Predictability of Quality of Life from Unmet Care Needs during Radiotherapy: A Cross-sectional Study[*]

Radyoterapi Sırasında Karşılanmayan Bakım Gereksinimlerinden Yaşam Kalitesinin Öngörülebilirliği: Kesitsel Bir Çalışma

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ABSTRACT

Purpose: The purpose of this study was to evaluate the predictive effect of unmet care needs on the quality of life in the radiotherapy process, to determine the factors affecting unmet care needs.

Methods: The study was carried out with patients who received outpatient radiotherapy. Individual Identification Form, Supportive Care Needs Scale Short Form and European Cancer Research and Treatment Organization Quality of Life Scale were used to collect research data. Data were analyzed using descriptive statistics, correlation, and regression analysis.

Results: The unmet care needs of the patients are 66.48±14.76 out of a total of 145 points. As the total score patients receive from the scale increases, their unmet care needs also increase.. EORTC QLQ-C30 scale mean scores of the patients; functional dimension is 61.70±15.41, symptom dimension is 27.97±1421, general health dimension is 53.63±15.28. It was determined that the unmet health service and sexuality needs of the patients did not have a predictive effect on the quality of life, while female gender, the unmet daily life and psychological needs were effective in the estimation of the quality of life.

Conclusion: Health professionals can obtain information about the quality of life of patients receiving radiotherapy based on the presence of unmet psychological and daily life needs.

Keywords: Radiotherapy, Cancer patient, Care needs, Quality of life, Assesment

ÖZET

Amaç: Bu araştırmanın amacı, radyoterapi uygulanan kanser hastalarının karşılanmamış bakım gereksinimlerinin yaşam kalitesine yordayıcı etkisini değerlendirmek, karşılanmayan bakım gereksinimlerini etkileyen faktörleri belirlemektir.

Method: Çalışma ayaktan radyoterapi alan hastalarla yürütüldü. Araştırma verilerinin toplanmasında Bireysel Tanımlama Formu, Destekleyici Bakım Gereksinimleri Ölçeği Kısa Formu ve Kanserin Tedavisi ve Araştırması için Avrupa Örgütü Yaşam Kalitesi Ölçeği kullanıldı. Verilerin analizinde tanımlayıcı istatistikler, korelasyon ve regresyon analizleri kullanıldı.

Bulgular: Hastaların karşılanmayan bakım gereksinimleri puanı toplam 145 puan üzerinden 66,48±14,76'dır. Hastaların ölçekten aldıkları toplam puan arttıkça karşılanmayan bakım gereksinimleri artmaktadır. Hastaların Kanserin Tedavisi ve Araştırması için Avrupa Örgütü Yaşam Kalitesi Ölçeği ortalama puanları; fonksiyonel boyut 61,70±15,41, semptom boyutu 27,97±1421, genel sağlık boyutu 53,63±15,28'dir. Hastaların karşılanmayan sağlık hizmeti ve cinsellik gereksinimlerinin yaşam kalitesine yordayıcı etkisinin olmadığı, yaşam kalitesinin tahmininde kadın cinsiyetin, karşılanmayan günlük yaşam ve psikolojik gereksinimlerin etkili olduğu belirlendi.

Sonuç: Sağlık uzmanları radyoterapi uygulanan hastaların karşılanmayan psikolojik ve günlük yaşam gereksinimlerinin varlığına göre hastaların yaşam kalitesi hakkında bilgi sahibi olabilir.

Anahtar kelimeler: Radyoterapi, Kanser hastası, Bakım gereksinimleri, Yaşam kalitesi, Değerlendirilme

Introduction

Cancer continues to increase across the World.[1] Approximately 50-60% of individuals newly diagnosed with cancer receive radiotherapy [RT] at least once during their entire treatment.[2] Acute, subacute, and late side effects of radiotherapy depend on the width of the application area, the total and daily radiation dose, the age of the patient, and comorbid conditions.[3] During the treatment process, patients may struggle with unmet needs due to physical, psychosocial, and economic factors.[4]

Unmet needs are multidimensional needs of cancer patients in the physical, psychosocial, emotional, sexual, daily life activities, economic, environmental, cultural, information, communication and spiritual areas.[5,6] The unmet needs in the cancer population may vary depending on the inpatient or outpatient treatment status of the patients, type of treatment, the type and severity of the cancer, the age of disease, the stage of the cancer, and the gender of the patient.[7,8] Studies'results indicated that unmet needs can lead to ineffective coping, emotional distress, a general dissatisfaction with care and a decreased quality of life.[4,9] Among the unmet needs previous studies, demonstrated that cancer patients have been found to have fear of recurrence of the disease, difficulty in long-term planning for the future, and they need help with stress management, worries and fears of the family members and caregivers.[6,10,11] Patients have needs with solving problems related to sexual life, financial support, information, and with access to medical care.[6,10,12] In addition, it has been determined that patients have needs with solving physiological problems such as feeling tired, pain and dry mouth, as well as needs for finding parking in the health institution and organizing housework (food, cleaning, house order).[11,12] For RT patients areas of unmet needs are found in the fields of psychological, access to health services and access to information, daily living activities.[13]

Quality of life is the patient's perception of physical, psychological and social well-being. Patients undergoing radiotherapy have increased supportive care needs with lack of energy, pain, concerns of relatives, inability to perform previous activities, physical limitation, feeling sad and depression, fear of cancer' spread due to the disease itself and the early and late side effects associated with the treatment, and failure to meet these needs can lead to a decrease in the quality of life of the patients.[4,14] The relationship between the unmet needs of patients cancer treatments, types of cancer, caregivers of cancer patients and quality of life was examined, but no information could be found on how unmet needs predicted the quality of life in radiotherapy patients in our country. This research was conducted to increase research on the subject, to produce more information to compare research findings, and to provide new suggestions. The aim of this research was to evaluate the predictive effect of unmet care needs on the quality of life during the radiotherapy process, and to determine the factors affecting unmet care needs.

Methods

Design, Setting and Sample

This crosssectional study was carried out between 20 January 2021 and 31 August 2021 in the Radiation Oncology Department in Eskişehir. Inclusion criterias in the study; being over 18 years of age, conscious, literate, who received RT 5 days a week, who completed at least 15 days of the RT process, and who volunteered to participate in the study. Radiotherapy-related side effects often begin to appear two to three weeks after the start of radiotherapy, and may gradually decrease over time and last up to two years.[10] For this reason, the criterion for the selection of the sample in the study was that the patients should have undergone RT for at least 15 days. Patients who did not receive any RT, who received chemotherapy simultaneously with RT, and who completed RT were excluded from the study (*Figure 1*). After reaching 250 patients, a power analysis was performed to evaluate the adequacy of the amount of

data. The power of the study was determined as 80.9% [approximately 81%) with 250 samples, d=0.180 effect size, and a 5% margin of error.

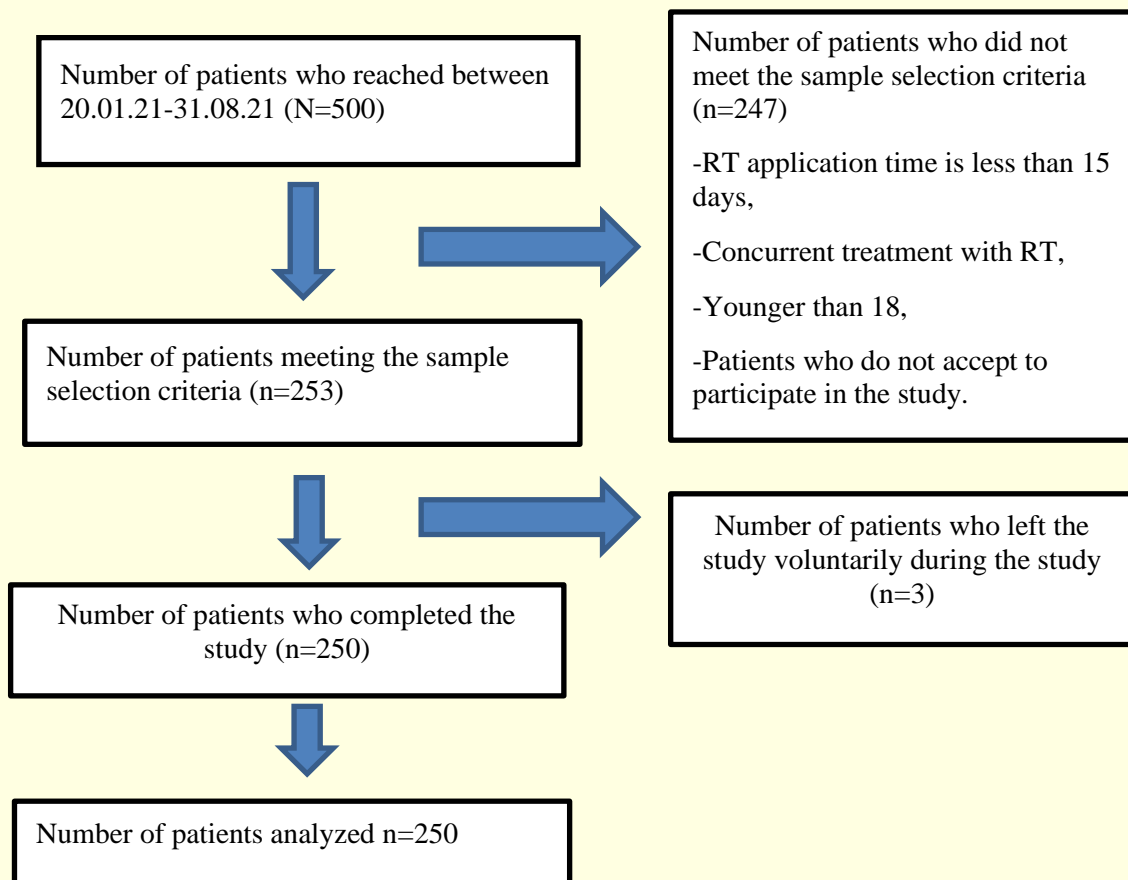| Number of patients who reached between 20.01.21-31.08.21 (N=500) | → | Number of patients who did not meet the sample selection criteria (n=247) |

Number of patients who reached between 20.01.21-31.08.21 (N=500)

↓

Number of patients meeting the sample selection criteria (n=253)

→ Number of patients who did not meet the sample selection criteria (n=247)

-RT application time is less than 15 days,

-Concurrent treatment with RT,

-Younger than 18,

-Patients who do not accept to participate in the study.

↓

Number of patients who completed the study (n=250)

→ Number of patients who left the study voluntarily during the study (n=3)

↓

Number of patients analyzed n=250

Figure 1. Flow chart

Measurement Tools and Data Collection

Individual Identification Form, the Supportive Care Needs Scale Short Form, and the European Organization for Cancer Research and Treatment Quality of Life Scale were used to collect data.

The Individual Introduction Form: On the form, there are 20 questions that cover sociodemographic (age, gender, education, economic status etc.) and disease/treatment (cancer type, teratments, chronic disease, caregiver support etc.) characteristics.

The Supportive Care Needs Scale Short Form (SCNS-SF): The scale was designed to assess the care needs of cancer patients and was translated to Turkish by Özbayır et al.[15,16] The Cronbach alpha coefficients of the scale are between 0.86-0.96.[15,16] The scale has 4 sub-dimensions: health care and information, psychology, sexuality, and daily life. The scores obtained from the subscales constitute the total score. Each item is scored between 1 and 5 points. The total score of the scale varies between 29 points and 145 points. The high score obtained from each sub-dimension of the scale indicates the excess need for supportive care in that area, but it can also be used to provide information about the presence/absence and the number of unmet needs.[15] In this study, the Cronbach alpha coefficients were determined as 0.93.

The European Organization for Cancer Research and Treatment Quality of Life Scale (EORTC QLQ-C30): The scale consists of 3 sub-dimensions: general health, functional, and symptoms. The general health sub-dimension, in which the patient evaluates his/her own quality of life, High scores in the general health and

functional dimensions reflect good quality of life, while high scores in the symptoms dimension indicate a decreased quality of life.[17] In the score calculation of the scale, the scores for each dimension are evaluated out of 100 and the patient can score between 0 and 100. In this study, the Cronbach alpha coefficients were determined as 0.99 for the general health sub-dimensions, 0.87 for the functional sub-dimension, and 0.80 for the symptom subdimension.

Written informed consent was obtained from the patients included in the study after the required information was provided about the purpose of the study. Data were collected by researchers in a quiet, calm room in about 20 minutes before the RT session using the face-to-face interview technique. The forms were filled by the patients. For patients who reported that they could not complete the forms alone, the researcher wrote the answers of patients on the forms.

Data analysis

In the study, continuous data were given as mean and standard deviation, and categorical data were given as numbers and percentages (%). The Shapiro Wilk test was used to investigate the suitability of the data for normal distribution. The summary values of the quantitative variables that did not show normal distribution were given as median (Q1-Q3) and MannWhitney U and Kruskal Wallis H tests were used to compare the groups. The Pearson Correlation analysis was used to determine the relationship subdimensions of EORTC-QLQ (functional dimension, symptoms dimension, general health dimension) and subdimensions of SCNS-SF (healthcare and information needs, daily life needs, sexuality needs, psychological needs). Multiple regression analysis was performed to investigate the effect of independent variables (gender, marital status, presence of support, healthcare and information needs, daily life needs, sexuality needs, psychological needs) on the dependent variable (general health dimension of EORTC-QLQ).

Ethical Considerations

The written permission was obtained from the relevant Non-interventional Ethics Committee with the number E-25403353-050.99-107451 and dated 16.10.2020. Patients were informed about the purpose of the study and the method of application, and informed consent was obtained.

Results

Socio-demographic-medical characteristics of the patients

The mean age of the patients was 60.56±11.95 years, 56% were male, 61.2% were primary school graduates, and 79.6% were married (Table 1). It was determined that the patients were being treated for lung cancer (22.8%), breast cancer (20.4%), and skin cancer (4.4%). It was determined that 42.8% of the patients had a chronic disease and 97.2% had caregiver support. The total score of unmet care needs of the patients is 66.48±14.76. EORTC QLQ-C30 scale mean scores of the patients; functional dimension is 61.70±15.41, symptom dimension is 27.97±1421, general health dimension is 53.63±15.28 (*Table 1*).

Table 1. Distribution of patients according to sociodemographic and medical characteristics (N=260)

Characteristics		mean±sd	min-max
Age(year)		60.56±11.95	19-86
Duration of radiotherapy (day)		18.79±3.93	15-36
Characteristics		n	%
Gender	Female	110	44.0
	Male	140	56.0
Marital status	Married	199	79.6
	Single	8	3.2
	Divorced, widowed	43	17.2
Educational Status	Only literacy	28	11.2
	Primary school	153	61.2

	Middle school	17	6.8
	High school	36	14.4
	University	16	6.4
Income status	Income equal to expenses	242	96.8
	Income less than expenses	8	3.2
Diagnosis of the disease	Breast cancer	51	20.4
	Head and Neck Cancer (Larynx, SCC, Thyroid, Synovitis)	47	18.8
	Lung cancer	57	22.8
	Urogynecological cancers (Prostate, uterus)	51	20.4
	GIS cancers (Rectum, esophagus, stomach, colon, pancreas)	23	9.2
	Skin cancers (Melanoma)	11	4.4
	Other (brain, vascular cancers)	10	4.0
Application area of radiotherapy	Head and neck area	64	25.6
	Chest area	111	44.4
	Abdominal area	19	7.6
	Urogenital area	51	20.4
	Other (rectal, lower extremity)	5	2.0
Presence of chronic illness	Yes	107	42.8
	No	143	57.2
Presence of support person	Yes	243	97.2
	No	7	2.8

SCNS-SF	mean±sd
Healthcare and Information Needs	12.70±3.11
Daily Life Needs	5.18±3.09
Sexuality Needs	17.13±7.30
Psychological Needs	31.46±5.65
SCNS-SF total	66.48±14.76
EORTC QLQ-C30	
Functional Dimension	61.70±15.41
Symptom dimension	27.97±14.21
General health dimension	53.63±15.28

Unmet care needs according to socio-demographic and medical characteristics of patients

The unmet needs of the patients were different according to their gender, marital status, income status, presence of chronic disease, cancer diagnosis, and radiotherapy application area (p<0.05)(***Table 2, 3***). Unmet health care and information, daily life, psychological and total unmet care needs of woman were statistically significantly higher than men (p<0.001). The daily life needs of the widows were higher than those of the married patients. Unmet needs of the patients were not different according to education and income status (p>0.05) (***Table 2***). It was determined that health services and information, daily life, psychological and total unmet needs were different according to the disease diagnoses (p<0.05). Patients without chronic disease had more sexual (p=0.001), psychological (p<0.001) and general unmet needs (p<0.001) compared to patients with chronic disease. Health care and information needs of patients who did not have a support person had higher needs than patients who did have a support person (p=0.038)(***Table 3***).

Table 2. Distribution of unmet care needs according to socio-demographic of patients (N=260)

Characteristics		n	Healthcare and Information Needs Median (Q1-Q3)	Daily Life Needs Median (Q1-Q3)	Sexuality Needs Median (Q1-Q3)	Psychological Needs Median (Q1-Q3)	SCNS-SF Median (Q1-Q3)
Gender	Female	110	33 (23-56)	14 (5-21)	3 (3-14)	22 (7-35)	75 (42-110)
	Male	140	29 (18-43)	11 (5-19)	3 (3-12)	11.5 (7-28)	58 (42-92)
Test value			4991.50*	3504.00*	7683.50*	3619*	3651.5*
p			**0.001**	**0.001**	0.974	**0.001**	**0.001**
Marital status	Married (1)	199	31 (18-56)	13 (5-19)	3 (3-14)	17 (7-31)	64 (42-110)
	Single (2)	8	33.5 (24-40)	11.5 (5-17)	3 (3-7)	24.5 (9-31)	71 (42-94)
	Divorced, widowed (3)	43	30 (23-51)	14 (9-21)	3 (3-11)	18 (7-35)	65 (46-107)
Test value			0.609**	6.207**	7.484**	3.974**	0.667**
p			0.737	**0.045**	**0.024***	0.137	0.717
Bonferroni			-	**3>1=0.027**	**1>3=0.008**	-	-
Income status	Income equal to expenses	242	31 (18-56)	13 (5-21)	3 (3-14)	19 (7-35)	65 (42-110)
	Income less than expenses	8	30 (24-40)	14 (9-19)	3 (3-3)	12.5 (7-27)	61.5 (46-89)
Test value			935.500*	896.500*	524.000	824.000*	850*
p			0.871	0.721	**0.015**	0.473	0.557

*Mann Whitney U testi, **Kruskal Wallis testi

Table 3. Distribution of unmet care needs according to medical characteristics of patients

Characteristics		n	Healthcare and Information Needs	Daily Life Needs	Sexuality Needs	Psychological Needs	SCNS-SF
			Median (Q1-Q3)	Median (Q1-Q3)	Median (Q1-Q3)	Median (Q1-Q3)	Median (Q1-Q3)
Diagnosis of the disease	Breast cancer (1)	51	33 (23-49)	14 (5-19)	5 (3-14)	23 (9-31)	76 (47-110)
	Head and neck Cancer (2)	47	30 (22-43)	12 (5-16)	3 (3-12)	16 (7-29)	63 (42-92)
	Lung cancer (3)	57	29 (18-40)	11 (5-19)	3 (3-12)	14 (7-28)	58 (46-88)
	Urogynecological cancers (4)	51	31 (23-47)	13 (7-21)	3 (3-12)	11 (7-35)	62 (44-107)
	GIS cancers (5)	23	31 (24-56)	13 (5-19)	3 (3-11)	16 (9-28)	68 (45-104)
	Skin cancers (6)	11	28 (24-42)	11 (5-18)	3 (3-12)	9 (7-23)	55 (42-92)
	Other (7)	10	33.5 (26-51)	13 (10-19)	3 (3-12)	21 (7-27)	72.5 (47-104)
Test value			15.450**	23.165**	5.323**	38.837**	35.356**
p			**0.001**	**0.001**	0.378	**0.001**	**0.001**
Bonferroni			1>3=0.004	1>2=0.001 1>3=>0.001 1>6=0.038	-	1>2=>0.001 1>3=>0.001 1>4=>0.001 1>5=0.009 1>6=>0.001	1>2=>0.001 1>3=>0.001 1>4=0.012 1>6=0.002
Application area of RT	Head and neck area (1)	64	30 (22-51)	12 (5-19)	3 (3-12)	14 (7-29)	62 (42-104)
	Chest area (2)	111	31 (18-49)	13 (5-19)	3 (3-14)	20 (7-31)	70 (46-110)
	Abdominal area (3)	19	29 (24-56)	13 (5-19)	3 (3-11)	16 (9-28)	63 (45-104)
	Urogenital area (4)	51	31 (23-47)	13 (7-21)	3 (3-12)	11 (7-35)	62 (44-107)
	Other (5)	5	34 (26-42)	14 (7-18)	5 (3-9)	21 (7-23)	74 (46-92)
Test value			0.581**	7.154**	3.993**	9.794**	5.449**
p			0.965	0.128	0.407	**0.044**	0.244
Presence of Chronic Disease^	Yes	107	30 (23-51)	13 (5-19)	3 (3-12)	14 (7-29)	61 (42-89)
	No	143	31 (18-56)	13 (5-21)	4 (3-14)	21 (7-35)	69 (42-110)
Test value			6731.500*	6756.500*	6017.500*	5334.000*	5665.000*
p			0.104	0.112	**0.001**	**0.001**	**0.001**
Treatment of Chronic Disease	Yes	107	30 (23-51)	13 (5-19)	3 (3-12)	14 (7-29)	61 (42-89)
	No	143	31 (18-56)	13 (5-21)	4 (3-14)	21 (7-35)	69 (42-110)
Test value			6731.500*	6756.500*	6017.500*	5334.000*	5665.000*
p			0.104	0.112	**0.001**	**0.001**	**0.001**
Supporter	Yes	243	31 (18-56)	13 (5-21)	3 (3-14)	18 (7-35)	64 (42-110)
	No	7	40 (24-49)	15 (7-17)	3 (3-7)	25 (11-31)	84 (55-95)
Test value			459.500*	612.500*	689.500*	500.500*	513.500*
p			**0.038**	0.205	0.348	0.063	0.074
Unmet needs	Yes	64	32 (23-49)	12 (5-21)	4 (3-12)	16.5 (7.35)	67 (42-107)
	No	186	30 (18-56)	13 (5-19)	3 (3-14)	19 (7.31)	64 (43-110)
Test value			4882.500*	5636.500*	5548.000*	5893.500*	5596.000*
p			**0.032**	0.525	0.373	0.906	0.475

*Mann Whitney U testi, **Kruskal Wallis testi, ^Diabetes, heart failure, hypertension, chronic kidney disease, rheumatoid arthritis

The relationship between patients' unmet care needs and quality of life

Patients' with increased health care and information needs, had their functional and general health status deteriorated (r=-0.386, p<0.05); as their daily life requirements increased, their functional (r=-0.648, p<0.05) and general health status deteriorated (r=-0.568, p<0.05) and symptom increased (r=-0.520, p<0.05). It was determined that there was a negative and low-level relationship between sexual needs and general health status (r=-0.129, p<0.05). As psychological needs decreased, functional (r=-0.400, p<0.05) and general health status improved (r=-0.505, p<0.05) and symptoms decreased (r=0.311, p<0.05). It was determined that the functional (r=-0.488, p<0.05) and general health status improved (r=-0.545, p<0.05), and the symptoms decreased as the SCNS-SF general score decreased (r=0.416, p<0.05) (*Table 4*).

Table 4. The relationship between unmet care needs and quality of life

Scale and Dimensions		Functional Dimension	Symptoms Dimension	General Health Dimension
Healthcare and Information needs	r	-0.392	0.376	-0.386
	p	**0.001**	**0.001**	**0.001**
Daily life needs	r	-0.648	0.520	-0.568
	p	**0.001**	**0.001**	**0.001**
Sexuality needs	r	-0.014	0.040	-0.129
	p	0.820	0.533	**0.042**
Psychological Needs	r	-0.400	0.311	-0.505
	p	**0.001**	**0.001**	**0.001**
SCNS-SF Total	r	-0.488	0.416	-0.545
	p	**0.001**	**0.001**	**0.001**

The predictive effect of patients' unmet care needs on quality of life

According to the model established in this research, female gender, being widowed, lack of social support, health care and information, daily life, sexuality and psychological needs in model 5 explained 41% of the quality of life (R^2=0.409). It was found that being a male (t=2.677,p=0.008), having unmet needs in daily life (t=-7.208, <0.001) and psychological needs (t=-4.999, <0.001) were statistically significantly to predicted quality of life. It was determined that a 1-unit increase in daily life requirements decreased the quality of life by 0.434 units (β=-0.434), while a 1-unit increase in psychological needs decreased the quality of life by 0.336 units (β=-0.336)(Table 5). The unmet need for health services and information, and the sexuality needs were not statistically significant in predicting the quality of life (p=0.273 and p=0.315, respectively) 'of the patients in this cohort' (*Table 5*).

Table 5. Findings on the predictive effect of unmet care needs on quality of life*

Model	Independent variables	Unstandardized coefficients		Standardized coefficients Beta (β)	Adjusted R²	t	p	F	p (model)
		Beta(β)	Std. Error						
Model 1	Constant	51.426	1.514			33.971	<0.001		
	Female	6,232	1.888	-.203		-3.301	0.001		
	Widow	-5,791	2.489	-.143	0.077	-2.326	0.021	7.926	<0.001
	Without social support	-10.249	5.686	-.111		-1.803	0.073		
Model 2	Constant	82.168	5.747			14.298	<0.001		
	Female	2.900	1.884	-.094		1.539	0.125		
	Widow	-6.138	2.353	-.152		-2.609	0.010		
	Without social support	-5.588	5.439	-0.060	0.176	-1.027	0.305	14.285	<0.001
	Healthcare and information needs	-.920	.167	-.341		-5.523	<0.001		
Model 3	Constant	101.930	5.628			18.110	<0.001		
	Female	-2.145	1.778	.070		-1.207	0.229		
	Widow	-3.680	2.106	-.091		-1.747	0.082		
	Without social support	-7.405	4.825	-.080	0.353	-1.535	0.126	28.150	<0.001
	Healthcare and information needs	-.470	.157	-.174		-2.987	0.003		
	Daily Life Needs	-2.478	.300	-.504		-8.246	<0.001		
Model 4	Constant	101.748	5.652			18.002	<0.001		
	Female	-2.082	1.786	.068		-1.166	0.245		
	Widow	-3.846	2.142	-.095		-1.796	0.074		
	Without social support	-7.640	4.860	-.083	0.351	-1.572	0.117	23.416	<0.001
	Healthcare and information needs	-.448	.165	-.166		-2.707	0.007		
	Daily Life Needs	-2.469	.302	-.502		-8.184	<0.001		
	Sexuality needs	-.123	.274	-.025		-0.451	0.652		
Model 5	Constant	100.538	5397			18.627	<0.001		
	Female	-4.785	1.788	.156		-2.677	0.008		
	Widow	-3.589	2.044	-.089		-1.756	0.080		
	Without social support	-6.454	4.643	-.070		-1.390	0.166		
	Healthcare and information needs	-.183	.166	-.068	0.409	-1.099	0.273	25.613	<0.001
	Daily life needs	-2.131	.296	-.434		-7.208	<0.001		
	Sexuality needs	0.275	.273	.056		1.006	0.315		
	Psychological needs	-.703	.141	-.336		-4.999	<0.001		

*Multiple Regression Analysis

Discussion

In this study, the predictive effect of unmet care needs on the quality of life of patients who received radiotherapy for at least 15 days was investigated. It was observed that unmet care needs (healthcare and information needs, daily life needs, sexuality needs, psychological needs], female gender, widow, and without social support in model 5 explained 41% of the quality of life. According to the model established in this research, it was found that being a female gender, having unmet needs in daily life, and psychological needs were statistically significantly to predicted quality of life. In studies conducted in different cancer populations, it has been found that an increase in daily life needs negatively affects the level of functional

status and general health level, leads to an increase in symptoms, and is a determinant of anxiety and depression.[18-24] Cochrane et al. [2020] emphasized that unmet physical and psychological needs may have the most impact on quality of life and reflect the high symptom burden and psychological distress.[25] Rha et al. (2020) reported that the symptom burden increases the care needs, on the other hand, the increase in the unmet needs causes the symptom burden and negatively affects the quality of life, and the needs of daily life must be evaluated.[26] For this, it is recommended that nurses make a comprehensive evaluation to understand the relationship between symptoms, daily life needs, and the quality of life of patients, and that supportive care needs must be addressed to maintain or improve quality of life.

Our results were similar to other studies involving cancer patients which found that as psychological needs and symptoms increase the quality of life of patients decreases.[25-28] Psychological problems cause patients to have a negative view of the future, a decrease in their expectations, loss of energy, decrease in treatment compliance, and an increase in symptoms.[12,29] For this reason, nurses should plan nursing interventions with a holistic approach to patients undergoing RT, including psychosocial aspects.

It was determined that the sexuality needs of the patients did not have a statistically significant predictive effect on the quality of life. On the other hand, a weak correlation was found between sexual needs and general health level. In our study, as the sexual needs of radiotherapy patients increased, the general health level was negatively affected. Sexual health is an important determinant of psychosocial well-being.[30] Failure to meet sexual needs causes the sexual life of individuals and their spouses to be adversely affected and a decrease in their quality of life.[31] This information was reported by Smith et al. (2019), stated that adults with sexual problems have a decreased level of enjoyment from life.[32] In addition to this information, it has been emphasized in a study, that sexuality life has a negative effect on the quality of life, but the patients stated their sexual needs less, which may be due to the barriers to discussing sexuality rather than the lesser needs.[33] In our study, it was thought that the reason why sexual needs had a weak effect on the quality of life was the high mean age of the sample (60.56±11.95 years) and the decrease in sexual needs with increasing age (r=-0.451, p<0.001). In addition, religious and cultural factors may have also affected the self-reporting of sexual needs among this cohort of patients.

It was found that the increase in the patients' need for health services and information did not predict the quality of life statistically. On the other hand as the needs for health services and information increased, the symptom burden increased and the general health and functional quality of life decreased [r<0.400]. Along with the disease and the ongoing treatment process, patients experience new symptoms as well as existing symptoms, and they also need more information, support, and care to cope with these issues.[34] There is evidence in the literature that adequate information support is determinant in the quality of life and that patients' information needs should be met to help cope with the disease and treatment related side effects.[35-37] It made us think that the reason why our study result differed from other research resultsmight be due to the characteristics of the sample.[35,36] Because in both studies, the majority of the sample was under the age of 50, while the mean age of the patients in our study was 60 years.[35,36] In addition, it is seen that patients received different cancer treatments in both studies, and in the study of Tabriz et al., the majority of them received more than one cancer treatment in combination at the same time.[35] In our study, only radiotherapy was applied to the patients. Although it is stated in the literature that younger patients need more information, it is emphasized that the information needs of patients vary according to treatment.[9,11,35]

In our study, women's had higher unmet needs with regards to health services and information, daily life, psychological needs and total unmet needs compared to men. These findings may be explained by the fact that men have been found to be more reluctant than women to express their needs and share their feelings.[38] Further, women, worldwide, carry out many roles in life ranging from mother, spouse, caregiver,

professional and housekeeper. Therefore, it seems understandable that by trying to full-fill these responsibilities and cope with cancer treatment women's may be more likely to report increased needs than man.

Limitations

The study was limited to only outpatient RT patients who have different cancer diagnosis, and patients whose RT ended and inpatient RT were excluded from the sample. Therefore, the results of the study cannot be generalized outside the sample. This scale is used to assess the unmet care needs which are daily life, psychological, sexuality, health services and information but does not provide information about spirituality, dignity, self-actualization and safety needs in the hierarchy of needs. For this reason, these subjects should be considered when conducting future research. Another limitation of the study is that the research data was collected during the covid-19 pandemic period. Patients stated that they wanted to participate in the research, but wanted to minimize the contact rate due to fear of the Covid 19 outbreak.

Conclusion

In addition to the increase in the number of newly diagnosed cancer patients every day, more than half of cancer patients receive radiotherapy at least once during the treatment. According to the results of the study, nurses can obtain information about the quality of life of patients receiving radiotherapy based on the presence of unmet psychological and daily life needs. Nurses' comprehensive assessment of the care needs of all patients during the treatment process and the application of interventions to eliminate unmet care needs will increase the patient's comfort and quality of life. Assessment of symptoms, physical and psychological needs, as well as less-assessed needs such as information needs, sexuality, spirituality, communication, dignity, self-actualization, and security will be beneficial for improving quality of life.

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Ethical Approval

The written permission was obtained from Eskişehir Osmangazi University Non-interventional Ethics Committee with the number E-25403353-050.99-107451 and dated 16.10.2020.

Author Contributions

Hazbiye Salaşi: Design, data collection, data analysis, article writing.

Ayşe Ozkaraman: Design, data analysis, article writing, critisizm.

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