



THE CORRELATION BETWEEN BODY IMAGE PERCEPTION, SEXUAL LIFE, AND FATIGUE IN PATIENTS WITH HEMATOLOGICAL MALIGNANCY

HEMATOLOJİK MALİGNİTELİ HASTALARDA BEDEN ALGISI, CİNSEL YAŞAM VE YORGUNLUK ARASINDAKİ İLİŞKİ

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Abstract

Aim: The aim of this study is to investigate the correlation between body image perception, sexual life, and fatigue in patients with hematological malignancy.

Material-Methods: This is a descriptive and cross-sectional research. This study was conducted with 176 patients treated in the Hematology Ward and Day Treatment Center of a University Hospital located in western Turkey between January 2020 and June 2022. The data were collected using the Patient Information Form, the Arizona Sexual Experience Scale, the Piper Fatigue Scale, and the Body-Cathexis Scale. The data were analyzed using percentage, Kruskal Wallis variance analysis, Mann Whitney-U test, Pearson's correlation analysis, and Cronbach's alpha internal consistency tests.

Results: It was found that 10.8% of the patients were informed about sexual life and very low rate (2.8%) of those who received information got this information from healthcare professionals. It was reported that 89.2% of the patients did not receive information about their sexual life after starting treatment, 52.8% stated that the process had an impact on their sexual life and 64.8% negatively affected their relationships with their spouses. The mean score of the patients from the Arizona Sexual Experiences Scale was 20.84 ± 2.53 , the mean total score from the Piper Fatigue Scale was 5.44 ± 0.60 , and the mean score from the Body-Cathexis Scale was 103.61 ± 6.37 .

Conclusion: A weak positive correlation was found between the Body-Cathexis Scale and the Piper Fatigue Scale's behavioral, affective and cognitive subscales and total score ($p < 0.05$). As the overall fatigue increased, satisfaction with body parts or functions declined ($p < 0.05$).

Oncology nurses should be able to provide care to patients including their sexuality in a holistic approach instead of symptom-focused care. As a result of the research; no significant relationship was found between the total score of the Arizona Sexual Experiences Scale and the total score of the Piper Fatigue Scale ($p > 0.05$). Similarly, no significant relationship was found between the total score of the Arizona Sexual Experiences Scale and the total score of the Body-Cathexis Scale ($p > 0.05$). They should be aware of other variables (such as fatigue and body image perception) that may affect sexual life and should be approach oncology patients from this perspective.

Keywords: Hematology, Body image perception, Sexuality, Fatigue, Nursing.

Özet

Amaç: Bu araştırma, hematolojik maligniteli hastalarda beden algısı, cinsel yaşam ve yorgunluk arasındaki ilişkiyi incelemek amacıyla yapılmıştır.

Gereç- Yöntem: Bu, tanımlayıcı ve kesitsel tipte bir araştırmadır. Bu çalışma, Ocak 2020- Haziran 2022 tarihleri arasında Türkiye'nin batısında yer alan bir Üniversite Hastanesi Hematoloji Servisi ve Gündüz Tedavi Merkezi'nde tedavi gören 176 hasta ile yapılmıştır. Araştırmanın verileri; Hasta Tanıtım Formu, Arizona Cinsel Yaşantılar Ölçeği, Piper Yorgunluk Ölçeği ve Vücut Algısı Ölçeği kullanılarak toplanmıştır. Verilerin analizinde yüzdelik, Kruskal Wallis Varyans analizi, Mann Whitney-U testi, Pearson korelasyon analizi ve Cronbach alpha iç tutarlılık testleri kullanılmıştır.

Bulgular: Hastaların %10,8'inin cinsel yaşama ilişkin bilgi aldığı, bilgi alanlarının ise çok düşük oranda (%2,8'inin) sağlık profesyonellerinden bilgi aldığı saptanmıştır. Hastaların %89,2'sinin tedaviye başladıktan sonra cinsel yaşama ilişkin bilgi almadıkları %52,8'inin yaşanan sürecin cinsel yaşamlarına etkisi olduğunu ve eşleri ile olan ilişkilerini %64,8 oranında olumsuz etkilediğini ifade etmiştir. Hastaların Arizona Cinsel Yaşantılar Ölçeği'nden aldıkları puanların ortalaması 20.84 ± 2.53 , Piper Yorgunluk Ölçeği'nden aldıkları toplam puanların ortalaması 5.44 ± 0.60 ve Vücut Algısı Ölçeği'nden aldıkları puanların ortalaması ise 103.61 ± 6.37 olarak belirlenmiştir.

Sonuç: Bu çalışmada; Vücut Algısı Ölçeği ile Piper Yorgunluk Ölçeği'nin davranışsal, duygulanım ve bilişsel alt boyutları ve toplam puanı arasında pozitif yönlü zayıf ilişki saptanmıştır ($p < 0.05$). Genel yorgunluk arttıkça vücut bölümlerinden ya da işlevlerinden duyulan memnuniyet azalmaktadır ($p < 0.05$). Araştırma sonucunda; Arizona Cinsel Yaşantılar Ölçeği toplam puanı ile Piper Yorgunluk Ölçeği toplam puanı arasında anlamlı ilişki saptanmamıştır ($p > 0.05$). Benzer şekilde, Arizona Cinsel Yaşantılar Ölçeği toplam puanı ile Vücut Algısı Ölçeği toplam puanı arasında da anlamlı ilişki saptanmamıştır ($p > 0.05$). Onkoloji hemşirelerinin hastalara semptom odaklı bakım yerine, bütüncül bakım kapsamında cinselliği de içine alan bir bakım verebilmeleri gerekmektedir. Cinsel yaşamı etkileyebilen diğer değişkenler (yorgunluk, beden algısı gibi) konusunda farkındalığının olması ve onkoloji hastalarına bu açıdan yaklaşabilmeleri gerekmektedir.

Anahtar Kelimeler: Hematoloji, Beden imajı algısı, Cinsellik, Yorgunluk, Hemşirelik.

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INTRODUCTION

Today, cancer ranks second after heart diseases in the ranking of diseases that cause death and is one of the most critical health concerns due to its high prevalence and negative effects on quality of life. The data from the Global Cancer Observatory (GLOBOCAN) indicate that a total of 19.976.499 new cancer cases were diagnosed and 11.000.000 deaths related to cancer took place in the world in 2022. It was reported that the population of Turkey in 2022 was 85.372.377 and the annual number of new cancer cases was 240.013 and the deaths related to cancer was 129.672 (1). The 2019 data from the Ministry of Health reported that the incidence of cancer in Turkey was 229,77 per 100.000, while the incidence of hematological malignancies was 16,31 per 100.000 in women and 20,9 per 100.000 in men (2).

Hematologic malignancy is a type of cancer that originates from blood-forming tissues such as the bone marrow or cells of the immune system; it occurs due to the mutation of stem cells, the accumulation of immature hematopoietic cells in the bone marrow and causing bone marrow failure. Hematologic cancer types include leukemia, lymphoma, multiple myeloma and subtypes of these diseases. Non-Hodgkin lymphoma ranks first in hematological malignancies in men and women, while leukemia ranks second. The majority of patients are treated with chemotherapy or immunotherapy (3-5).

Hematological malignancies are gradually increasing in the society. The side effects of the therapies are frequently observed as nausea-vomiting, alopecia, fatigue and pain. These side effects negatively affect patients physically, socially and emotionally (4,5). Cancer and treatment process causes reduction in sexual desire, fatigue, decrease in sexual performance, and other conditions caused by problems related to changing body image in women (6).

Body perception is a concept that begins to develop in infancy, becomes more important in adolescence, grows and evolves throughout life, and involves the subjective perception of one's own body (7). Changes in body perception in individuals may be due to some hormonal, functional, structural and

appearance differences. The consequences of cancer such as hair loss, excision of female genitals and death concerns may affect the impairment in body image perception (8). The study by Pehlivan et al., (2019) determined that alopecia resulting from chemotherapy in acute leukemia patients impaired the quality of life and reduced self-esteem (9). Virginia Satir (1975), a family therapist, states a strong correlation between an individual's body image, self-esteem, and sexual identity. According to Satir, every individual needs to feel attractive as a sexual partner (9). The sexual self-image of a man or woman is a combination of feeling physically attractive, and the ability to satisfy the emotional needs of the partner such as compassion, affection, warmth and gentleness, and love skills (10-12). Sexuality is not only a matter of sexual activity but also is related to influencing thoughts, feelings and actions (13). The World Health Organization (WHO) defines sexuality as the positive enrichment and strengthening of personality, communication and love by considering the individual as a whole in terms of physical, psychological, intellectual and social aspects. The sexual life of cancer patients may be affected due to changes in sexual functions that develop in the body due to age (menopausal changes in women, erectile dysfunctions in men), changes in body image that appear as a side effect of treatment, fatigue, communication problems with the partner before the diagnosis and fatigue (14).

Sexual dysfunction refers to a broad term that involves any sexual disorder. Dysfunction and reduced libido, difficulties in achieving orgasm, dyspareunia, vaginal dryness and vaginismus appear in female cancer patients. Also, sexual distress may induce stress and anxiety in individuals (15). On the other hand, men may experience erectile dysfunction (ED) in addition to fatigue, pain, and anxiety the side effects of chemotherapy. Chemotherapy, hormone therapy, surgical procedures and radiotherapy may cause sexual side effects (16). Melphalan and cyclophosphamide treatment may lead to reduced sexual desire and erectile dysfunction in male patients diagnosed with multiple myeloma (17-19). The study by Ljungman et al. (2018) highlighted that hormone therapy in young women diagnosed with breast cancer not only caused biological/physical effects

such as vaginal discomfort and vaginal dryness but also adversely affected psycho-social aspects such as negative body perception and feeling unattractive (20).

One of the most common side effects in patients diagnosed with cancer is fatigue (21). Fatigue related to cancer is a condition with both subjective and objective dimensions (22). As fatigue appears, individuals suffer from such symptoms as elevated physical complaints, diminished performance power, lack of energy, loss of interest in favorite activities, depression, and reduced sexual desire (23). The most common toxicities with Nilotinib used in chronic myeloid leukaemia patients are headache (36%), nausea (31%), rash (30%), fatigue (11%), and alopecia (7%) (24). In their study, Suzuki et al., (2018) found that fatigue was the most common symptom in multiple myeloma patients who were treated with bortezomib, lenalidomide, and thalidomide (25). Olsson et al., (2016) reported in their study that male patients with acute lymphoblastic leukemia, chronic lymphoblastic leukemia and diffuse B-cell lymphoma treated with chemotherapy or immunotherapy suffered from reduced sexual desire and sexual ability and fatigue one month later (5).

The nursing profession that evaluates patients as a whole with their physical, socio-cultural, psychological and spiritual characteristics, is based on the delivery of a holistic health care service to patients. However, sexuality can be perceived as taboo due to sociocultural and religious factors. Therefore, a holistic approach to patients is not possible. Although evaluating oncology patients for sexuality, identifying the issues that patients are uneasy about their sexual lives and rendering sexual counselling services represent significant criteria of care, they are not sufficiently implemented within the scope of routine care (12,26). One of the most significant barriers to initiating communication with the patient on sexual matters is feeling discomfort and embarrassment when talking about sexuality (26,27). The study by Pınar (2010) found that nurses were unable to counsel the patients due to their focus on cancer treatment, lack of time and insufficient knowledge about sexuality (28). However, nurses are responsible for identifying sexual problems that develop due to the disease and treatment process, allowing the individuals under their care to discuss their problems

related to sexual functioning, and making suggestions (27,28). Hordern et al., (2007) stressed in their study that cancer patients are required to be informed and supported to adapt to their altered sexual lives (29). Therefore, it is necessary to raise awareness among nurses and make sure that sexuality is an important area that should be paid attention to in cancer treatment (30). Nevertheless, no studies that investigated the correlation between body image perception, sexual life and fatigue in patients with hematological malignancy are available in Turkey, whereas there is a limited number of international studies. Therefore, it is expected that the present study would bridge that gap in the literature. This study was conducted to investigate the correlation between body image perception, sexual life, and fatigue in patients with hematological malignancy.

Research Questions

- 1) What is the level of body image perception in patients with hematological malignancy?
- 2) What is the mean score of patients with hematological malignancy in the Arizona Sexual Experience Scale?
- 3) What is the level of fatigue in patients with hematological malignancy?
- 4) Is there any correlation between body image perception, sexual life, and fatigue in patients with hematological malignancy?

MATERIAL-METHODS

Design of the Study

This study was conducted as descriptive and cross-sectional.

Population and Sample

The population of the study consisted of all patients treated in the Hematology Ward and Day Treatment Center of a University Hospital in western Turkey between January 2020 and June 2022. Since the number of patients was unknown, the sample selection formula with infinite population ($n=t^2.p.q/d^2$) [$n=(1.96)^2.(0.91).(1-0.91)/(0.05)^2$] was used to calculate the sample size, and the sample size was calculated as 125. The sample consisted of 176 patients who were treated in the hematology ward and day treatment center between January 2020 and June 2022, met the inclusion criteria and voluntarily agreed to participate in the study. Inclusion criteria for

patients were determined as follows: (a) being aged between 18-65 years, (b) undergoing radiotherapy or chemotherapy, (c) being diagnosed with one of CLL, AML, CML, Lymphoma, Multiple Myeloma, MDS, (d) being literate, (e) getting a score of ≤ 2 in the ECOG Performance Scale, (f) being diagnosed at least 3 months ago, and (g) being voluntary to participate in the study and filling out the informed consent form. Exclusion criteria for patients were determined as follows: (a) having difficulty to maintain verbal communication, (b) having problem in speaking and understanding Turkish, (c) having condition that affects sexual health in both genders (hysterectomy, vaginismus, prostate, erectile dysfunction).

Data Collection Tools

The data were collected using the Patient Information Form, Arizona Sexual Experience Scale (ASES), Piper Fatigue Scale (PFS), and Body-Cathexis Scale (BCS).

Personal Information Form: This form was prepared based on the literature (4-12). This form is a 23-item questionnaire including socio-demographic characteristics of the patients (age, gender, marital status, educational background, employment status, health insurance status, income level) and their data related to diseases and sexuality (whether or not there is a caregiver and who is the caregiver, type of cancer, stage of disease, duration of diagnosis, presence of metastases, number of chemotherapy cycles, type of treatment, presence of chronic disease, chronic disease type, score of the ECOG (Eastern Cooperative Oncology Group) performance scale, whether the patient was informed of sexuality after beginning treatment, source of information, how often did the patient feel tired, how did the patient perceive his/her body after the treatment, the effects of the treatment process, the effect of the process on his/her relationship with his/her spouse.)

The ECOG performance scale is formed by the initials of the Eastern Cooperative Oncology Group. The scale, also known as the WHO performance score, was developed in 1960. In the ECOG Performance Scale, 0 indicates normal health status and 5 indicates death. Low scores indicate good

general condition, while high scores indicate poor prognosis (31).

Arizona Sexual Experience Scale

McGahuey et al., (2000) developed the Arizona Sexual Experience Scale, a self-report scale designed to evaluate changes and disorders that appear in sexual functions in patients using psychotropic drugs (32). The scale was designed as two separate forms for men and women with 5 questions in each. Each question on the scale focuses on sexual drive, psychological and physiological arousal, ability to reach orgasm, and satisfaction from orgasm. Each question is scored from 1 to 6 with total score ranging from 5 to 30. A total score of 19 or more, a score of 5 or 6 in any item, or a score of 4 in three or more items indicate sexual dysfunction and are highly correlated with sexual dysfunctions identified by clinicians (32,33). Soykan (2004) conducted the Turkish validity and reliability study of the scale. It was found that internal consistency and reliability of the scale were high with a Cronbach's alpha value of .90 and the scale was valid in differentiating sexual dysfunction (34). Its Cronbach's alpha value was determined to be 0.92 in this study.

Piper Fatigue Scale: The scale, which was developed by Piper et al., (1998), analyses fatigue with 4 subjective dimensions. The behavioral subscale consists of 6 items, the cognitive subscale consists of 6 items, the affective subscale consists of 5 items and the sensory subscale consists of 5 items. The items in the scale are rated from 1 (weak) to 10 (strong) as weak and strong. For each item, the individual marks the number that best describes the fatigue that he/she is feeling at that moment. The subscale scores in the scale are achieved by summing up the scores on all items in that subscale and dividing it by the number of items. The total score is calculated by summing up all items and dividing it by the total number of items. The scale includes 5 open-ended questions which are excluded from the evaluation when calculating the PFS score (35). The scale total score of the patients varies between 0 and 10 and as the score rises, the fatigue that people feel intensifies. Can et al., (2001) conducted the Turkish validity and reliability study of the scale (36). The

reliability coefficient of the scale was reported as 0.94. The Cronbach's alpha value of the scale was found to be 0.90 in this study.

Body-Cathexis Scale: Secord and Jourard developed the "Body-Cathexis Scale" in 1953 to identify the level of body perception satisfaction. Hovardaoğlu adapted the Body-Cathexis Scale into Turkish in 1993 and conducted its validity and reliability study. Hovardaoğlu (1993) found the Cronbach's alpha internal consistency coefficient as 0.91 and the alpha value as 0.76. The scale consists of a total of 40 items and is a five-point Likert-type scale (1= I like it very much, 2= I like it quite a lot, 3= I am undecided, 4= I don't like it that much, 5= I don't like it at all). Each item describes a part of the body or a function. The scale is assessed by calculating the Body-Cathexis Scale mean score of the patients. The total score of the scale varies between 40 and 200, where a rise in the total score indicates a decline in satisfaction with body parts or functions, and a fall in the total score indicates an increase in satisfaction (37). The scale has no subscale and cut-off point. Üstündağ et al., (2017) also used the Body-Cathexis Scale in their study on the symptoms of depression and anxiety, and self-esteem in patients with gynecological cancer (38). The Cronbach's alpha value of the scale was found to be 0.90 in this study.

Data Assessment

SPSS 22.0 program was used to analyze the data of the study. The data were analyzed using percentage, pearson's correlation analysis, and cronbach's alpha internal consistency tests. The Bonferroni test was used to determine the conformity of the scale scores to normal distribution. For data that were not normally distributed, the Mann-Whitney U test and the Kruskal-Wallis test were used. Results were considered significant when ($p < 0.05$).

Ethical Considerations

The ethics committee approval was obtained from the Non-Invasive Clinical Trials Ethics Committee of Dokuz Eylül University on 13/04/2020 (decision number:2020/07-07) to conduct the study. Participation in the study was based on the principle of voluntariness and the participants gave verbal and written

consents within the scope of the Declaration of Helsinki.

RESULTS

Socio-demographic, Disease and Treatment Process Characteristics of the Patients

When the socio-demographic characteristics of the participants were analyzed, it was found that their mean age was 42.70 ± 11.66 years. 52.3% of the patients were male, 60.8% were married and 45.5% were primary school graduates. 72.7% were employed and 97.7% had health insurance. 97.7% of the patients had a caregiver and 70.5% were cared for by their spouses (Table 1).

Table 1. Distribution of Sociodemographic Characteristics of Patients

	X \pm SD	Min - Max
Age	42,70 \pm 11,665	19 - 63
	n	%
Gender		
Female	84	47,7
Male	92	52,3
Marital Status		
Married	107	60,8
Single	69	39,2
Educational Status		
Literate	15	8,5
Primary education	80	45,5
Secondary Education	55	31,3
College/University	26	14,8
Working Status		
Employed	128	72,7
Doesn't work	48	27,3
Health Insurance		
Yes	172	97,7
No	4	2,3
Caregiver		
Yes	172	97,7
No	4	2,3
Care giving person		
Spouse	124	70,5
Children	24	13,6
Other Family Members	25	14,2
Healthcare Personnel	3	1,7
Total	176	100

The disease and treatment process-related data of the patients included in the study were assessed in the study. The results indicated that 26.1% of the patients were diagnosed with AML, 22.2% with multiple myeloma, 21.6% with lymphoma, 13.1% with CML, 10.8% with CLL and 5.1% with

myelodysplastic syndrome. The cancer stage of the patients was found to be at stage 1 in 73.3%, while 64.8% were diagnosed with cancer 3 months or more ago. Metastasis was observed in 14.8% of the patients. While 89.2% of the patients had less than 10 cycles of chemotherapy, 98.3% of the patients underwent chemotherapy only. 40.3% of the patients had chronic diseases. While ECOG performance score of 96.6% of the patients was 2 or below. It was determined that 10.8% of the patients received information about sexual life, and 7.4% received information about sexual life from television, the internet, magazines and newspapers. When the fatigue frequencies of the patients were assessed, it was determined that 41.5% sometimes suffered from fatigue (Table 2).

Table 2. Distribution of Patients' Information Regarding Their Disease and Treatment Process

	n	%
Cancer Type (n=174)		
AML	46	26,1
KML	23	13,1
KLL	19	10,8
Lenfoma	38	21,6
Multiple Myelom	39	22,2
Myelodisplastik Sendrom	9	5,1
Cancer Stage		
Stage 1	129	73,3
Stage 2	39	22,2
Satge 3	8	4,5
Diagnosis Time		
Within 3 Months	62	35,2
3 Months and Earlier	114	64,8
Metastasis		
Yes	26	14,8
No	150	85,2
Number of Chemotherapy Cycles		
<10	157	89,2
10 – 20	19	10,8
Treatment		
Chemotherapy	173	98,3
Radiotherapy + Chemotherapy	3	1,7
Chronic Disease		
Yes	71	40,3
No	105	59,7
ECOG Performance Scale		
2 and under	170	96,6
3 and above	6	3,4
Information About Sexual Life		
Take	19	10,8
didn't take	157	89,2

Table 2. (Continued)

	n	%
From Whom Did She Get Information About Sexual Life?		
Doctor	5	2,8
Relatives	2	1,1
TV / Internet / Magazine / Newspaper	13	7,4
Fatigue Frequency		
Never	5	2,8
Rarely	28	15,9
Sometimes	73	41,5
Frequently	70	39,8
Body Image Perception following the Treatment		
I Like It Very Much	8	4,5
I like it	69	39,2
I do not notice any difference	38	21,6
I do not like it	39	22,2
I do not like it at all	22	12,5
Effect of the Process on Sexual Life		
Yes	93	52,8
No	38	21,6
Partially	45	25,6
The Effect of the Process on the Relationship with the Spouse		
Was it	114	64,8
Was it not	62	35,2
The Effect of Fatigue Due to Treatment Process on Sexual Life		
Was it	147	83,5
Was it not	29	16,5
Effects of Treatment-Related Body Changes on Sexual Life		
Was it	158	89,8
Was it not	18	10,2
Total	176	100

It was determined that 39.2% of the patients expressed their body image perception following the treatment as “I like it”. The treatment process affected the sexual lives of 52.8% of the patients, the fatigue due to the treatment process affected the sexual lives of 83.5% of the patients, and the change in the body due to the treatment process affected the sexual lives of 89.8% of the patients. 64.8% of the patients stated that the process affected their relationship with their spouses (Table 2).

The Patients' Mean Scores in the Arizona Sexual Experience Scale (ASEX), Piper Fatigue Scale (PFS) and Body-Cathexis Scale (BCS)

The ASEX, PFS and BCS scores of the patients were evaluated. The results showed that their ASEX mean score was 20.84 ± 2.534 . Their mean scores for the PFS subscales were 6.40 ± 0.850 in the Behavioral subscale, 6.67 ± 0.839 in the Affective subscale, 5.56 ± 1.054 in the Sensory subscale, and 3.36 ± 0.743 in the Cognitive subscale. Their PFS total mean score was 5.44 ± 0.600 . Their BCS

mean score was 103.61 ± 6.376 . The ASEX, PFS, and BCS mean scores of the patients were high.

Comparison of the Patients' ASEX and BCS Scores in terms of their Socio-demographic Characteristics

The ASEX and BCS scores of the patients were analyzed in terms of their socio-demographic characteristics (Table 3). No statistically significant difference was found between the ASEX and BCS scores of the patients in terms of their socio-demographic characteristics ($p>0.05$).

Table 3. Comparison of the Arizona Sexual Experience Scale and the Body-Cathexis Scale Scores of the Patients in terms of their Socio-demographic Characteristics

Variables	N	Arizona Sexual Experience Scale		Body-Cathexis Scale	
		M (Min-max)	Z, x ² /p	M(Min-max)	Z,x ² /p
Gender*					
Female	84	21(14-27)	-0.485/0.627	103.50(91-120)	-0.196/0.845
Male	92	21(14-26)		103(88-119)	
Marital Status*					
Married	107	21(14-27)	-1.144/0.252	103(88-120)	-1.103/0.270
Single	69	21 (16-26)		104(89-119)	
Educational level **					
Literate	15	21(17-26)		104(96-117)	
Primary School	80	21(16-27)	0.418/0.939	104(89-120)	7.178/0.066
Secondary School	55	21(14-25)		102(88-115)	
College/University	26	20.50 (16-25)		103.50(91-119)	
Employment Status*					
Employed	128	21(16-26)	-0.089/0.926	103(88-116)	-0.230/0.818
Unemployed	48	21(14-27)		103(89-120)	
Health Insurance*					
Yes	172	21(14-27)	-1.036/0.300	103(88-120)	-0.338/0.735
No	4	22(20-25)		103(89-120)	
Income Level*					
High	35	21(16-24)	-0.772/0.440	103(95-114)	-0.163/0.870
Moderate	141	21(14-27)		103(88-120)	

*Z: Mann Whitney U test, **X²: Kruskal Wallis H test

Comparison of the Patients' ASEX and BCS Scores in terms of their Disease and Treatment Process-related Characteristics

The ASEX and BCS scores of the patients were analyzed in terms of their disease and treatment process-related characteristics (Table 4). Based on the results obtained, it was found that the BCS mean scores of the patients were 103.98 ± 6.437 in those who had less than 10 chemotherapy cycles and 100.58 ± 5.026 in those who had 10 - 20 chemotherapy cycles. It was found that BCS scores of the patients who had less than 10 chemotherapy cycles were statistically significantly higher than the patients who had between 10 to 20

chemotherapy cycles ($Z=-2.131$; $p<0.05$). No statistically significant difference was found between the ASEX scores of the patients in terms of the number of chemotherapy cycles ($p>0.05$) (Table 4).

A statistically significant difference was found between the BCS scores of the patients in terms of their ECOG performance scores ($p<0.05$). The BCS scores of patients with an ECOG performance score of 2 and below were higher than those of patients with an ECOG performance score of 3 and above ($Z=-2.600$; $p<0.05$). No statistically significant difference was found between the ASEX scores of the patients in terms of their ECOG performance scores ($p>0.05$) (Table 4).

A statistically significant difference was found between the ASEX scores of the patients in terms of whether the process they had been through had an effect on their sexual life (KW=10.579; $p<0.05$). The ASEX scores of the patients for whom the process they went through had an effect on their sexual life were higher than those of those for whom the process they went through had a partial or no effect on their sexual life. No statistically significant difference was found between the effect of the process they went through on their

sexual life and their BCS scores ($p>0.05$) (Table 4).

No statistically significant difference was found between the ASEX and BCS scores of the patients in terms of their cancer types, cancer stages, duration of diagnosis, metastasis presence, type of treatment, presence of chronic disease, whether they were informed of sexual life, body perception after treatment, and whether or not the process they had gone through had an effect on their relations with their spouses ($p>0.05$) (Table 4).

Table 4. Comparison of the Patients' Scores of the Arizona Sexual Experience Scale and the Body-Cathexis Scale in terms of their Disease and Treatment Process-Related Characteristics

Variables	N	Arizona Sexual Experience Scale		Body-Cathexis Scale	
		M (Min-max)	Z, x ² /p	M (Min-max)	Z, x ² /p
Cancer Type**					
AML (1)	46	21.50 (16-26)	1.002/0.962**	103(92-119)	4.263/0.512
CML (2)	23	21(14-25)		103(91-112)	
CLL (3)	19	22(17-25)		103(98-113)	
Lymphoma (4)	38	21(16-25)		102.50 (88-117)	
Multiple myeloma (5)	39	21(16-26)		105(90-120)	
Myelodysplastic syndrome (6)	9	21(16-25)		106 (100-115)	
Stage of Cancer **					
Stage 1 (1)	129	21(14-27)	1.670/0.434	102(88-120)	2.987/0.225
Stage 2 (2)	39	22(16-25)		105(94-117)	
Stage 3 (3)	8	22(19-24)		105.50 (98-113)	
Duration of Diagnosis ***					
Within 3 months	62	21(16-26)	-0.061/0.951	103(89-117)	-1.109/0.268
3 months and more ago	114	21(14-27)		103(88-120)	
Metastasis ***					
Yes	26	20.50 (14-27)	-1.045/0.296	103.50 (92-118)	-0.271/0.786
No	150	21(14-26)		103(88-120)	
Number of chemotherapy cycles ***					
<10	157	21(14-27)	-0.026/0.979	104(88-120)	-2.131/0.033*
10 - 20	19	21(16-25)		101(91-111)	
Treatment***					
Chemotherapy	173	21 (14-27)	-1.078/0.281	103(88-120)	-0.383/0.701
Radiotherapy + chemotherapy	3	19 (19-21)		102(98-107)	
Presence of chronic disease ***					
Yes	71	21(14-27)	-0.748/0.454	103(89-120)	-0.133/0.894
No	105	21(14-26)		103(88-119)	

* $p<0.05$, ***Z: Mann Whitney U test, ** χ^2 : Kruskal Wallis H test

Table 4. (continued)

Variables	N	Arizona Sexual Experience Scale		Body-Cathexis Scale	
		M (Min-max)	Z, x²/p	M (Min-max)	Z, x²/p
ECOG Performance Scale***					
2 and below	170	21(14-27)	-0.641/0.521	103(89-120)	-2.600/0.009*
3 and above	6	22(16-25)		104(94-117)	
Getting information about sexual life***					
Did	19	21 (17-24)	-0.111/0.912	106(98-117)	-1.585/0.113
Did not	157	21(14-27)		103(88-120)	
Information about sexual life **					
Never (1)	5	19 (14-26)	3.043/0.385	102(89-119)	1.680/0.641
Rarely (2)	28	21(14-27)		101 (88-115)	
Sometimes (3)	73	22(16-25)		103(95-115)	
Often (4)	70	21(17-22)		104(98-120)	
Post-Treatment Body Image **					
I like it a lot (1)	8	19(14-25)	3.549/0.470	106.50 (99-119)	3.121/0.538
I like it (2)	69	21(14-27)		103(89-118)	
I do not notice any difference (3)	38	22(16-25)		103(92-113)	
I do not like it (4)	39	21(16-26)		103(90-115)	
I don't like it at all (5)	22	20.50 (16-24)		103.50(88-120)	
The Effect of the Experienced Process on Sexual Life **					
Affected (1)	93	22 (14-27)	10.579/0.005* 1>2,1>3***	103 (88-116)	1.380/0.502
Did not affect (2)	38	20 (16-24)		103 (89-114)	
Partially affected (3)	45	21 (16-25)		103 (90-120)	
The Effect of the Experienced Process on Their Relations with Their Spouse***					
Affected	114	21 (14-27)	1.822/0.068	104 (91-120)	-1.898/0.058
Did not affect	62	21 (14-25)		102 (88-114)	

*p<0.05, ***Z: Mann Whitney U test, **X²: Kruskal Wallis H test, p value obtained as a result of Bonferroni correction p<0.167

Comparison of the Patients' Piper Fatigue Scale Scores in terms of their Socio-demographic Characteristics

The PFS scores of the patients were analyzed in terms of their socio-demographic characteristics (Table 5). A statistically significant difference was found between the cognitive subscale scores of the patients in terms of their educational level (X²=13.375; p<0.05). The cognitive fatigue of literate and primary school graduates was more severe than that of secondary school graduates. No statistically significant difference was found between the scores of patients in Behavioral, Affective, and Sensory subscales in terms of their educational level (p>0.05). A statistically significant difference was found between the

PFS scores of the patients in terms of their educational level (X²=11.543; p<0.05). The fatigue of primary school, college and university graduates was more severe than that of secondary school graduates (Table 5).

A statistically significant correlation was found between the PFS total and subscale mean scores of the patients and their income level (p<0.05). The scores of the patients with high income in Behavioral (Z=-4.275), Affective (Z=-2.589), Sensory (Z=-2.015) and Cognitive (Z=-3.856) subscales were higher than those of the patients with moderate income level (p<0.05). The PFS scores of patients with high income were statistically significantly higher than those of patients with

Table 5. Comparison of the Patients' Piper Fatigue Scale Scores According to Their Socio-demographic Characteristics

Variable	N	Piper Fatigue Scale									
		Behavioral Subscale		Affective Subscale		Sensory Subscale		Cognitive Subscale		Piper Fatigue Scale Total	
		M (Min-max)	Z, x²/p	M (Min-max)	Z, x²/p	M (Min-max)	Z, x²/p	M (Min-max)	Z, x²/p	M (Min-max)	Z, x²/p
Gender											
Female	84	6.50(3.3-7.8)	-0,528/0,597	6.80(4.4-8.2)	-0,147/0,883	5.60(2.4-7.8)	-0,402/0,688	3.25(1.5-4.8)	-1,313/0,189	5.55(3.3-6.4)	-0,336/0,737
Male	92	6.67(4.3-8.2)		6.80(3.4-8.4)		5.60(3.0-8.6)		3.33(1.7-5.2)		5.55(3.7-6.9)	
Marital Status											
Married	107	6.50(3.3-8.2)	-0,246/0,806	6.80(4.6-8.4)	-0,251/0,802	5.60(2.4-8.6)	-0,847/0,397	3.33(1.5-5.2)	-0,705/0,481	5.55(3.3-6.9)	-0,505/0,614
Single	69	6.67(4.5-7.8)		6.80(3.4-8.4)		5.40(3.0-7.8)		3.33(1.8-5.0)		5.50(3.7-6.4)	
Educational Level											
Literate (1)	15	6.83(5.8-7.5)		6.80(6.2-7.8)	6,011/0,111	5.40(3.8-6.8)	2,558/0,465	3.67(2.2-4.2)	13,375/0,004* 1>3**, 2>3**	5.73(4.6-6.0)	11,543/0,009* 2>3**, 3<4**
Primary School (2)	80	6.67(4.5-8.2)	7,696/0,053	6.60(3.4-8.4)		5.70(3.4-8.6)		3.42(1.8-5.2)		5.64(3.9-6.9)	
Secondary School (3)	55	6.17(4.3-7.8)		6.80(5.0-8.2)		5.40(3.0-8.0)		3.00(1.5-4.5)		5.23(4.1-6.4)	
College/University (4)	26	6.58(3.3-8.0)		7.00(5.0-8.2)		5.90(2.4-7.8)		3.58(2.0-4.7)		5.68(3.3-6.4)	
Employment Status											
Employed	128	6.67(4.3-8.0)	-0,911/0,362	6.80(3.4-8.2)	-0,090/0,928	5.70(3.2-8.0)	-1,709/0,087	3.33(1.7-5.0)	-1,018/0,309	5.59(3.9-6.4)	-1,339/0,180
Unemployed	48	6.50(3.3-8.2)		6.80(4.4-8.4)		5.20(2.4-8.6)		3.33(1.5-5.2)		5.45(3.3-6.9)	
Health Insurance											
Yes	172	6.58(3.3-8.0)	-0,120/0,608	6.80(3.4-8.4)	-1,833/0,067	5.60(2.4-8.0)	-0,428/0,669	3.33(1.5-5.2)	-0,443/0,658	5.55(3.3-6.4)	-0,636/0,525
No	4	6.00(5.0-8.2)		6.10(5.4-6.6)		5.00(4.4-8.6)		3.67(2.5-4.5)		5.09((4.4-6.9)	
Income Level											
High	35	7.00(5.5-7.8)	-4,275/0,000*	7.00(5.6-8.4)	-2,589/0,010*	5.80(4.2-8.0)	-2,015/0,044*	3.67(2.7-5.2)	-3,856/0,000*	5.86(5.2-6.4)	-4,812/0,000*
Moderate	141	6.33(3.3-8.2)		6.60(3.0-8.0)		5.40(2.4-8.6)		3.67(1.5-5.2)		5.45(3.3-6.9)	

* $p < 0.05$, Z: Mann Whitney U test, X^2 : Kruskal Wallis H test, ** p value obtained as a result of Bonferroni correction: $p < 0.008$

moderate income ($Z=-4.812$; $p<0.05$) (Table 5).

No statistically significant difference was found between the PFS scores of the patients based on their gender, marital status, employment, and health insurance ($p>0.05$) (Table 5).

Comparison of the Patients' Piper Fatigue Scale Scores in terms of their Disease and Treatment Process-related Characteristics

The PFS scores of the patients were analyzed in terms of their disease and treatment process-related characteristics (Table 6). A statistically significant difference was found between the patients' number of chemotherapy cycles and their PFS total score, and the mean scores on the behavioral and cognitive subscales ($p<0.05$). The scores of the patients, who had less than 10 chemotherapy cycles, in the Behavioral ($Z=-2.253$) and Cognitive ($Z=-3.103$) subscales were higher than those of the patients who had 10 - 20 chemotherapy cycles ($p<0.05$). The PFS total score of the patients who had less than 10 cycles of chemotherapy was higher than the score of the patients who had 10 - 20 cycles of chemotherapy ($Z=-2.690$; $p<0.05$). No statistically significant difference was found between the scores of the patients in the Affective and Sensory subscales in terms of the number of chemotherapy cycles ($p>0.05$) (Table 6).

A statistically significant difference was detected between the Sensory subscale mean scores of the patients and the presence of chronic disease ($p<0.05$). The Sensory subscale scores of the patients with chronic disease were higher than those of the patients without the chronic disease ($Z=-2.246$; $p<0.05$). There was no statistically significant difference between the scores of the patients in the Behavioral, Affective, and Cognitive subscales and their PFS total scores in terms of the presence of chronic disease ($p>0.05$) (Table 6).

A statistically significant difference was found between the ECOG performance status of the patients and their scores in the behavioral, and cognitive subscales and their PFS total scores ($p<0.05$). The scores of the

patients having an ECOG performance score of 2 and below in the Behavioral ($Z=-2.627$) and Cognitive ($Z=-2.436$) subscales were higher than those of the patients having an ECOG performance score of 3 and above ($p<0.05$). The PFS total mean scores of the patients were 5.46 ± 0.601 in patients with an ECOG performance score of 2 and below and 4.89 ± 0.192 in patients with an ECOG performance score of 3 and above. It was found that the PFS total score of patients with an ECOG performance score of 2 and below was higher compared to the patients with an ECOG performance score of 3 and above ($Z=-2.635$; $p<0.05$). No statistically significant difference was found between the scores of the patients in the Affective and Sensory subscales in terms of their ECOG performance scores ($p>0.05$) (Table 6).

It was found that the Affect subscale scores of the patients who got information about sexual life were statistically significantly higher than the scores of the patients who did not ($Z=-2.354$; $p<0.05$). There was no statistically significant difference between the scores of the patients in the Behavioral, Sensory and Cognitive subscales and their PFS total scores in terms of whether or not they got information about sexual life ($p>0.05$) (Table 6).

A statistically significant difference was found between the affective subscale and total mean scores of the patients in terms of the effect of the process they went through on their relations with their spouses ($p<0.05$) (Table VI). The Affective subscale scores of the patients who were affected by the process they went through in their relations with their spouses were higher compared to the patients who were not affected by the process they went through on their relations with their spouses ($Z=2.837$; $p<0.05$). The PFS total scores of the patients whose relations with their spouses were affected the process they went through were higher than those of the patients whose relations with their spouses were not affected the process they went through ($Z=-2.335$; $p<0.05$). There was no statistically significant difference between the scores of the patients in the Behavioral, Sensory, and Cognitive subscales based on the

Table 6. Comparison of The Patients' Piper Fatigue Scale Scores in terms of their Disease and Treatment Process-Related Characteristics

Variable	N	Piper Fatigue Scale									
		Behavioral		Affective		Sensory		Cognitive		Piper Fatigue Scale	
		Subscale		Subscale		Subscale		Subscale		Total	
		M (Min-max)	Z, x2/p	M (Min-max)	Z, x2/p	M (Min-max)	Z, x2/p	M (Min-max)	Z, x2/p	M (Min-max)	Z, x2/p
Cancer type											
AML	46	6.67(3.3-8.2)		6.80(4.6-8.4)		5.80(2.4-8.6)		3.50(1.7-5.0)		5.64(3.9-6.9)	
CML	23	6.50(4.3-7.5)	1.481/0.915	6.60(5.0-8.0)	4.336/0.502	5.20(3.0-6.4)		3.67(2.0-5.0)		5.45(3.7-6.1)	
CLL	19	6.67(4.5-8.0)		7.00(5.2-8.4)		5.40(3.0-7.2)	7.524/0.184	3.33(2.3-5.0)	4.887/0.430	5.64(4.6-6.3)	1.782/0.878
Lymphoma	38	6.42(5.2-7.5)		6.80(4.6-8.2)		5.70(4.0-8.0)		3.50(1.5-4.3)		5.52(4.3-6.2)	
Multiple Myeloma	39	6.67(4.7-8.0)		6.60(3.4-8.0)		5.60(3.6-7.8)		3.17(2.2-5.2)		5.45(4.1-6.4)	
Myelodysplastic syndrome	9	6.83(4.7-7.7)		7.00(5.0-8.2)		5.40(3.4-6.8)		3.00(1.8-4.3)		5.55(3.9-6.1)	
Stage of cancer											
Stage 1	129	6.50(3.3-8.2)		6.60(4.6-8.4)		5.40(2.4-8.6)		3.33(1.7-5.2)		5.45(3.3-6.9)	
Stage 2	39	6.67(5.0-7.7)	4.072/0.131	6.80(3.4-8.2)	1.120/0.571	5.80(4.0-8.0)	1.179/0.555	3.50(1.5-5.2)	3.027/0.220	5.73(4.1-6.2)	2.756/0.252
Stage 3	8	6.83(6.3-7.5)		6.90(6.0-8.2)		5.40(4.2-7.2)		3.75 ± 0.512		5.66(5.5-6.4)	
Duration of diagnosis											
Within 3 months	62	6.67(4.3-8.2)	0.189/0.850	6.80(3.4-8.2)	-0.678/0.498	5.60(3.4-8.6)	-0.363/0.717	3.33(1.-5.2)	-0.427/0.669	5.59(4.1-6.9)	-0.49/0.618
3 months and more ago	114	6.67(3.3-8.0)		6.80(4.6-8.4)		5.60(2.4-7.8)		3.33(1.7-5.2)		5.55(3.3-6.4)	
Metastasis											
Yes	26	6.50(4.8-8.0)	-0.278/0.781	6.80(5.0-8.2)	-0.305/0.760	5.80(4.2-7.8)	-1.245/0.213	3.50(2.5-4.5)	-1.574/0.115	5.68(4.4-6.3)	-1.268/0.205
No	150	6.67(3.3-8.2)		6.80(3.4-8.4)		5.50(2.4-8.6)		3.33(1.5-5.2)		5.52(3.3-6.9)	
Number of chemotherapy cycles											
<10	157	6.67(3.3-8.0)	-2.253/0.024*	6.80(3.4-8.4)	-1.342/0.180	5.60(2.4-8.0)	-0.630/0.528	3.50(1.7-5.2)	-3.103/0.002*	5.59(3.3-6.4)	-2.690/0.007*
10 - 20	19	5.67(4.7-8.2)		6.40(5.0-8.4)		5.40(3.0-8.6)		2.67(1.5-4.5)		5.05(3.3-6.9)	
Treatment											
Chemotherapy	173	6.50(3.3-8.2)	-0.304/0.761	6.80(3.4-8.4)	-0.585/0.559	5.60(2.4-8.6)	-0.229/0.819	3.33(1.5-5.2)	-0.447/0.665	5.55(3.3-6.9)	-0.486/0.627
Radiotherapy + chemotherapy	3	6.50(6.2-7.2)		7.00(6.4-7.4)		6.20(4.6-6.2)		3.17(3.2-4.3)		5.73(5.2-6.0)	
Presence of chronic disease											
Yes	71	6.50(4.7-7.8)	-0.171/0.864	7.00(3.4-8.2)	-1.813/0.070	5.80(4.0-8.0)	-2.246/0.025*	3.33(1.5-5.2)	-0.658/0.511	5.64(3.9-6.4)	-1.930/0.054
No	105	6.50(3.3-8.2)		6.60(4.4-8.4)		5.40(2.4-8.6)		3.33(1.7-5.0)		5.50(3.3-6.9)	

Table 6. (Continued)

Piper Fatigue Scale											
Variable	N	Behavioral Subscale		Affective Subscale		Sensory Subscale		Cognitive Subscale		Piper Fatigue Scale Total	
		M (Min-max)	Z, x ² /p	M (Min-max)	Z, x ² /p	M (Min-max)	Z, x ² /p	M (Min-max)	Z, x ² /p	M (Min-max)	Z, x ² /p
ECOG Performance Scale											
2 and below	170	6.67(3.3-8.2)	-2.627/0.009*	6.80(3.4-8.4)	-1.637/0.102	5.60(2.4-8.6)	-0.882/0.378	3.33(1.5-5.2)	-2.436/0.015*	5.57(3.3-6.9)	-2.635/0.008*
3 and above	6	5.50(5.2-6.2)		6.20(5.8-7.0)		5.10(4.6-6.2)		2.67(2.2-3.2)		4.84(4.7-5.2)	
Getting information about sexual life											
Did	19	6.67(5.0-7.3)	-0.638/0.523	7.20(4.6-8.0)	-2.354/0.019*	6.20(3.0-7.6)	-0.793/0.428	3.33(2.3-5.0)	-0.234/0.815	5.59(4.5-6.3)	-0.646/0.518
Did not	157	6.50(3.3-8.2)		6.60(3.4-8.4)		5.40(2.4-8.6)		3.33(1.5-5.2)		5.55(3.3-6.9)	
Information about sexual life											
Never (1)	5	6.83(4.5-8.2)		7.00(3.4-8.2)		5.60(2.4-8.6)		3.33(1.5-5.2)	7.992/0.046*	5.55(3.3-6.9)	3.515/0.319
Rarely (2)	28	6.67(4.3-7.7)	2.392/0.495	6.70(4.4-8.4)	0.334/0.951	5.90(3.0-8.0)	1.504/0.681	3.50(1.7-5.2)	3>4**	5.68(3.7-6.4)	
Sometimes (3)	73	6.50(3.3-7.8)		6.80(4.6-8.4)		5.40(2.4-7.2)		3.17(2.3-5.2)		5.45(3.3-6.4)	
Often (4)	70	6.58(6.2-7.8)		6.80(5.0-7.8)		5.60(4.0-6.4)		3.50(3.2-3.5)		5.59(5.1-6.0)	
Post-Treatment Body Perception											
I like it a lot	8	6.58(6.2-7.8)		6.90(6.2-8.2)		5.50(3.4-7.2)		3.42(2.8-4.7)		5.73(4.8-6.0)	
I like it	69	6.50(3.3-7.8)	4.829/0.305	6.80(4.4-8.4)	3.304/0.508	5.40(2.4-7.6)	2.487/0.647	3.50(1.7-5.2)	3.554/0.471	5.55(3.3-6.0)	4.304/0.336
I do not notice any difference	38	6.67(5.0-8.0)		6.80(3.4-8.0)		5.80(3.0-7.2)		3.50(1.5-4.3)		5.70(4.1-6.3)	
I do not like it	39	6.17(4.7-8.2)		6.60(5.0-8.2)		5.60(3.0-8.6)		3.00(2.0-5.2)		5.27(3.7-6.9)	
I don't like it at all	22	6.83(4.5-7.7)		6.90(4.6-8.4)		5.80(3.8-7.8)		3.17(1.8-4.8)		5.68(3.9-6.4)	
The Effect of the Experienced Process on Sexual Life											
Affected	93	6.67(4.7-8.2)	0.615/0.735	6.60(3.4-8.4)	3.898/0.142	5.60(3.0-8.6)	1.932/0.381	3.30(1.5-5.0)	2.123/0.346	5.55(3.7-6.9)	0.085/0.958
Did not affect	38	6.67(4.5-7.7)		6.60(4.6-7.6)		5.80(3.6-7.2)		3.42(1.8-5.2)		5.59(3.9-6.2)	
Partially affected	45	6.50(3.3-8.0)		6.80(5.0-8.2)		5.40(2.4-8.0)		3.33(1.7-4.8)		5.55(3.3-6.3)	
The Effect of the Experienced Process on Their Relations with Their Spouse											
Affected	114	6.67(3.3-8.0)	1.496/0.135	6.80(4.4-8.4)	2.837/0.005*	5.80(2.4-8.0)	-1.753/0.080	3.33(1.5-5.0)	-0.129/0.897	5.66(3.3-6.4)	-2.335/0.020*
Did not affect	62	6.25(4.3-8.2)		6.67(3.4-8.0)		5.40(3.0-8.6)		3.25(1.8-5.2)		5.41(3.7-6.9)	

* $p < 0.05$, Z: Mann Whitney U test, X^2 : Kruskal Wallis H test, ** p value obtained as a result of Bonferroni correction: $p < 0.005$

effect of the process they went through on their relations with their spouses ($p>0.05$) (Table 6).

No statistically significant difference was found between the PFS scores of patients in terms of their cancer types, cancer stages, duration of diagnosis, metastasis presence, type of treatment, presence of chronic disease, body perception after treatment, and whether or not the process they went through had an effect on their sexual life ($p>0.05$) (Table 6).

The Correlation Between the Patients' ASES, PFS, and BCS Scores

The correlation between the ASES, PFS, and BCS scores of the patients was analyzed and the results are given in Table VII. These results indicated that there was a weak positive correlation between the BCS scores of the patients and their scores in the Behavioral ($r=0.241$), Affective ($r=0.302$) and Cognitive

($r=0.295$) subscales of PFS ($p<0.05$). As the behavioral, affective, and cognitive fatigue increased, their satisfaction with body parts or functions declined. There was a very weak positive correlation between the BCS scores of the patients and their Sensory subscale scores ($r=0.177$; $p<0.05$). As Sensory fatigue increased, satisfaction with body parts or functions decreased. A weak positive correlation was found between the BCS and PFS total scores of the patients ($r=0.359$; $p<0.05$). As the overall fatigue increased, satisfaction with body parts or functions decreased. There was no statistically significant correlation between the PFS and ASEX scores of the patients ($p>0.05$). No statistically significant correlation was found between the BCS and ASEX scores of the patients ($p>0.05$) (Table VII).

Table 7. Piper Fatigue Scale, and Body-Cathexis Scale

	Arizona Sexual Experience Scale		Body-Cathexis Scale	
	r	p	r	p
Behavioral Subscale	-0.046	0.542	0.241	0.001*
Affective Subscale	0.032	0.673	0.302	0.000*
Sensory Subscale	-0.059	0.436	0.177	0.019*
Cognitive Subscale	0.056	0.464	0.295	0.000*
Piper Fatigue Scale Total	-0.013	0.868	0.359	0.000*
Body-Cathexis Scale	-0.048	0.527		

* $p<0.05$, r: Pearson's Correlation

DISCUSSION

In this study, the relationship between body image perception, sexual life and fatigue in patients with hematological malignancy was discussed in line with the following literature.

As a result of the study, it was determined that 41.5% of the patients sometimes experienced fatigue. Many cancer patients experience fatigue due to the tumor itself and cancer treatments (14,39). In a study conducted on chronic lymphoblastic leukemia patients, fatigue symptoms were observed at a rate of 20% (40). Olsson et al. (2013) stated that the most common symptoms observed as side effects of chemotherapy in patients with hematological malignancies are fatigue and lack of energy (41). Our study results are similar.

In this study, it was determined that 39.2% of the patients expressed their body

image perception as "I like it". In other studies, although not parallel to our study, the rate of negative effects on body image is generally higher. In the study of Pehlivan et al. (2019), it was determined that alopecia caused by chemotherapy in acute leukemia patients caused a decrease in body image perception (9). In their study, Cecil et al. (2010) stated that prostate cancer and its treatment often suppress the masculinity of patients (42).

In this study, 52.8% of the patients stated that the disease/treatment process affected their sexual life and 64.8% stated that it disrupted their relations with their partners. This may be due to the side effects of chemotherapy such as fatigue, alopecia, abnormal weight loss, and sexual disorder, all of which negatively affected both themselves and their sexual behaviors with their partners. The study by Ljungman et al., (2018) with

breast cancer patients reported that the treatment caused biological/physical effects such as vaginal discomfort, vaginal dryness, and alopecia, which in turn had negative psycho-social effects such as negative body perception and feeling unattractive (46). Olsson et al., (2016) reported in their study that male patients with leukemia and lymphoma treated with chemotherapy or immunotherapy suffered from diminished sexual desire, reduced sexual ability, and fatigue (5). This may arise from the side effects of the changes, such as fatigue, hair loss, abnormal weight loss, and psychological disorders, all of which have negatively affected both the patients and their behavioral interactions with their partners.

This study revealed that 89.2% of the patients did not get information about sexual life after treatment had begun. Besides being patient-associated, this may be associated with the fact that healthcare professionals provide hematology patients with care and training focusing on other side effects such as pain, nausea-vomiting and fatigue and hesitate about sexuality. The studies have shown that nurses fail to inform patients adequately as they are inadequately educated about sexuality and feel embarrassed to talk about sexual health (44). The study by Pınar (2010) in Turkey also revealed that 48.5% of the healthcare professionals focused on the treatment administered and 39.8% lacked knowledge of sexual counselling when the barriers that appeared in discussing sexual problems with cancer patients were examined (28). The study by Gültürk et al., (2018) on the sexual attitudes of nurses revealed that those who did not attend a course on sexual health during their education had never delivered sexual health care and had more barriers in sexual health assessment (44). The study by GÜDÜL ÖZ et al., (2020) on the belief of nursing students in sexual myths, with the participation of 475 students, revealed that 56.1% of the students were embarrassed to deliver sexual health care (45). These results, in addition to being related to the patient, may be related to healthcare professionals providing care and education to hematology patients that focuses on other side effects such as pain, nausea-vomiting, and

fatigue, and hesitancy about sexuality. Studies have shown that nurses do not adequately inform patients because patients are not educated enough about sexuality and are embarrassed to talk about sexual health (40,44).

This study revealed that the ASEX mean score, the PFS total score and the BCS total score were high. Chemotherapy in female patients results in loss of sexual desire, vaginal dryness, inability to orgasm, dyspareunia, absence of estrogen and reduction in vulva tissue. On the other hand, erectile dysfunction and lack of ejaculation during orgasm develop in male patients (49,50). It is observed that such negative consequences adversely affect the sexual life of the patients. Chemotherapy may induce dysfunction of Leydig cells and thus reduce the production of sexual hormones. Karacan et al. (2020) found the average ASEX score to be high in their study on patients diagnosed with acute leukemia and lymphoma. Lower testosterone concentrations and elevated levels of luteinizing hormone and follicle-stimulating hormone were reported in patients after chemotherapy. Disorders in the endocrine system due to the treatment administered in cancer patients are an essential cause of fatigue. (46, 47). In the study conducted by Gheyasi F. et al. (2019) with AML patients, the average fatigue score was found to be high. It is stated in the literature that the deterioration of patients' body image perception due to their treatments is due to many reasons such as loss of self-esteem, life stress, communication problems, and deterioration of sexual life (52). In their study, Yi et al. (2009) found that body perception mean scores were high (52).

This study revealed no significant difference between the effect of the experienced process on sexual life and the BCS mean score, but patients who stated that the process they went through had an effect on sexual life had a higher ASES mean score. The study by Karacan (2020) reported that the process that patients with hematological malignancy went through negatively affected their sexual life (47). In their study, Acquati et al., (2017) reported that 43% of patients diagnosed with leukemia had problems in their

sexual life due to chemotherapy (53). The results of the present study are parallel.

This study revealed a weak positive correlation between the Body-Cathexis Scale and behavioral, affective, and cognitive subscales and total score of the Piper Fatigue Scale. As the overall fatigue increased, satisfaction with body parts or functions declined. This result suggests that the level of fatigue can be controlled by promoting/improving the body perception of the patients. Many factors are involved in the development of fatigue associated with cancer. These factors include toxicity due to treatment, physiological abnormalities (anemia, infection, neuromuscular disorders, metabolic abnormalities, sleep disorders) and psychological disorders such as depression (54). Fatigue can be observed in 80% of patients undergoing chemotherapy and 90% of patients undergoing radiotherapy. The fatigue perceptions of patients can affect their activities of daily living, interpersonal communication and enjoyment/satisfaction with life (47). Fatigue associated with chemotherapy may lead to loss of sexual desire, a decline in self-esteem, and problems between spouses. Studies have shown that sexual reluctance, accompanied by communication problems between spouses, can make spouses feel disliked and undesired (54). Özkan et al., (2017) reported in their study in which they used the Piper Fatigue Scale that fatigue in cancer patients who had undergone chemotherapy led to effects such as inability to maintain activities of daily living, abnormal and exhausting fatigue for affection, and decreased ability to engage in favorite activities (23). The present study supports the literature.

As a result of the research; no significant relationship was found between the total score of the Arizona Sexual Experiences Scale and the total score of the Piper Fatigue Scale. There are results in the literature that reveal the relationship. In their study, Wettergen L. et al. (2016) stated that adolescents and young adults diagnosed with cancer-related sexual problems between the ages of 25 and 39 could not find the energy to engage in sexual activities due to fatigue, and therefore were negatively affected

sexually (56). In their study by Yi et al., they stated that the fatigue experienced by patients with hematological malignancies contributed to sexual dysfunction (51).

No statistically significant relationship was found between the patients' scores on the Body Image Scale and the scores on the Arizona Sexual Experiences Scale. This finding of our study varies with the literature. Contrary to our study, studies have been found in the literature. For example; In the study by Ljungman et al. (2018), it was emphasized that hormone therapy in young women diagnosed with breast cancer causes biological/physical effects such as vaginal discomfort and vaginal dryness, as well as psychosocial effects such as negative body image and feeling unattractive. Olsson et al. (2013) reported that treatment-related body image changes in both women and men led to feelings of being sexually unattractive, decreased sexual desire, and avoiding intimacy. It is thought that the difference in the studies is due to the hesitations to express it due to the cultural differences in the regions where the study was conducted.

Limitations

Due to the COVID-19 pandemic, disruptions occurred in the hospital data collection process. Additionally, patients were hesitant to answer questions regarding their sexual life, which posed challenges in data collection.

Conclusion and recommendations

In this study, the scores of patients with hematological malignancy in the Arizona Sexual Experience Scale, Piper Fatigue Scale and Body-Cathexis Scale were above the median value. In this study; The mean score of the patients from the Arizona Sexual Experiences Scale was 20.84 ± 2.53 , the mean total score from the Piper Fatigue Scale was 5.44 ± 0.60 , and the mean score from the Body-Cathexis Scale was 103.61 ± 6.37 . The mean scores in all three scales were found to be high. A weak positive correlation was found between the Body-Cathexis Scale and the Piper Fatigue Scale total score. As general fatigue increases, body perception is negatively affected. As a result of the research; no significant relationship was found between the

total score of the Arizona Sexual Experiences Scale and the total score of the Piper Fatigue Scale. Similarly, no significant relationship was found between the total score of the Arizona Sexual Experiences Scale and the total score of the Body-Cathexis Scale. In this study, no relationship was found between sexual life and body image/fatigue. It was determined that the patients had an insufficient level of getting information about their sexual life during the disease process. The information sources of the patients who got information about sexual life contained inaccurate and inadequate information such as TV/internet instead of the professional health team.

In line with the findings of the study; It is recommended that oncology nurses should address the sexual functions of patients in the care plan, inform the patients about protecting sexual health and improving the quality of life in patient education, and raise further awareness on sexual health with in-service trainings in order to approach patients holistically. It is recommended that evidence-level guidelines be created on these issues and training programs be organized at regular intervals. Therefore, future studies on patients with hematological malignancy require invasive studies that may affect body perception, sexual life, and fatigue parameters.

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