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Determining the factors affecting sleep quality in oncology patients

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Abstract

This descriptive study aimed to determine the factors affecting sleep quality in oncology patients. This study was carried out with 238 patients. The study group consisted of 119 oncology patients receiving inpatient treatment due to the diagnosis of cancer in the surgery clinic. The control group consisted of 119 patients who were hospitalized in the same clinic for any acute or chronic disease other than cancer and who had the same sociodemographic characteristics as the study group. The study data were collected using a questionnaire consisting of 29 questions that determine the sociodemographic and clinical characteristics of the patients and the Pittsburgh Sleep Quality Index. It was determined in this study that some sociodemographic and clinical characteristics of the patients affected their scores on the Pittsburgh Sleep Quality Index. It was determined that the sleep quality of the patients in the study and control groups was at a good level and that the sleep quality of the control group patients was better than that of the study group patients.

Keywords: Oncology; patient; sleep quality.

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1. Introduction

Cancer is an important health problem in which cells undergo uncontrolled proliferation and change and its mortality and morbidity are high [1]. According to GLOBOCAN 2020 data, 19.3 million people in the world were newly diagnosed with cancer; 10 million people died, and one out of 5 people gets cancer during their lifetime. The most frequently diagnosed types of cancer in our country can be listed as lung cancer, breast cancer, colorectal cancer, prostate cancer, and thyroid cancer, respectively [2].

Cancer is a medical and physical disease and a condition that psychologically and socially affects the individual. After the diagnosis of cancer, the patient may experience many problems such as anxiety, despair, guilt, anger, hopelessness, uncertainty, and sleep problems. Side effects of chemotherapy and radiotherapy can negatively affect the general quality of life of the patient [3]. For this reason, cancer patients may not only have to cope with the disease process but also with the side effects of cancer treatments [4].

In human life, sleep is a very important requirement like air, water, nutrition, and excretion [5]. It is reported that adequate and quality sleep is necessary to protect psychophysiological health [6]. Sleep can be affected by physical, psychological, and environmental factors. However, it can affect the physical and mental health and the quality of life of the individual [3, 7]. The sleep-wake cycle of inpatients may vary. During hospitalization, patients may have to wake up frequently due to healthcare practices. The sleep quality of sick individuals can be affected by environmental and psychological factors. In this respect, sleep problems can affect the disease prognosis and the well-being of the individual [5, 8, 9]. These effects can be observed more apparently in oncology patients who generally face the consequences of severe and life-threatening diseases such as cancer [7]. Although sleep disorders are prevalent in oncology patients, they can be ignored by both patients and health professionals [10,11].

Good sleep quality can make the individual feel rested and ready for the new day, have the ability to perform daily activities, and feel energetic after waking up [12, 13]. Poor sleep quality can bring along many physical and cognitive problems, especially memory and learning disorders, thought and motivation disorders, loss of concentration, anxiety, nervousness, hallucinations, depression, decreased appreciation of work and social activities, fatigue, intolerance to pain, decreased immune functions, constipation, loss of appetite, and tendency to accidents [6, 7, 14].

In cancer patients, sleep quality can be affected by factors such as age, gender, disease-related conditions, nutritional status, cancer treatment, drug use, stimulant use, psychosocial status, exercise, and restless legs syndrome [3, 15]. Since sleep problems are important factors affecting the quality of life and ability to cope with the disease, it is very important to support patients in this regard. This study was planned to determine the factors affecting the sleep quality of oncology patients. The results of this study are thought to be useful in developing strategies to improve the sleep quality of oncology patients.

1.1. Purpose of study

This study aimed to determine the factors affecting the sleep quality of oncology patients receiving inpatient treatment. In this study, answers to the following questions were sought:

- What is the level of sleep quality of oncology patients?
- What are the sociodemographic and clinical characteristics that affect the sleep quality of oncology patients?

2. Materials and methods

2.1. Participants

This descriptive study was carried out with oncology patients who were hospitalized in a state hospital between December 30, 2019, and December 30, 2020. The study was conducted with a total of 238 patients, 119 in the study group and 119 in the control group, who agreed to participate in the study and met the inclusion criteria. The study group consisted of 119 oncology patients receiving

inpatient treatment and the control group consisted of 119 patients with another chronic disease, who had the same sociodemographic characteristics as the study group and were not diagnosed with cancer. Male or female patients willing to participate in the study were included in the study. The dependent variable of the study was oncology patients' perceptions of sleep quality. The independent variables of the study were oncology patients' sociodemographic and clinical characteristics.

2.2. Data collection instruments

In the study, data were collected using a patient introduction questionnaire and the Pittsburgh Sleep Quality Index. The questionnaire consists of 29 questions that determined the sociodemographic and clinical characteristics of the patients (age, gender, marital status, education, occupation, socioeconomic status, family type, number of children, employment status, social security, place of residence, people the patient lives with, satisfaction with the living environment, medical diagnosis, time of diagnosis, disease stage, treatment/treatments applied, symptoms due to the treatment, perception of health, satisfaction with the medical treatment, presence of chronic disease, regular drug use, regular health checks, presence of a person diagnosed with cancer in the family, environmental conditions affecting the sleep state.

The Pittsburgh Sleep Quality Index was developed by Buysse et al. [16], adapted into Turkish by Ağargün et al. [17], and consists of 24 questions and 7 components. These components are subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleeping medication, and daytime dysfunction. The index also includes five questions that are answered by the person's bedmate. However, these last five questions are not used in scoring. Each question is evaluated from 0 to 3. The sum of the scores obtained from the seven components gives the total PSQI (Pittsburgh Sleep Quality Index) score. The total PSQI score ranges between 0-21. The sleep quality of those with a total score of 5 or below was “good” and those with a score above 5 are considered to have “poor” sleep quality. A PSQI score above 5 indicates that the individual has serious problems in at least two areas of sleep or has mild or moderate distress in more than three areas.

Ağargün et al. [17] determined the total Cronbach alpha reliability coefficient as 0.80 in PSQU. In this study, the Cronbach alpha reliability coefficient of PSQI was determined as 0.709 for the study group and 0.704 for the control group.

2.3. Ethics and data collection

In this study, the ethical standards of the Declaration of Helsinki were followed. The data were collected by the researchers and informed consent was taken from the patients. Information about the study was given to the patients who accepted to participate in the study and the questionnaire and PSQI were applied. It was stated to the patients that the decision about whether or not to participate in the study was entirely theirs to make, that their names would not be written on the questionnaire, and that the data collected from this study would only be used within the scope of the study. Data collection was completed in approximately 8-10 minutes.

2.4. Data analysis

Statistical analysis of the data of the patients included in the study was performed in the SPSS 23.0 package program in a computer environment. Percentage calculation, One-Way Analysis of Variance, Kruskal Wallis test, Mann Whitney U test, and Cronbach's alpha coefficient were used in data evaluation. The results were presented as frequency, percentage, and mean. The significance level was taken as $p<0.05$.

3. Results

A total of 238 oncology patients participated in this study. Of them, 119 constituted the study group and 119 with the same characteristics who received treatment for any acute or chronic disease constituted the control group. Of the study group patients participating in the study, 47.9% were female; 52.1% were male; 76.5% were married; 72.3% had a nuclear family; 98.3% had children; 45.3% had 4-6 children; 49.6% were literate; 37.0% were primary school graduates; 43.7% were housewives;

63.0% had an income equal to expenses; 89.1% were not employed; 53.8% of those who were employed were full-time employees; 99.2% had social security; 42.9% lived in the village; 44.5% lived with their spouses and children; 94.1% were satisfied with their working environment (Table I).

TABLE I
DISTRIBUTION OF STUDY GROUP PATIENTS' SOCIODEMOGRAPHIC CHARACTERISTICS

Characteristics		n	%
Age	28-48	22	18.5
	49-69	62	52.1
	70-93	35	29.4
Gender	Female	57	47.9
	Male	62	52.1
Marital status	Married	91	76.5
	Single	28	23.5
Family type	Extended family	33	27.7
	Nuclear family	86	72.3
Children	Yes	117	98.3
	No	2	1.7
Number of children (n= 117)	1-3	52	44.4
	4-6	53	45.3
	7 and over	12	10.3
Education status	Illiterate	59	49.6
	Primary school	44	37.0
	Secondary school	4	3.4
	High school	8	6.7
	University	4	3.4
Occupation	Worker	9	7.6
	Officer	5	4.2
	Retired	28	23.5
	Farmer	11	9.2
	Self-employed	14	11.8
	Housewife	52	43.7
Socioeconomic status	Income < expenses	37	31.1
	Income = expenses	75	63.0
	Income > expenses	7	5.9
Employment status	Yes	13	10.9
	No	106	89.1
Employee classification (n= 13)	Full time	7	53.8
	Part-time	4	30.8
	In shifts	2	15.4
Social security	Yes	118	99.2
	No	1	.8
Place of residence	City	19	16.0
	District	49	41.2
	Village	51	42.9

Living with	Spouse	39	32.8
	Children	24	20.2
	Spouse and children	53	44.5
	Relatives	3	2.5
Level of satisfaction with the living environment	Satisfied	112	94.1
	Dissatisfied	112	94.1

Of the study group patients, 33.6% had gastric CA; 30.3% had colorectal CA; 18.5% had rectal CA; 77.3% were diagnosed in 0-6 months; 54.6% were in the second stage of the disease; 98.3% received surgical treatment; 28.0% received chemotherapy; 89.7% had pain due to treatment; 59.5% had changes in taste; 46.6% had dyspnea; 45.7% developed dehydration; 78.2% defined their health status as moderate; 89.9% were satisfied with the medical treatment they received; 82.2% were moderately satisfied; 52.9% had a chronic disease; 65.6% had hypertension; 40.6% had diabetes; 20.3% had a cardiac disease; 73.9% did not go to regular health checks; 47.1% had a person diagnosed with cancer in the family; 53.6% of these family members were second-degree relatives; environmental conditions partially affected the sleep state of 63.0% of the patients (Table II).

TABLE II
DISTRIBUTION OF STUDY GROUP PATIENTS' CLINICAL CHARACTERISTICS

Characteristics		n	%
Diagnosis	Lung CA	2	1.7
	Colorectal CA	36	30.3
	Breast CA	6	5.0
	Gastric CA	40	33.6
	Ovarian CA	4	3.4
	Pancreas CA	4	3.4
	Peritoneal malignant mesothelioma	1	.8
	Rectum CA	22	18.5
	Thyroid CA	2	1.7
	Esophageal CA	2	1.7
Time of diagnosis	0-6 months	92	77.3
	7-13 months	15	12.6
	14-19 months	6	5.0
	20 months and over	6	5.0
Disease stage	Stage 1	24	20.2
	Stage 2	65	54.6
	Stage 3	25	21.0
	Stage 4	5	4.2
Treatment/treatments applied*	Surgical treatment	116	98.3
	Chemotherapy	33	28.0
	Radiotherapy	4	3.4
	Chemotherapy-Radiotherapy	15	12.7
Symptoms developed due to treatment*	Pain	104	89.7
	Anorexia	5	4.3
	Cachexia	13	11.2
	Alopecia	9	7.8
	Changes in taste	69	59.5
	Nausea-vomiting	6	5.2
	Dehydration	53	45.7
	Fatigue	2	1.7
	Dyspnea	54	46.6
	Sleep disturbance	9	7.8
How health is defined?	Good	13	10.9
	Moderate	93	78.2

	Poor	13	10.9
Satisfaction with the medical treatment received	Yes	107	89.9
	No	12	10.1
If yes, the level of satisfaction (n= 107)	Low	7	6.5
	Moderate	88	82.2
	High	12	11.2
Presence of chronic disease	Yes	63	52.9
	No	56	47.1
Chronic diseases* (n= 63)	Cardiac disease	13	20.3
	Diabetes	26	40.6
	Hypertension	42	65.6
	Atherosclerosis	4	6.3
Regular health checks	Yes	31	26.1
	No	88	73.9
Presence of a person diagnosed with cancer in the family	Yes	56	47.1
	No	63	52.9
If yes, what degree of relativeness	First degree relative	26	46.4
	Second degree relative	30	53.6
Environmental conditions affecting the sleep state	Yes	27	22.7
	No	17	14.3
	Partially	75	63.0

*Multiple answers were given.

The median PSQI score of the patients in the study group was 5 (1-18). The median scores of the patients on the components of PSQI were 1 (0-3) for subjective sleep quality, 1 (0-3) for sleep latency, 0 (0-3) for sleep duration, 0 (0-3) for habitual sleep efficiency, 1 (0-3) for sleep disturbance, 0 (0-3) for use of sleeping medication, and 1 (0-3) for daytime dysfunction. Study group patients got the highest scores on subjective sleep quality, sleep latency, sleep disturbance, and daytime dysfunction subdimensions of PSQI and the lowest scores on sleep duration, habitual sleep efficiency, and use of sleeping medications (Table III).

TABLE III
TOTAL AND SUBGROUP MEDIAN SCORES OF STUDY GROUP PATIENTS ON THE PITTSBURGH SLEEP QUALITY INDEX

Scale	Median (Min-Max)
Pittsburgh Sleep Quality Index	
Subjective sleep quality	1 (0 - 3)
Sleep Latency	1 (0 - 3)
Sleep Duration	0 (0 - 3)
Habitual sleep efficiency	0 (0 - 3)
Sleep disturbance	1 (0 - 3)
Use of sleeping medication	0 (0 - 3)
Daytime dysfunction	1 (0 - 3)
Total	5 (1 - 18)

Min.: Minimum. Max.: Maximum. PSQI: Pittsburgh Sleep Quality Index

According to the comparison made between sociodemographic and clinical characteristics of the study group patients and their median scores on PSQI, there was a statistical difference in terms of characteristics such as age group (X^2=6.120, p=0.047), perception of health (X^2=14.681, p=0.001), level of satisfaction with the medical treatment (X^2=10.355, p=0.006), presence of chronic disease (U=1024.5, p<0.001), regular drug use (U=1005, p<0.001), environmental factors affecting the sleep state (X^2=32.726, p<0.001) (Table IV).

In line with the findings, the PSQI score of the patients in the 70-93 age group was higher compared to those in the 28-48 age group. The PSQI score was higher in those who defined their health status as poor, those who were less satisfied with the medical treatment they received, those who had chronic diseases, those who regularly used drugs, and those who stated that environmental factors affected their sleep patterns. There was no statistically significant difference between the PSQI score and study group patients' gender (U=1650.5 p=0.534), marital status (U=1239 p=0.826), education level (X^2=5.587, p=0.349), occupation (X^2=5.405, p=0.369), income status (X^2=2.333, p=0.311), family type (X^2=1261, p=0.346), the status of having children (U=63, p=0.262), employment status (U=548.5, p=0.229), place of residence (X^2=0.992, p=0.609), people who patients lived with (X^2=2.722, p=0.437), satisfaction with the living environment (U=310.5, p=0.355), time of diagnosis (X^2=0.131, p=0.988), disease stage (X^2=1.3, p=0.729), satisfaction with medical treatment (U=443.5 p=0.078), and having a person diagnosed with cancer in the family (U=1568.5, p=0.296) (Table IV).

TABLE IV
COMPARISON OF STUDY GROUP PATIENTS' SOCIODEMOGRAPHIC AND CLINICAL CHARACTERISTICS AND TOTAL PITTSBURGH SLEEP QUALITY INDEX (PSQI) SCORES

Characteristics		**PSQI**	**Test value**
		Med (Min-Max)	**p**
Age groups			**p= 0.047**
	28-48 [A]	3.5 (1 - 16)	χ^2= 6.120
	49-69 [AB]	5 (1 - 18)	
	70-93 [B]	7 (2 - 16)	
			P= 0.534
Gender	Female	6 (1 - 18)	U= 1650.5
	Male	5 (1 - 18)	
			p= 0.826
Marital status	Married	5 (1 - 18)	U= 1239
	Single	6.5 (1 - 16)	
			p= 0.349
Education level	Illiterate	6 (1 - 16)	χ^2= 5.587
	Literate	5 (1 - 18)	
	Primary school	5 (1 - 18)	
	Secondary school	5 (2 - 12)	
	High school	3 (1 - 16)	
	University	3.5 (1 - 6)	
			p= 0.369
Occupation	Worker	8 (1 - 16)	χ^2= 5.405
	Officer	2 (1 - 5)	
	Retired	4.5 (1 - 14)	
	Farmer	6 (1 - 18)	
	Self-employed	5 (2 - 10)	
	Housewife	6 (1 - 18)	
			p= 0.311
Income status	Income < expenses	7 (1 - 16)	χ^2= 2.333
	Income = expenses	5 (1 - 18)	
	Income > expenses	5 (2 - 11)	
			p= 0.346
Family type	Extended	7 (1 - 18)	U= 1261
	Nuclear	5 (1 - 18)	
			p= 0.262
Children	Yes	5 (1 - 18)	U= 63
	No	9 (6 - 12)	
			p= 0.973
Number of children	1-3	5 (1 - 18)	χ^2= 3.306
	4-6	5 (1 - 16)	
	7 and over	5 (2 - 18)	
			p= 0.229
Employment status	Yes	4 (1 - 12)	U= 548.5

	No	5 (1 - 18)	
			p= 0.609
Place of residence	City	5 (1 - 12)	χ^2= 0.992
	District	5 (1 - 16)	
	Village	6 (1 - 18)	
			p= 0.437
Living with	Spouse	5 (1 - 18)	χ^2= 2.722
	Children	4 (1 - 16)	
	Spouse and children	5 (1 - 18)	
	Relatives	10 (6 - 12)	
			p= 0.355
Level of satisfaction with the living environment	Satisfied	5 (1 - 18)	U= 310.5
	Dissatisfied	5 (4 - 16)	
			p= 0.988
Time of diagnosis	0-6 months	5 (1 - 18)	χ^2= 0.131
	7-13 months	6 (1 - 16)	
	14-19 months	5.5 (2 - 15)	
	20 months and over	4.5 (3 - 18)	
			p= 0.729
Disease stage	Stage 1	5 (1 - 18)	χ^2= 1.3
	Stage 2	5 (1 - 16)	
	Stage 3	6 (2 - 16)	
	Stage 4	8 (4 - 11)	
			p= 0.001
How health is defined?	Good [A]	4 (1 - 9)	**χ^2= 14.681**
	Moderate [A]	5 (1 - 18)	
	Poor [B]	10 (4 - 16)	
			p= 0.078
Satisfaction with the medical treatment received	Yes	5 (1 - 18)	U= 443.5
	No	6.5 (4 - 18)	
If yes. the level of satisfaction			**p= 0.006**
	Low [A]	10 (4 - 16)	**χ^2= 10.355**
	Moderate [B]	5 (1 - 18)	
	High [B]	3 (1 - 10)	
Presence of chronic disease			**p< 0.001**
	Yes	7 (1 - 18)	**U= 1024.5**
	No	4 (1 - 16)	
			p< 0.001
Regular use of medication	Yes	7 (2 - 18)	**U= 1005**
	No	4 (1 - 16)	
Regular health checks	Yes	5 (1 - 18)	
	No		p= 0.239
		5 (1 - 18)	U= 1170.5
Presence of a person diagnosed with cancer in the family	Yes	5.5 (1 - 18)	
	No		p= 0.296
		5 (1 - 16)	U= 1568.5
			p= 0.315
If yes. degree of relativeness	First degree relative	6.5 (2 - 18)	U= 329
	Second degree relative	5 (1 - 18)	
			p< 0.001
Environmental conditions affecting the sleep state			**χ^2= 32.726**
	Yes [A]	10 (3 - 18)	
	No [B]	3 (1 - 10)	
	Partially [B]	4 (1 - 16)	

χ^2= Kruskal Wallis Test Statistics. U= Mann Whitney U Test Statistics. A-B= There was no difference between the groups with the same letters. PSQI: Pittsburg Sleep Quality Index

Of the patients in the control group, 47.9% were female; 52.1% were male; 79.0% were married; 72.3% had a nuclear family; 96.6% had children; 53.8% were literate; 43.7 % were housewives; 63% had an income equal to expenses; 83.2% were not employed; 99.2% had social security; 48.7% lived in the district; 50.4% lived with their spouses and children; 87.4% were was satisfied with the working environment (Table V).

TABLE V
DISTRIBUTION OF CONTROL GROUP PATIENTS' SOCIODEMOGRAPHIC CHARACTERISTICS

Characteristics		n	%
Age	28-48	21	17.6
	49-69	67	56.3
	70-93	31	26.1
Gender	Female	57	47.9
	Male	62	52.1
Marital status	Married	94	79.0
	Single	25	21.0
Family type	Extended	33	27.7
	Nuclear	86	72.3
Children	Yes	115	96.6
	No	4	3.4
Education level	Literate	64	53.8
	Primary school	36	30.3
	Secondary school	7	5.9
	High school	6	5.0
	University	6	5.0
Occupation	Worker	6	5.0
	Officer	6	5.0
	Retired	29	24.4
	Farmer	10	8.4
	Self-employed	16	13.4
	Housewife	52	43.7
Socioeconomic status	Income < expenses	37	31.1
	Income = expenses	75	63.0
	Income > expenses	7	5.9

Employment status	Yes	20	16.8
	No	99	83.2
Employee classification (n= 13)	Full time	13	65.0
	Part-time	3	15.0
	In shifts	4	20.0
Social security	Yes	118	99.2
	No	1	.8
Place of residence	City	20	16.8
	District	58	48.7
	Village	41	34.5
Living with	Spouse	37	31.1
	Children	22	18.5
	Spouse and children	60	50.4
Satisfaction with the living environment	Very satisfied	15	12.6
	Satisfied	104	87.4

*Multiple answers were given.

Of the control group patients, 34.5% were diagnosed with gall bladder; 19.3% were diagnosed with acute abdomen; 15.1% were diagnosed with an inguinal hernia; 11.8% were diagnosed with goiter; 75.6% received the diagnosis 0-6 months ago; 86.3% received surgical treatment; 89.3% had pain; 38.4% had nausea and vomiting; 21.4% had sleep disturbance; 69.7% defined their health status as moderate; 98.3% were satisfied with the medical treatment they received; 67.5% defined their level of satisfaction as moderate; 39.5% had a chronic disease; 72.4% had hypertension; 42.6% had diabetes; 14.9% had a cardiac disease; 67.2% did not go to regular health checks; 31.9% had a person diagnosed with cancer in the family; 71.1% of these family members were second-degree relatives; environmental conditions partially affected the sleep state of 73.1% of the patients (Table VI).

TABLE VI
DISTRIBUTION OF CONTROL GROUP PATIENTS' CLINICAL CHARACTERISTICS

Characteristics		**n**	**%**
Diagnosis	Acute abdomen	23	19.3
	Goiter	14	11.8
	Hemorrhoids	4	3.4
	Inguinal hernia	18	15.1
	Stomach perforation	3	2.5
	Operated obesity	4	3.4
	Pancreatitis	8	6.7
	Gall bladder	41	34.5
	P. sinus	4	3.4
Time of diagnosis	0-6 months	90	75.6
	7-13 months	23	19.3
	14-19 months	3	2.5
	20 months and over	3	2.5
Treatment/treatments applied*	Surgical treatment	101	86.3%
	Other	18	15.4%
Symptoms developed due to treatment*	Pain	100	89.3%
	Nausea-vomiting	43	38.4%
	Fatigue	7	6.3%

	Dyspnea	5	4.5%
	Sleep disturbance	24	21.4%
How health is defined?			
	Good	36	30.3
	Moderate	83	69.7
Satisfaction with the medical treatment received	Yes	117	98.3
	No	2	1.7
If yes, the level of satisfaction			
	Low	3	2.6
	Moderate	79	67.5
	High	35	29.9
Presence of chronic disease	Yes	47	39.5
	No	72	60.5
If yes, chronic diseases*	Cardiac disease	7	14.9%
	Diabetes	20	42.6%
	Hypertension	20	72.4%
Regular health checks	Yes	39	32.8
	No	80	67.2
Presence of a person diagnosed with cancer in the family			
	Yes	38	31.9
	No	81	68.1
If yes, the degree of relativeness (n=38)	First degree relative	11	28.9
	Second degree relative	27	71.1
Environmental conditions affecting the sleep state			
	Yes	7	5.9
	No	25	21.0
	Partially	87	73.1

* Multiple answers were given.

The median PSQI score of the patients in the control group was 4 (2-11). The median scores of the control group patients on the components of PSQI were 1 (0-2) for subjective sleep quality, 1 (1-3) for sleep latency, 0 (0-1) for sleep duration, 0 (0-3) for habitual sleep efficiency, 1 (0-3) for sleep disturbance, 0 (0-3) for use of sleeping medication, and 1 (1-3) for daytime dysfunction. Control group patients got the highest scores on subjective sleep quality, sleep latency, sleep disturbance, and daytime dysfunction subdimensions of PSQI and the lowest scores on sleep duration, habitual sleep efficiency, and use of sleeping medications (Table VII).

TABLE VII
TOTAL AND SUBGROUP MEDIAN SCORES OF CONTROL GROUP PATIENTS ON THE PITTSBURGH SLEEP QUALITY INDEX

Scale	Median (Min-Max)
Pittsburgh Sleep Quality Index	
Subjective sleep quality	1 (0 - 2)
Sleep Latency	1 (1 - 3)
Sleep Duration	0 (0 - 1)
Habitual sleep efficiency	0 (0 - 3)
Sleep disturbance	1 (0 - 3)
Use of sleeping medication	0 (0 - 3)
Daytime dysfunction	1 (1 - 3)
Total	4 (2 - 11)

Min.: Minimum. Max.: Maximum. PSQI: Pittsburgh Sleep Quality Index

According to the comparison made between sociodemographic and clinical characteristics of the control group patients and their median scores on PSQI, there was a statistical difference in terms

of characteristics such as regular drug use (U=1225, p=0.009), regular health checks (U=1212.5, p=0.039), and environmental factors affecting the sleep state (X^2=19.526, p<0.001) (Table 8).

In line with the findings, it was determined that the PSQI score was higher in those who regularly used drugs, who regularly went to health checks, and who stated that environmental factors affected their sleep patterns. There was no statistically significant difference between the PSQI score and control group patients' characteristics such as age group (X^2=5.139, p=0.077), gender (U=1505 p=0.143), marital status (U=970, p=0.160), an education level (X^2=7.587, p=0.180), occupation (X^2=1.787, p=0.878), income status (X^2=1.316, p=0.518), family type (U=1284.5, p=0.402), the status of having children (U=110.5, p=0.064), employment status (U=960, p=0.823), place of residence (X^2=1.813, p=0.404), people the patient lived with (X^2=2.589, p=0.274), satisfaction with the living environment (X=642.5, p=0.247), time of diagnosis (X^2=2.490, p=0.477), perception of health (U=1447.5, p=0.777), satisfaction with the medical treatment (U=93.5 p=0.610), level of satisfaction with the medical treatment (X^2=0.733 p=0.693), presence of a person diagnosed with cancer in the family (U=1454.5, p=0.613), and presence of chronic disease (U=1374.5 p =0.070) (Table VIII).

TABLE VIII
COMPARISON OF CONTROL GROUP PATIENTS' SOCIODEMOGRAPHIC AND CLINICAL CHARACTERISTICS AND TOTAL PITTSBURGH SLEEP QUALITY INDEX (PSQI) SCORES

Characteristics		**PSQI Med (Min-Max)**	**Test value p**
Age group			p= 0.077
	28-48	3 (2 - 8)	χ^2= 5.139
	49-69	4 (2 - 9)	
	70-93	4 (2 - 11)	
Gender			p= 0.143
	Female	4 (2 - 11)	U= 1505
	Male	4 (2 - 9)	
Marital status			p= 0.160
	Married	4 (2 - 11)	U= 970
	Single	4 (2 - 11)	
Education status			p= 0.180
			χ^2= 7.587
	Literate	4 (2 - 11)	
	Primary school	4 (2 - 11)	
	Secondary school	4 (3 - 11)	
	High school	2.5 (2 - 6)	
	University	5 (3 - 8)	
Occupation			p= 0.878
	Worker	4 (2 - 5)	χ^2= 1.787
	Officer	4 (3 - 6)	
	Retired	4 (2 - 9)	
	Farmer	4 (2 - 5)	
	Self-employed	4 (2 - 6)	
	Housewife	4 (2 - 11)	
Socioeconomic status			p= 0.518
	Income < expenses	4 (2 - 11)	χ^2= 1.316
	Income = expenses	4 (2 - 10)	
	Income > expenses	6 (3 - 6)	
Family type			p= 0.402
	Extended	4 (2 - 11)	U= 1284.5
	Nuclear	4 (2 - 11)	
Children			p= 0.064
	Yes	4 (2 - 11)	U= 110.5
	No	8.5 (3 - 9)	

Employment status			p= 0.823
	Yes	4 (2 - 6)	U= 960
	No	4 (2 - 11)	
Employee classification			p= 0.330
	Full time	4 (2 - 6)	χ^2= 2.219
	Part-time	3 (3 - 4)	
	In shifts	4 (2 - 5)	
Place of residence			p= 0.404
	City	4.5 (2 - 9)	χ^2= 1.813
	District	4 (2 - 11)	
	Village	4 (2 - 10)	
Living with			p= 0.274
	Spouse	4 (2 - 9)	χ^2= 2.589
	Children	4 (2 - 11)	
	Spouse and children	4 (2 - 11)	
Satisfaction with the living environment			p= 0.247
	Very satisfied	4 (2 - 11)	χ^2= 642.5
	Satisfied	4 (2 - 11)	
Time of diagnosis			p= 0.477
	0-6 months	4 (2 - 11)	X= 2.490
	7-13 months	4 (2 - 11)	
	14-19 months	4 (3 - 4)	
	20 months and over	5 (3 - 6)	
Perception of health			p= 0.777
	Good	4 (2 - 11)	U= 1447.5
	Moderate	4 (2 - 11)	
Satisfaction with the medical treatment received			p= 0.010 U= 95.5
	Yes	4 (2 - 11)	
	No	3,5 (2 - 5)	
If yes, the level of satisfaction			p= 0.693
	Low	4 (4 - 8)	x= 0.733
	Moderate	4 (2 - 11)	
	High	4 (2 - 9)	
Presence of chronic disease			p= 0.070 U= 1374.5
	Yes	4 (2 - 11)	
	No	4 (2 - 9)	
Regular drug use			**p= 0.009**
	Yes	4 (2 - 11)	**U= 1255**
	No	4 (2 - 9)	
Regular health checks			**p= 0.039** **U= 1212.5**
	Yes	4 (2 - 11)	
	No	4 (2 - 10)	
Presence of a person diagnosed with cancer in the family			p= 0.613 U= 1454.5
	Yes	4 (2 - 11)	
	No	4 (2 - 11)	
If yes, what degree of relativeness			p= 0.892
	First degree relative Second degree relative	4 (2 - 8)	U= 144.5
Environmental conditions affecting the sleep state			

(2 - 11) Yes [A]	4	**p< 0.001** **X= 19.526**
9 (6 - 11)		

No [B]	4 (2 - 8)
Partially [B]	4 (2 - 10)

χ^2= Kruskal Wallis Test Statistics. U= Mann Whitney U Test Statistics. A-B= There was no difference between the groups with the same letters. PSQI: Pittsburg Sleep Quality Index

4. Discussion

The results of this study, which was conducted to determine the sleep quality-related factors of oncology patients receiving treatment in a hospital located in the Central Black Sea Region of northern Turkey, were discussed in line with the relevant literature. In this study, which was conducted to determine the factors affecting the sleep quality of oncology patients, it was determined that the PSQI score of the control group patients was higher than the score of the oncology patients although the PSQI score of oncology patients was good. In the study conducted by Owen, Parker, and McGuire [18] to compare the sleep quality of cancer patients and healthy individuals, it was determined that sleep quality was lower in individuals with cancer, supporting research findings. It was also seen that findings obtained regarding the sociodemographic characteristics of the patients were similar to the findings of other studies conducted with oncology patients in our country [19-25] .

In this study, it was determined that oncology patients had cardiac diseases, diabetes, hypertension, and atherosclerosis in addition to cancer. In the study conducted by Aksu and Erdoğan [20], it was reported that oncology patients included in the study had chronic diseases, especially hypertension, chronic lung disease, and diabetes.

In this study, it was determined that the median PSQI score differed according to some sociodemographic and clinical characteristics of the patients. An increase in the PSQI score indicates poor sleep quality. In this study, the PSQI score of patients who were in the 70-93 age group was found to be higher compared to those in the 28-48 age group. Furthermore, those who perceived their health as poor, those who were less satisfied with the medical treatment they received, those who had a chronic disease, those who regularly used drugs, and those who stated that environmental factors affected their sleep patterns had a higher score on PSQI.

Likewise, relevant studies reported that the sleep patterns of patients who were aged 66 years and older, who regularly used drugs [3], and who had a chronic disease were affected and that the presence of environmental factors affected their sleep patterns. This may be due to the usual changes that occur with age and chronic health problems affecting sleep patterns such as hypertension, diabetes, and cardiac diseases [26].

In the study conducted by Kalender [3] to evaluate sleep quality in cancer patients, it was reported that gender, education level, marital status, place of residence, employment status, and income status did not have a significant effect on sleep quality, supporting our research findings. Similarly, in the study conducted by Arslan [22], it was reported that gender, employment status, education level, and occupation did not affect sleep quality.

Cancer treatments can cause some adverse side effects such as pain, fatigue, nausea-vomiting, cachexia, changes in taste, dyspnea, mucositis, and anorexia [4, 27,28]. In this study, it was determined that oncology patients experienced pain, changes in taste, dyspnea, and dehydration symptoms the most due to cancer and its treatment. Likewise, in the study by Kalender [3], it was determined that cancer treatment methods cause pain and that this causes sleep disturbance.

Cancer patients may have to cope not only with the disease process but also with the side effects of cancer treatments [4]. One of the most important factors affecting the cancer-related quality of life is the need for sleep. The prevention of sleep disorders has an important role in the protection of psychophysiological health. Current or potential sleep problems should be diagnosed in individuals diagnosed with cancer and appropriate nursing interventions should be planned in this regard [3, 10].

5. Conclusion

In this study, it was determined that the sleep quality of the study and control group patients was at a good level and that the sleep quality of the control group patients was better than that of the

study group patients. However, it was found that some environmental factors affected the sleep quality of the patients. Sleep disorders can be ignored by both patients and health professionals. In this direction, it is recommended to plan nursing interventions to increase the sleep quality of patients.

The inability to make long-term observations to evaluate the accuracy of the answers given by the sample group in the face-to-face interviews is a limitation of this research. It is recommended to use quantitative and qualitative research methods together in future studies to be conducted on this subject.

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