseases had a higher mean FSS score than those without chronic diseases (t=2.725; p=0.007). Patients who were on medication had a lower mean FSS score than those who were not (t=2.451; p=0.015). Patients with primary breast cancer had a lower mean FSS score than those with metastatic breast cancer (t=2.953; p=0.003).

Patients with an ECOG score of II had a higher mean FSS score than those with an ECOG score of I. Moreover, patients with an ECOG score of I had a higher mean FSS score than those with an ECOG score of 0 (F=39.669; p<0.001). Patients who slept less than eight hours had a higher mean FSS score than those who slept more than eight hours (t=2.422; p=0.016) (Table 3).

Employed patients had significantly higher mean GCQ total ($t=2.988$; $p=0.003$) and GCQ “relief” ($t=2.488$; $p=0.014$), “relaxation” ($t=2.616$; $p=0.010$), and “overcoming problems” ($t=2.492$; $p=0.013$) subscale scores. Patients with positive incomes had significantly higher mean GCQ total ($F=3.898$; $p=0.022$) and GCQ “relief” ($F=5.024$; $p=0.007$) subscale scores than those with negative incomes. Smokers had significantly lower mean GCQ total ($F=4.950$; $p=0.008$) and GCQ “relief” ($F=3.113$; $p=0.046$) and “relaxation” ($F=6.350$; $p=0.002$) subscale scores than non-smokers. Patients who were on medication had significantly lower mean GCQ total ($t=2.016$; $p=0.045$) and GCQ “relaxation” ($t=2.195$; $p=0.029$) and “overcoming problems” ($t=2.072$; $p=0.039$) subscale scores than those who were not. Patients with breast cancer had significantly higher mean GCQ total ($t=2.711$; $p=0.007$) and GCQ “relief” ($t=2.117$; $p=0.036$), “relaxation” ($t=2.600$; $p=0.010$), and “overcoming problems” ($t=2.046$; $p=0.042$) subscale scores than those with metastatic breast cancer. Patients with an ECOG score of II had a significantly lower mean GCQ total ($F=27.403$; $p<0.001$) and GCQ “relief” ($F=42.078$ $p<0.001$), “relaxation” ($F=5.928$; $p=0.003$), and “overcoming problems” ($F=23.606$; $p<0.001$) subscale scores than those with an ECOG score of I. Moreover, patients with an ECOG score of I had a significantly lower mean GCQ total ($F=27.403$; $p<0.001$) and GCQ “relief” ($F=42.078$ $p<0.001$), “relaxation” ($F=5.928$; $p=0.003$), and “overcoming problems” ($F=23.606$; $p<0.001$) subscale scores than those with an ECOG performance score of 0. Patients who received less than eight cycles of chemotherapy had significantly higher mean GCQ total ($t=3.356$; $p=0.001$) and GCQ “relaxation” ($t=4.578$; $p<0.001$) and “overcoming problems” ($t=2.644$; $p=0.009$) subscale scores than those who received more than eight rounds of chemotherapy. “Patients who reported sleeping less than eight hours had a significantly lower mean GCQ total ($t=2.481$; $p=0.014$) and GCQ “relief” ($t=2.893$; $p=0.004$) and “relaxation” ($t=2.158$; $p=0.039$) subscale scores than those who reported sleeping more than eight hours (Table 3).

There was a negative correlation between FSS and GCQ total scores ($r=-0.232$; $p=0.001$). There was also a negative correlation between FSS total and GCQ “relief” ($r=-0.366$; $p<0.001$) and “overcoming problems” ($r=-0.169$; $p=0.013$) subscale scores. These results suggested that the more severe the fatigue, the lower the comfort levels (Table 4).

The results showed that tobacco use [$B=-0.116$ (95% GA: -0.208; -0.023); $t=-2.456$, $p=0.015$], ECOG per-

Table 4 The relationship between patients' fatigue severity scale and general comfort scale scores

GCS	FSS	
GCS-total	$r=-0.232$	$p=0.001^*$
Relief	$r=-0.366$	$p<0.001^*$
Relaxation	$r=-0.027$	$p=0.697$
Superiority	$r=-0.169$	$p=0.013^*$

*, $p<0.05$; r: Pearson correlation test; FSS: Fatigue severity scale; GCS: General comfort scale

formance scores [$B=-0.125$ (95% GA: -0.172; -0.079), $t=-5.300$, $p<0.001$], the number of chemotherapy cycles [$B=-0.068$ (95% GA: -0.129;-0.007), $t=-2.185$, $p=0.030$], and sleep duration [$B=0.022$ (95% GA: 0.003-0.040), $t=2.287$, $p=0.023$] affected patients' general comfort levels. These findings indicated four results. First, smokers had lower general comfort levels than non-smokers. Second, patients with higher ECOG scores had lower general comfort levels than those with lower ECOG scores. Third, patients who received more chemotherapy cycles had lower general comfort levels than those with fewer chemotherapy cycles. Fourth, patients who slept longer had higher general comfort levels than those who slept for shorter durations (Table 5).

DISCUSSION

Breast cancer patients undergoing chemotherapy often experience a range of symptoms, which can vary in intensity and duration depending on the individual and the specific chemotherapy regimen. Fatigue is a common symptom and side effect associated with chemotherapy for breast cancer. Fatigue has physical, psychological, and social consequences. Fatigue prevents patients from performing daily activities and diminishes their comfort level. Poor comfort is also an indicator of poor quality of life. Poor comfort and quality of life can also have a negative impact on the treatment regimen. Nurses should monitor and manage their patients' fatigue and other related symptoms to improve their comfort level. Patients with high comfort levels can take care of their own needs and live independently.[18-21]

Our results showed that patients, in general, experienced fatigue (48.29 ± 10.22). Li et al.,[22] identified fatigue as one of the most prevalent and distressing symptoms among patients with advanced cancer. Sürten et al.[23] found that fatigue was among the most common symptoms in end-stage cancer patients. A study found that cancer patients had moderate fatigue levels.

Table 5 Independent variables related to patients' general comfort level (multivariate linear regression analysis results)

Factors Variables	Unstandardized coefficients		95.0% CI for B		Standardized coefficients		
	B	SD	Lower	Top	Beta	t	p
Still	3.030	0.163	2.709	3.352	–	18.596	<0.001
Age	0.002	0.002	-0.001	0.005	0.073	1.043	0.298
Education Status	0.011	0.023	-0.034	0.057	0.032	0.493	0.623
Working status (0=no; 1=yes)	0.081	0.057	-0.030	0.193	0.092	1.438	0.152
Income status	0.043	0.027	-0.011	0.097	0.096	1.562	0.120
Smoking(0=no/ex-smoker; 1=yes)	-0.116	0.047	-0.208	-0.023	-0.150	-2.456	0.015*
Presence of a constantly used medication (0=no; 1=yes)	-0.050	0.031	-0.111	0.012	-0.104	-1.597	0.112
Disease state (0=primer; 1=metastatic)	-0.047	0.030	-0.108	0.013	-0.099	-1.558	0.121
ECOG performance score	-0.125	0.024	-0.172	-0.079	-0.379	-5.300	<0.001*
Total chemotherapy cycle (0=<8; 1>=8)	-0.068	0.031	-0.129	-0.007	-0.137	-2.185	0.030*
Sleep duration	0.022	0.009	0.003	0.040	0.145	2.287	0.023*
Fatigue severity	0.016	0.015	-0.013	0.046	0.078	1.092	0.276
Model	R ²		0.297				
	F(11–206)		7.914				
	p		<0.001				
	DW		1.860				
	Method		Enter				

*: p<0.05, Linear regression; CI: Confidence interval; SD: Standard deviation; DW: Durbin Watson analysis; The dependent variable = General comfort level

[11] Hinz et al.[24] observed that German patients with cancer experienced more severe fatigue than healthy individuals. All in all, our results are consistent with the literature. We think that the experience of fatigue in cancer patients can vary depending on the type of cancer and the specific treatment protocol they are undergoing.

Cancer patients often have to cope with a wide range of symptoms and side effects associated with both the disease itself and its treatments. Those symptoms and side effects also affect their comfort levels. Our patients had a mean GCQ score of 140.61±11.42, indicating high comfort levels. Patients had the highest score on the “overcoming problems” subscale (3.11±0.21), while they had the lowest score on the “relief” subscale (2.80±0.34). These results indicated that patients were able to cope with problems but could not experience complete relief.

Kubat Bakır and Yurt discovered that patients who underwent surgery had a mean general comfort score of 128.91±25.13, indicating that their overall comfort level was above average.[25] This suggests that these patients experienced a relatively high level of comfort following their surgical procedures.[25] Ertin and Kurt revealed that cancer patients experienced a moderate quality of life.[26] Research shows that patients with breast cancer have a high quality of life.[27,28] While there is a large body of research on the comfort levels of different patient groups, no researchers have investigated the com-

fort levels of patients with cancer. A high quality of life is also an indicator of high comfort. Researchers have reported that cancer patients have a moderate-to-high quality of life. All in all, our results are consistent with the literature. Our patients had high comfort levels, probably because they were able to comply with treatment regimens and overcome their problems.

Our employed patients experienced less fatigue and higher comfort than their unemployed counterparts. Kurt and Unsar[10] found that unemployed patients with cancer experienced more fatigue than their employed counterparts. Bayram reported that breast cancer patients who were civil servants or self-employed had a higher quality of life compared to housewives. [27] Schmidt et al.[29] observed that patients who quit their jobs due to breast cancer had a poor quality of life. These findings may be attributed to the fact that cancer patients who experience lower levels of fatigue often report higher levels of comfort, primarily because they are better able to actively participate in their work and daily life activities.

Our results showed that patients with positive incomes had less fatigue and more comfort than those with negative incomes. Lin et al.[30] reported that cancer patients with low socioeconomic status (SES) experienced more fatigue than those with high SES. Ertin and Kurt[26] found that cancer patients with SES

typically experienced higher levels of fatigue and lower comfort compared to their counterparts with higher SES. Kim and Kim also documented that cancer survivors with low SES had a poorer quality of life than their counterparts with high SES.[31] These findings can be attributed to the fact that cancer patients with low SES face a multitude of challenges that impact their quality of life, including disparities in healthcare access, financial hardships, limited social support, poor nutrition, and psychosocial stressors. On the other hand, cancer patients with high SES have a better quality of life because they typically have advantages in healthcare access, treatment options, financial resources, support systems, education, and living conditions. These factors collectively contribute to their ability to manage cancer more effectively and maintain a higher quality of life throughout their journey.

Our results showed that smokers experienced more fatigue and less comfort than non-smokers. Vaz-Luis et al.[32] and Zvolensky et al.[33] also found that smokers and e-smokers experienced more fatigue than non-smokers. Research shows that smokers have a poorer quality of life than non-smokers.[34,35] These results suggest that smoking is a dangerous addiction that causes various health problems.

Our results showed that patients with chronic diseases experienced more fatigue than their counterparts without chronic diseases. Moreover, patients who were on medication had lower comfort levels than those who were not. İzgü et al.[5] found that cancer patients with chronic diseases more severe fatigue than those without chronic diseases. Ghaderi et al.[36] documented that cancer patients with chronic diseases (hypertension, diabetes, etc.) experienced higher levels of fatigue than those without chronic diseases. Önsüz and Can observed that cancer patients who were on medication experienced more fatigue than those who were not.[37] Schenker et al.[38] focused on patients with advanced life-limiting diseases and found that patients who were on medication had a poorer quality of life than those who were not. Many people with chronic diseases are on medication. Cancer patients with chronic illness and polypharmacy experience lower levels of comfort and higher levels of fatigue.

Our results showed that patients with primary breast cancer experienced lower levels of fatigue and higher levels of comfort than those with metastatic breast cancer. Research shows that patients with advanced stages of cancer experience more fatigue than those with earlier stages of cancer.[5,11] Research, in general, shows that patients with Stage III breast can-

cer have a poorer quality of life than those with Stage I and II breast cancer.[28] Hamer et al.[39] also found that patients with metastatic breast cancer had a poorer quality of life than those with primary breast cancer. These findings suggest that patients with metastatic breast cancer typically have a poorer quality of life than those with primary breast cancer due to the incurable nature of the disease, aggressive treatments, chronic symptoms (fatigue), and emotional distress, resulting in poorer quality of life and low levels of comfort.

Our results showed that patients with higher ECOG scores experienced higher levels of fatigue and lower levels of comfort compared to those with lower ECOG scores. Hinz et al.[24] reported a positive correlation between ECOG scores and fatigue. A study also found that cancer patients with higher ECOG scores experienced higher levels of fatigue and lower levels of comfort than those with lower ECOG scores. [11] Ertin and Kurt[26] documented that cancer patients with higher ECOG scores had a poorer quality of life than those with lower ECOG scores. Bayram[27] noted that breast cancer patients with lower ECOG scores enjoyed a better quality of life than those with higher ECOG scores. All in all, cancer patients with lower ECOG scores tend to enjoy a better quality of life due to improved physical functioning, treatment tolerability, independence, psychological well-being, reduced symptom burden, social engagement, treatment options, and overall well-being.

Our results showed that patients who slept less than eight hours had higher levels of fatigue and lower levels of comfort than those who slept more than eight hours. Haque et al.[40] found that breast cancer survivors who experienced sleep deprivation experienced fatigue six times more frequently than those without sleep deprivation. Research shows that cancer patients with a higher quality of sleep enjoy a better quality of life.[41,42] All in all, cancer patients with a higher quality of sleep enjoy a better quality of life due to improved physical and emotional well-being, enhanced cognitive function, better pain management, increased energy levels, reduced stress, higher treatment adherence, improved social engagement, and an overall sense of well-being.

Our results showed that patients who had received less than eight cycles of chemotherapy had higher comfort levels than those who had received more than eight cycles of chemotherapy. Moreover, patients who had received an additional cycle of chemotherapy had lower comfort levels than those who had not. studies found that cancer patients who had received fewer cy-

cles of chemotherapy enjoyed a better quality of life. [26,43] Cancer patients who undergo more cycles of chemotherapy may have a poorer quality of life due to cumulative side effects, physical and emotional distress, financial strain, disruption of daily life, and potential long-term health effects associated with the treatment.

Our results showed that patients who experienced higher levels of fatigue had lower comfort levels. Özkan and Akın[11] and Doğan, Tel, and Özkan found that cancer patients with higher levels of fatigue had a poorer functional quality of life than those with lower levels of fatigue.[44] Dağcı reported that lymphoma patients with high fatigue levels had worse functional status. [45] No researchers have investigated the association between fatigue and comfort among patients with cancer. Most researchers have focused only on quality of life. Therefore, our findings on the relationship between fatigue and comfort contribute to the literature.

Limitation and Strengths

This study had some limitations. The results cannot be generalized to all patients with breast cancer. The results are sample-specific. Although we contacted many patients, their diagnoses and treatments were variable. Therefore, many factors that could not be assessed may have influenced fatigue and comfort levels. Despite these limitations, our sample was pretty large. Therefore, our findings represent the data from breast cancer patients living in northwestern Turkey (Thrace region).

CONCLUSION

Our results indicate that cancer patients with higher levels of fatigue have lower comfort levels. Sociodemographic (employment status, income, etc.) and disease-related characteristics (disease status, the number of chemotherapy cycles, etc.) affect cancer patients' fatigue and comfort levels. Smokers have lower comfort levels than non-smokers. Cancer patients with higher ECOG scores have lower comfort levels than those with lower ECOG scores. Cancer patients who have undergone more cycles of chemotherapy have lower comfort levels than those with fewer cycles of chemotherapy. Cancer patients who sleep less than eight hours have lower comfort levels than those who sleep more than eight hours. Nurses should also implement the right interventions to help patients with breast cancer experience lower levels of fatigue and higher levels of comfort. Moreover, researchers should evaluate patients with different types of cancer to investigate the relationship between comfort and fatigue.

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