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Research Article

**PATIENTS' SLEEP QUALITY AND AFFECTING FACTORS ON POST-MASTECTOMY****Serap KURTAR\*** <sup>1</sup> **Nigar ÜNLÜSOY DİNÇER** <sup>2</sup> <sup>1</sup>Dr. Abdurrahman Yurtaslan Oncology Training and Research Hospital, Ankara/Turkey<sup>2</sup>Ankara Yıldırım Beyazıt University, Faculty of Health Science, Ankara/Turkey\*Corresponding author: [serapcam4@gmail.com](mailto:serapcam4@gmail.com)

**Abstract:** *This descriptive and cross-sectional study was conducted to determine sleep quality and factors affecting sleep in patients who have been operated on mastectomy surgery. The sample of the study is comprised of those patients (n=110) who visited general surgery outpatient clinic in an education and research hospital in Ankara between January 1 and July 30, 2020, for the check after their mastectomy surgery, agreed to participate in the study and met research criteria. The Patient Information Form and the Pittsburgh Sleep Quality Index (PSQI) were used as data collection tools. The numbers and percentages, t-test and Kruskal Wallis Chi-Square, and Fisher's Exact Spearman Correlation analysis were used to evaluate the data. Written permission from the ethics committee and the institution, and written consent from the patients were obtained to conduct the study. After the mastectomy surgery of patients who participated in the study, the average PSQI score of them was 10.19 ± 3.44 (2-18). After the mastectomy surgery of the patients, it was determined that 60,9% of the patients had a decrease in sleep quality, 89,1% had poor sleep quality, and 81,8% had a change in the postoperative sleeping position. There was no statistically significant difference between the findings related to the characteristics of the patients and the PSQI mean scores (p> 0.05). According to the results of the study, patients who have poor sleep quality and changes in their sleep habits after mastectomy surgery should be given the training to improve sleep quality before discharging from the hospital. In the field of nursing, it is recommended to conduct experimental studies to increase the sleep quality of patients.*

**Keywords:** *Nursing, Mastectomy, Pittsburgh Sleep Quality Index, Sleep, Sleep Quality.*

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**1. Introduction**

The most common type of cancer among women in Turkey and the world is breast cancer [1]. 2.088.849 new breast cancer cases were diagnosed in the world in 2018 [2]. In Turkey, in 2017, a breast cancer diagnosis has been put to one in every four women, total in one year 19.211 women was diagnosed with breast cancer [3]. With the advancing technology, many new treatment methods for breast cancer have emerged. These treatment methods have increased the survival rate in breast cancer patients [4].

Being diagnosed with breast cancer is an extremely traumatic and stressful process for women [4]. Women who have undergone mastectomy have difficulty in accepting the deterioration of their bodies after surgery and, as a result, face many problems such as shaking of body image, loss of self-confidence, and decreased sexual attraction [5]. In addition to these psychosocial problems experienced

by women after mastectomy, patients also encounter many physiological problems such as infection, pain, phantom breast, and lymphedema during and after surgical wound healing [6,7,8].

Another problem experienced by women who have undergone a mastectomy after breast cancer is sleep disorders. Low sleep quality, inefficient sleep, and sleep disorders are among the top five health problems experienced by patients who have undergone a mastectomy, the longest and most serious [9]. Just like psychosocial and physiological problems, sleep disorders can turn into a chronic disease in breast cancer patients starting from the moment of diagnosis and covering the whole process [10].

Sleep is one of the most basic human needs, both physically and psychologically, and is a compulsory physiological need [11]. Although problems related to sleep in cancer patients are widely known, patients are generally not considered adequately in terms of sleep [12]. Providing qualified and sufficient sleep increases the patient's quality of life by contributing to the reduction of fatigue, depression, and anxiety disorders in patients with mastectomy [13,14,15]. Therefore, evaluating the prevalence of sleep-related problems and determining sleep quality in women who have undergone mastectomy are guiding in planning care [16,17,18]. This study was conducted to determine sleep quality and the affecting factors of sleep quality in patients after mastectomy surgery.

### Research Questions

1. What level / how is the sleep quality of patients who have undergone mastectomy surgery?
2. Do characteristics of patients undergoing mastectomy surgery affect sleep quality?

## 2. Materials and Methods

### 2.1. Place of Research and its Properties

The study was performed as a descriptive and cross-sectional study. The study was conducted in the outpatient clinics of a training and research hospital in Ankara/Turkey. Patients come to the outpatient clinic for control one month after the operation in the general surgery clinic.

### 2.2. Research Population and Sample

The population of the study consisted of patients (n=151) who came to the general surgery outpatient clinic after mastectomy between January 1 and July 30, 2020. The sample consisted of patients who came to the control on the same dates and met the criteria for inclusion in the study and were accepted to participate in the study (n=110).

Inclusion criteria in the research

- Having radical and total mastectomy surgery,
- There is no obstacle to communication,
- Absence of a psychological disorder that causes insomnia,
- who voluntarily agree to participate in the research,
- Patients with ages 18 years and older are included.

The criteria for exclusion from the study

- Those who receive surgical treatment other than mastectomy simple mastectomy skin-sparing mastectomy nipple-sparing mastectomy,
- Those diagnosed with a defined psychiatric illness,
- Patients with perception, hearing, and visual impairments that prevent communication were excluded from the sample.

In the research, which was asked to evaluate sleep quality in general, "Has there been a change in your sleep quality after surgery?" Considering the rates obtained from the cross-table between the

questionnaire question and the scale item "How do you evaluate your sleep quality", the power of this study was found to be 0.99.

### **2.3. Data Collection Instruments**

The Patient Information Form and the Pittsburg Sleep Quality Index (PSQI) were used as data collection tools. The Patient Information Form; was prepared by the researchers using the relevant literature [10,13,20] The form consists of two parts and 25 questions. The first part consists of 16 questions, 13 questions include the descriptive characteristics of the patients, and include age, educational status, marital status, employment status, economic status, place of residence, and people with whom they live. The other three questions include whether the individual has other diseases than breast cancer, the medications they use, and the time elapsed after the mastectomy surgery. The second part consists of nine questions evaluating the sleep habits of the patients.

PSQI; It is a subjective assessment scale developed by Buysse et al in 1989 that provides detailed information about the sleep quality and sleep disturbance of the person in the last month [19]. The validity and reliability study in our country was conducted by Ağargün et al. (1996) and the Cronbach alpha value of the scale was found to be 0.80 [20]. In this study, Cronbach's alpha value was found to be 0.72. The scale includes a total of 24 questions. 19 of these questions consist of the answers received from the person himself, the 19th question is about whether the person has a spouse or roommate. The other five questions on the scale are answered by the person's spouse or roommate and are used only for clinical evaluation. While calculating the scale scoring, the 19th question and the five questions answered by their spouse or roommates are not included in the score [20].

### **2.4. Implementation of the Research**

The research data were collected by face-to-face interview technique with patients who came to the outpatient clinic for control after mastectomy surgery. According to the hospital procedure, patients come to the first control two weeks after the operation, and if there is no problem, they come to the next control one month later. Expert opinion was obtained from Mehmet Yücel Ağargün, the owner of the scale, about when the post-surgical PSQI form should be applied, and in accordance with the expert opinion, patients who came for control after mastectomy surgery at least one month after the operation were evaluated.

The aim of the study was explained to the patients who had passed at least one month after their discharge after mastectomy surgery and their written consent was obtained. Interviews with the patients were conducted in the outpatient clinic rooms. Each interview lasted 20-30 minutes on average.

### **2.5. Ethical Aspect of the Research**

Ethical approval was obtained from Yıldırım Beyazıt University's Ethical Committee (Date:13/11/2019; Number: 23). Written permission was obtained from Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital (17/12/2019-84) for the implementation of the study. Before starting the application, the purpose of the study was explained to the patients included in the study, and informed consent was obtained by giving information about the study. Written permission was obtained via e-mail from the person who conducted the Turkish validity and reliability study of the PSQI to use the scale.

### **2.6. Data Assessment**

IBM SPSS Statistics 20 program was used in the evaluations and  $p < 0.05$  was accepted as the statistical significance limit. Mean standard deviation, median, minimum, and maximum values are

given in descriptive statistics for continuous data, and number and percentage values are given in discrete data. Shapiro-Wilk test was used to examine the conformity of the data to normal distribution.

### 3. Results

According to Table 1, the minimum score obtained from the scale by the patients participating in the study was 2, the maximum score was 18, and the mean total score of the scale was  $10.19 \pm 3.44$ . When the scale total scores of the patients were evaluated, it was determined that 89.1% of the patients had poor sleep quality (PSQI score of 5 and above) according to the PSQI.

**Table 1.** Distribution of the mean PSQI scores of the patients (n = 110)

Patients' PSQI Scores	$\bar{X} \pm SD$ (min-max)	
PSQI points	10.19±3.44 (2-18)	
PSQI score	Number	%
> 5 poor sleep quality	98	89.1
≤ 5 good sleep quality	12	10.9

In Table 2, 51.8% of the patients participating in the study are between the ages of 45-and 59. It was determined that 61.8% of the patients participating in the study lived with their spouses and children, and 9.1% lived alone. It was found that 79.1% of the patients participating in the study were at the middle-income level. It was determined that 78.2% of the patients participating in the study did not work in any job. It was determined that 62.5% of the working patients were private-sector employees.

In Table 2, the distribution of PSQI means scores according to some of the introductory characteristics of the patients participating in the study was examined. The difference between the age groups, marital status, people living together, income, education, employment, smoking status, and PSQI score averages of the patients participating in the study was not statistically significant ( $p > 0.05$ ).

In Table 3, the distribution of PSQI mean scores according to the health status and sleep habits of the patients was examined. It was found that there was no statistically significant difference between the duration of mastectomy surgery and the mean PSQI scores of patients with and without a disease other than breast cancer, patients using drugs, and the types of drugs used ( $p > 0.05$ ).

The mean PSQI scores of the patients who thought that they had sleep problems were found to be significantly higher than the patients who thought they did not have sleep problems ( $p < 0.000$ ).

There is no difference between the average PSQI scores with the electronic equipment in the room they sleep in, the activities they do before sleeping, the darkness of the room they sleep in, the short-term sleep during the day, and the change in the postoperative sleeping position ( $p > 0.05$ ). The difference between the PSQI mean scores of the patients who stated that their sleep quality increased, decreased, or did not change after surgery was not significant ( $p = 0.05$ ).

**Table 2.** Distribution of the PSQI mean scores of the patients according to some descriptive characteristics (n = 110)

Descriptive Characteristics	PSQI SCORE				Test	p
	n	%	$\bar{X} \pm SD$	(min-max)		
<b>Age groups</b>						
30-44	30	27.3	9.43±3.39	(4-16)	F=1.209	0.302
45-59	57	51.8	10.63±3.40	(2-18)		
≥ 60	23	20.9	10.09±3.58	(2-16)		
<b>Marital Status</b>						
Married	87	79.1	10.00±3.40	(2-18)	t=-1.133	0.260
Single	23	20.9	10.91±3.59	(2-16)		
<b>People with whom they live</b>						
Alone	10	9.1	11.60±3.89	(2-15)	$\chi^2 = 4.281$	0.369
With children	16	14.5	10.69±3.36	(5-16)		
With wife and children	68	61.8	9.77±3.38	(2-18)		
With wife/ children/ family elders	8	7.3	10.12±3.91	(5-16)		
With spouse	8	7.3	11.00±3.21	(6-16)		
<b>Income status</b>						
Low	20	18.2	10.95±3.25	(4-16)	t=1.091	0.277
Middle	87	79.1	10.09±3.49	(2-18)		
High	3	2.7	8.00±2.65	(6-11)		
<b>Education Status</b>						
Literate	13	11.8	9.23±2.87	(5-15)	F=1.155	0.330
Primary School	55	50.0	10.75±3.52	(2-16)		
High School	29	26.4	9.79±3.28	(4-18)		
University	13	11.8	9.00±3.89	(2-16)		
<b>Working status</b>						
Working	24	21.8	9.58±3.89	(2-18)	t=-0.978	0.330
Not working	86	78.2	10.36±3.31	(2-16)		
<b>Profession (n=24)</b>						
Public employee	9	37.5	9.89±3.02	(5-14)	U=58.0	0.599
Private sector	15	62.5	9.40±4.42	(2-18)		
<b>Smoking</b>						
Uses	16	14.5	10.56±2.85	(6-16)	t=0.466	0.642
Not using	94	85.5	10.13±3.54	(2-18)		
<b>Smoking time</b>						
10 years and less	5	31.2	10.20±3.77	(6-16)	U=21.0	0.679
> 10 years	10	68.8	10.80±2.66	(7-14)		

**Table 3.** Distribution of PSQI mean scores according to the health status and sleeping habits of the patients (n = 110)

Other Disease and Sleep Characteristics	n	%	PSQI SCORE		Test	p
			$\bar{X} \pm SD$	(min-max)		
Disease other than breast cancer						
With	52	47.3	10.44±3.54	(4-18)	t=0.724	0.471
Without	58	52.7	9.96±3.37	(2-16)		
Diseases other than breast cancer						
Diabetesmellutus	11	20.8	10.18±2.60	(6-15)	$\chi^2=0.559$	0.906
Hypertension	22	41.4	10.36±3.33	(4-16)		
Thyroid	10	18.9	9.70±4.76	(2-18)		
Other <sup>a</sup>	10	18.9	10.60±3.63	(5-16)		
Any drug use						
Using	68	61.8	10.37±3.66	(2-18)	t=0.684	0.496
Not using	42	38.2	9.90±3.08	(2-16)		
Medication used (n=68)						
Antihipertansif	21	30.9	9.67±3.18	(4-16)	F=0.731	0.537
Antidiabetic	11	16.2	11.09±3.48	(6-16)		
Antidepressant	10	14.7	11.50±3.98	(5-18)		
Other	26	38.2	10.19±4.00	(2-16)		
Time elapsed since mastectomy surgery						
1-6 months	66	59.9	9.89±3.47	(2-18)	F=0.679	0.510
7-12 months	32	29.2	10.69±3.52	(2-16)		
≥ 13 months	12	10.9	10.58±3.09	(5-16)		
You have trouble sleeping						
Thinking	65	59.1	11.78±2.79	(6-18)	t=7.008	0.000**
Not thinking	45	40.9	7.89±2.97	(2-14)		
Electronic equipment in the sleeping room						
The one	48	43.6	10.81±3.42	(4-18)	t=1.681	0.096
Non	62	56.4	9.71±3.41	(2-16)		
Activity before sleeping (n=91)						
Watching TV/playing with a cell phone	78	85.5	10.38±3.31	(4-18)	t=-0.077	0.939
Other <sup>b</sup>	13	14.3	10.46±3.66	(2-16)		
When you wake up						
Feeling rested/energetic	44	40.0	8.93±3.05	(2-16)	t=-3.269	0.001*
Feeling tired	66	60.0	11.03±3.45	(2-18)		
Room to sleep						
Dark	63	57.3	10.25±3.76	(2-18)	t=0.222	0.825
Not dark	47	42.7	10.11±3.00	(2-16)		
Short-term sleep during the day						
Never	27	24.5	9.85±3.60	(2-16)	F=0.378	0.769
Sometimes	52	47.3	10.13±3.61	(2-18)		
Often	18	16.4	10.94±3.49	(5-16)		
Always	13	11.8	10.08±2.40	(6-15)		
Postoperative change in sleeping position						
The one	90	81.8	10.27±3.48	(2-18)	t=0.488	0.627
Non	20	18.2	9.85±3.31	(4-16)		
Change in sleep quality after surgery						
Sleep quality increasing	10	9.1	8.50±3.44	(2-12)	$\chi^2 =6.002$	0.050
Sleep quality declining	67	60.9	10.88±3.30	(5-18)		
Unchanged	33	30.0	9.30±3.45	(2-16)		

<sup>a</sup>Other diseases; Asthma, heart, anemia.<sup>b</sup> Other activities; Reading books, drinking milk, and taking a shower.

\*p&lt;0.05; \*\*p&lt;0.01

#### 4. Discussion

The need for sleep, which is one of the basic human needs, varies depending on many factors such as the disease state, health status, age, and environmental conditions [21]. The most common side effects of cancer diagnosis and treatment in patients with breast cancer are fatigue, depression, and sleep disorder [22,23].

According to the results obtained from the research; The average PSQI score of the patients participating in the study after mastectomy was found to be  $10.88 \pm 3.30$  (Table 1). In the study, it was determined that 89.1% of the patients had poor sleep quality according to the average score they got from the total PSQI scale (Table 1). Tell et al. exhibited (2014), that the average score obtained from the PSQI scale of breast cancer patients who had breast Conserving Surgery or mastectomy was found to be  $8.1 \pm 3.6$  (117). In the study conducted by Taylor et al. (2012), it was found that 43% of patients with breast cancer experienced insomnia after surgery [24].

No statistically significant difference was found between the marital status, income status, educational status, people living with them, smoking and alcohol use status, and total PSQI scores of the patients participating in the study (Table 2). In other studies conducted on patients with breast cancer and mastectomy (Yılmaz, 2020; Pazarcıkcı, 2017), the difference between the marital status, education level, smoking, alcohol consumption status of the participants, family structure, with whom they live at home and their income status were not statistically significant [12,25].

In the study, the difference between the patients and age groups and the PSQI mean scores were not found to be significant (Table 2). That the time to fall asleep increases with age, and more frequent and rapid awakenings are observed compared to young adults [26,27]. In the study by Arslan and Fadiloğlu (2009), in which the sample group was different from breast cancer, the effect of sleep problems on the quality of life was examined, the difference between the age groups and the PSQI score averages was not statistically significant [28]. In this sense, our results are compatible with the literature.

In the present study, there was no significant difference in the PSQI mean scores of the patients living alone compared to the patients living with their spouses and children. Similarly, in the study conducted by Colagiuri et al. (2011), the difference between the PSQI mean scores between the patients living alone and married was not found to be statistically significant either [29]. Herein, no difference was found between the PSQI mean scores of patients with a different disease other than breast cancer and patients with any drug use. It is known in the literature that diseases and some medications affect sleep duration and sleep quality. For example, narcotic drugs, antidepressants, beta-blockers, and steroids delay the transition to REM sleep and cause a decrease in sleep quality. It has been stated that the disease state is a source of both physiological and psychological stress on individuals and this situation causes sleep disorders by affecting sleep [15,30].

We found no difference between the time elapsed after mastectomy surgeries and the PSQI mean scores. Yılmaz (2020) has demonstrated that there was no statistically significant difference was found between the PSQI score averages of the patients according to the type of breast surgery and the duration after diagnosis [12]. As known sleep disorders are more common in patients who receive cancer treatment for a long time compared to patients with newly diagnosed cancer [31]. In addition, it is thought that the spouse and family support of the patients and their adaptation to breast cancer may have an effect on their sleep quality.

Our results showed, that the difference between the PSQI mean scores of the patients who thought they had sleep problems after mastectomy and the patients who did not was found to be statistically significant (Table 3). Bower et al. (2011) found that 65% of the patients after breast cancer treatment had 5 points above the average PSQI score, that is, their sleep quality was "bad" [22]. Yılmaz (2020) presented it was found that 60% of breast cancer patients had low sleep quality [12]. The frequent

occurrence of sleep disturbances in patients with breast cancer can be thought to be due to symptoms that reduce the patient's quality of life such as depression, stress, anxiety, and fatigue that patients experience in the process of getting used to a new situation after surgery.

This study revealed that the average PSQI score of the patients who felt energetic and listened when they woke up was found to be significantly lower than the PSQI score average of the patients who felt tired when they woke (Table 3). Ekinci's (2016) study found that cancer patients with high levels of fatigue had worse sleep quality than patients with low levels of fatigue [32]. The frequent occurrence of fatigue in patients with breast cancer and its reflection on the quality of sleep suggests that the sleep problems and sleep disturbances experienced in patients after surgery are significant.

In the study, there was no difference between the PDQI mean scores and the state of having electronic equipment in the room where the patients slept, the darkness of the room they slept in, and the change in their sleeping position after surgery. Having a television in the bedroom delays bedtime and causes problems such as difficulty falling asleep and short-term sleep [33]. In the study of Aksu and Erdoğan (2017), it was stated that one of the factors that most affect patients' sleep is that the room is too bright [34]. Environmental factors affect sleep. The fact that the room where the patient sleep is dark enough and without noise facilitates the transition to sleep [15,35].

In our study, there was no statistically significant difference between the mean PSQI scores of patients with decreased postoperative sleep quality and patients who did not change their sleep quality after surgery and stated that sleep quality increased (Table 3). After surgical operations, patients often encounter sleep problems. Patients' postoperative pain, medications, and anxiety are some of the conditions that may cause sleep disturbance in the patient [36]. In patients with breast cancer after mastectomy, sleep disturbances are common due to Vargas et al (2014), it was found that 70.8% of patients with breast cancer experienced depression, stress, and anxiety, which causes a decrease in sleep quality in patients after surgery [10]. The study conducted a decrease in sleep quality and sleep disorders after surgery [37]. Onselen et al. (2013) evaluated sleep disturbances in breast cancer patients before and after surgery for six months and observed a slight decrease after an increase in sleep disturbances in the postoperative patients in the first period, but despite the decrease, sleep disturbance was found to be statistically significantly higher in patients [38]. In the study conducted by Fortner et al. (2002), the sleep quality of patients with breast cancer was evaluated with PSQI and it was found that 61% of the patients had low sleep quality [13].

## 5. Conclusion and Recommendations

As a result of the study, it was determined that almost all of the patients participating in the study had poor sleep quality. The information provided here about the patients' introductory characteristics, such as age, marital status, and income, put forth that it did not affect the sleep quality. It was determined that the characteristics of the patients' health conditions and sleeping habits affected the sleep quality, but not significantly. This study presented that there were changes in the sleeping habits of the patients after the surgery and these changes had negative effects on sleep quality. In order to evaluate the quality of sleep, experimental studies should be carried out with nursing interventions to increase the sleep quality of the patients, except for the subjective data obtained from the patient.

### Limitations of the Research

The limitations of the study are that the study was conducted in the General Surgery Service of Abdurrahman Yurtaslan Oncology Hospital and that it was conducted with the patients that could be reached. The research is limited to the features measured by the measurement tools used and the answers given by the patients to these scales. The study was conducted only with patients who had a total and radical mastectomy.



**Ethical statement:**

Ethical approval was obtained from Yıldırım Beyazıt University's Ethical Committee (Date:13/11/2019; Number: 23). Written permission was obtained from Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital (17/12/2019-84) for the implementation of the study. Before starting the application, the purpose of the study was explained to the patients included in the study, and informed consent was obtained by giving information about the study. Written permission was obtained via e-mail from the person who conducted the Turkish validity and reliability study of the Pittsburg Sleep Quality Index to use the scale.

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**Conflicting of Interest:**

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**Authors' Contributions:**

S. K: Conceptualization (%50), Methodology (%50), Analysis (% 50), Resources (%50), Investigation (%100), Writing - Original draft preparation (% 60)

N.Ü.D: Conceptualization (%50), Methodology (%50), Analysis (%50), Resources (%50), Writing - Original draft preparation (% 40)

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