



CARE NEEDS AND SATISFACTION WITH NURSING CARE QUALITY OF CANCER PATIENTS

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Abstract – Objective: *This study aims to determine the relationships between care needs and satisfaction with nursing care quality of chemotherapy-treated cancer patients.*

Patients and Methods: *This cross-sectional study was conducted between November and December 2021 in an Outpatient Chemotherapy Unit in Istanbul. The interview form consists of socio-demographic and treatment-related questions, cancer needs of patients, the satisfaction with the quality of nursing care.*

Results: *Most of the participants were 55 years of age and older (61%), women (57.8%), had comorbid diseases (52.4%), and 48% were diagnosed with stage II cancer (48%). The care needs to be reported frequently by patients were mostly psychological and interpersonal communication. It was determined that the most important variables that increased the health care needs were perception by patients of their health status, age, stage of cancer, and the level of satisfaction they perceive together with the quality of nursing care.*

Conclusions: *This study determined that patient care should be planned based on the factors affecting patient care needs and that care needs could decrease with increasing satisfaction with nursing care.*

KEYWORDS: *Nursing Care, Quality of care, Patient satisfaction, Cancer needs, Cross-sectional studies.*

INTRODUCTION

Cancer is an important public health problem due to the world's high mortality and morbidity rates¹. High-quality cancer care for cancer patients includes not only anti-cancer treatment but also supportive care for patients^{2,3}. Especially during their illness and treatment, cancer patients need nursing care to manage treatment-related side effects and symptoms^{4,5}.

Needs assessment considers a comprehensive assessment of the care needs of the individuals (for instance, physical, psychological, social, spiritual, financial, information, and health care needs) and provides clues on the help-seeking behavior of the individuals and the magnitude of their needs⁵. An accurate and effective needs assessment can help prioritize care needs, allocate resources to areas and individuals where they are most needed, develop cost-effective patient care



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strategies, ultimately improve quality of life⁵. To provide holistic care one of the most significant indicators of high-quality care is patient satisfaction⁶⁻⁸. Patient satisfaction is an important factor in the overall assessment of the quality of care⁹. Patient satisfaction can be defined as the extent to which the health care experiences of patients match the level and quality of care they expect⁷. Patient satisfaction surveys can help identify patient groups that require more attention and even who deserve targeted interventions and can also highlight areas of the care process that have room for improvement in the oncology setting⁸.

Although cancer needs¹⁰ and patient satisfaction with nursing care^{8,9,11,12} of cancer survivors have been examined in the literature^{10,13}, cancer needs and patient satisfaction is still unclear in the current literature. Additionally, it is important that identify which cancer needs have the greatest implications for patient satisfaction with nursing care quality in the active chemotherapy treatment process. This study aims to determine the care needs and satisfaction with nursing care quality of cancer patients. Therefore, this cross-sectional study sought to resolve two research questions:

What are the factors affecting the care needs of cancer patients receiving chemotherapy?

What are the factors affecting the satisfaction level of cancer patients receiving chemotherapy from the quality of nursing care?

PATIENTS AND METHODS

Study Participants and Setting

This study was a cross-sectional study conducted at the outpatient chemotherapy unit at Istanbul University Cerrahpasa Hospital between November 2021-December 2021. The eligible patients for the study were identified by the chemotherapy nurse of the unit and informed consent of the patients for this study was taken by this nurse who is a researcher in the study. An online questionnaire was sent to patients who accepted to participate via WhatsApp for data collection. The sample of the study consisted of 410 patients by convenience sampling method who applied to the Outpatient Chemotherapy Unit in this process and agreed to participate in the study. Participant eligibility criteria are shown in Figure 1.

Measurements

Online questionnaire forms contained three parts. The first part of the questionnaire includes descriptive characteristics of patients such as gender, age, marital status, employment status, income level, health status, treatment-related characteristics such as the type and stage of cancer, and the treatment regimen of the patient. The second

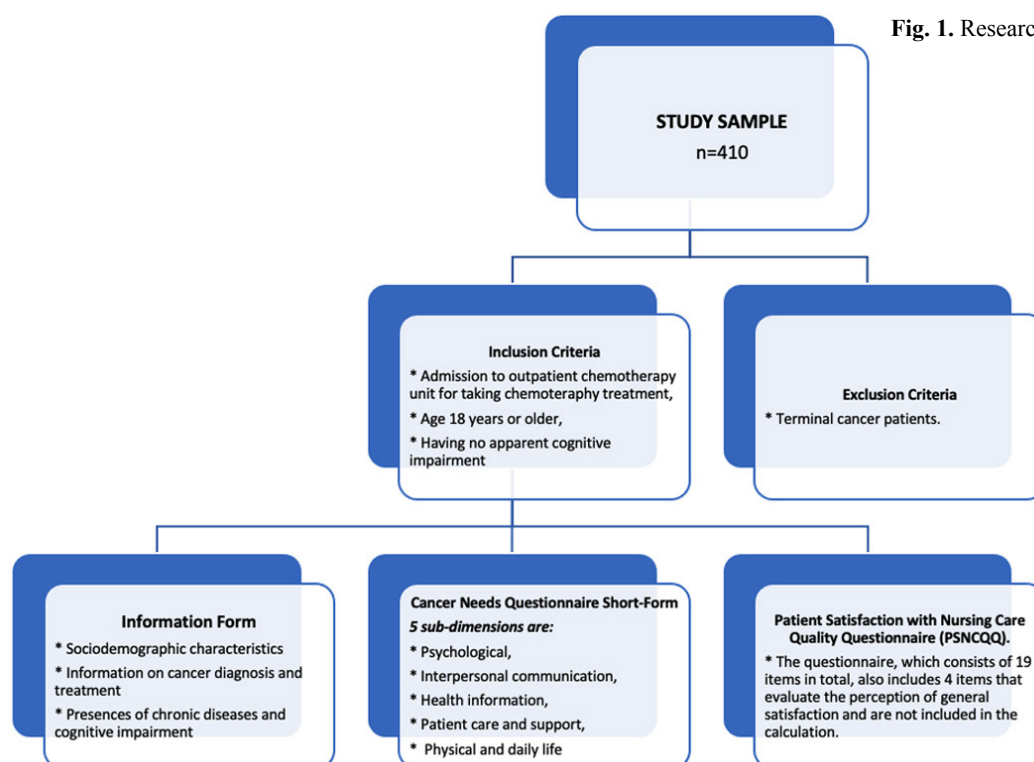


Fig. 1. Research design.

part of questionnaire assessed of the questionnaire assessed the patients' cancer needs with the 'Cancer Needs Questionnaire Short-Form'. This scale was developed by Cossich et al¹⁴ for use in ambulatory chemotherapy units. The scale consists of 32 questions with 5 sub-dimensions: psychological, interpersonal communication, health information, patient care and support, physical and daily life. Cronbach's alpha coefficient for the sub-dimensions of the original scale ranged from 0.77 to 0.94. The 5-item Likert-type questions of the scale are marked by the participants as "no need for help (1)", "need for help has been met (2)", "low need for help (3)", "moderate need for help (4)" and "high need for help (5)". A high score indicates that the patient's needs are highly intensive. Turkish validity and reliability study of the scale were performed by Dolu et al¹⁵ in 2021. In that study, the Cronbach alpha coefficient for the entire Cancer Needs Questionnaire short-form was calculated as 0.87, Spearman-Brown correlation value as 0.787, and Guttman split-half value as 0.779¹⁵.

The third part of the questionnaire assessed the satisfaction of patients with nursing care with the Patient Satisfaction with Nursing Care Quality Questionnaire (PSNCQQ). It was developed in 2005 by Laschinger et al¹⁶. The PSNCQQ which consists of 19 items in total, also includes 4 items that evaluate the perception of general satisfaction and are not included in the calculation. 5-Point Likert type scale is scored between "(5) excellent" and (1) poor". The Cronbach α reliability factor in the original study of the scale was good (0.97)¹⁷.

Ethical Considerations

This study was approved by the University of Health Sciences Scientific Research Ethics Committee (Document Date and Number: 03.11.2021/75062) The consent of the patients who agreed to be included in the study was obtained through the informed consent form and the Declaration of Helsinki principles were strictly followed to protect participants' right.

Statistical Analysis

The data were summarized by means, standard deviations, medians, frequencies, and percentages using Statistical Package for the Social Sciences (SPSS) version 25.0 (SPSS Corp., Armonk, NY, USA). The Skewness and Kurtosis values were used to assess the normal distribution of data. The independent samples *t*-test and analysis

of variance (ANOVA) test were used to examine the relationships between the sociodemographic characteristics, their satisfaction with nursing care, and cancer needs. Pearson's correlation test was used to examine the relationship between continuous variables. Multiple stepwise linear regression analysis was performed to assess factors affecting cancer needs and satisfaction of patients with nursing care quality. Statistical significance was evaluated with two-tailed test and $p < 0.05$.

RESULTS

The socio-demographic characteristics of the participants are presented in Table 1. 61.7% of the patients who participated in the study were 55 years and older, 57.8% were women, 89.3% were married, 43.9% were primary school graduates, 77.1% were not working in any job, and 60.7% indicated having high-income level. The distribution of characteristics related to illness of the participants is shown in Table 2. 26.3% of patients that participated in the study had breast cancer, 48% were at stage II, 52.4% had a comorbid illness, and more than half were receiving cancer treatment for over a year.

Care Needs and Affecting Factors

The total mean score of the cancer care needs scale was 82.13 ± 25.24 (Min=33-Max=156). The highest care needs a score of the patients were reported in the psychological domain (Mean=2.84+1.05) and interpersonal communication domain (Mean=2.79+1.08) (Figure 2). As a

TABLE 1. Treatment with chemotherapy and/or re-surgical operation, the outcome, and the survival.

Variables	Subgroups	n	%
<i>Age, years</i>	≤ 34	29	7.1
	35-44	44	10.7
	45-54	84	20.5
	55-64	130	31.7
	≥ 65	123	30.0
<i>Gender</i>	Female	237	57.8
	Male	173	42.2
<i>Marital status</i>	Single	44	10.7
	Married	366	89.3
<i>Level of education</i>	Illiterate	44	10.7
	Primary school	180	43.9
	High school	130	31.7
	University or higher	56	13.7
<i>Working status</i>	Yes	94	22.9
	No	316	77.1
<i>Level of income</i>	Low or medium	161	39.3
	High	249	60.7



TABLE 2. Treatment related characteristics of patients.

Variables	Subgroups	n	%
Health status of patients	Bad	73	17.8
	Medium	163	39.8
	Good	174	42.4
Comorbidity	Yes	215	52.4
	No	195	47.6
Stage of disease	Stage II	131	32.0
	Stage III	197	48.0
	Stage IV	82	20.0
Cancer diagnosis	Breast cancer	108	26.3
	Lung cancer	78	19.02
	Genitourinary system cancers	88	21.45
	Colorectal cancer	69	16.82
	Gastrointestinal system cancers	35	8.53
	Head and neck cancers	5	1.21
	Other	27	6.58
Duration of cancer treatment	< 1 year	205	50.0
	1-10 years	205	50.0

result of the assessment, it was determined that patients aged 65 and over compared to patients under 65 years of age ($F= 18,889; p < 0.001$), illiterate patients compared to patients with primary school or higher education level ($F=22,446; p < 0.001$), those who were not employed compared to those who were employed ($F= 3.250; p < 0.001$), those who perceive their income level as low or moderate compared to patients who perceive their income level as high ($t=12.601; p < 0.001$), and those who perceive their health status as poor compared to patients who perceive their health status as good or moderate ($F= 491.133; p < 0.001$), patients without comorbidity ($F=7.669; p < 0.001$), Stage 4 (metastatic) patients ($F= 117.514; p < 0.001$) compared to Stage 2 and Stage 3 pa-

tients had higher cancer care needs (Table 3). In addition, there was a medium correlation between scores participants received on the CNQ scale and cancer stage ($r = 0.605, p < 0.01$) and strong correlation between scores participants received on the CNQ scale perceived health status ($r = -0.848, p < 0.01$), a moderate correlation with satisfaction with nursing care ($r = -0.455, p < 0.01$) and age ($r = 0.356, p < 0.01$), and a weak but significant correlation was found with perceived income status ($r = -0.265, p < 0.01$) (Table 4).

Results of multiple stepwise regression analysis of predictors of cancer care needs are presented at Table 5. The analysis revealed four models. In the first model, those with positive perceived health status ($B = -0.76, SE = 0.02, \exp [B] = -0.85, p < 0.001$) were found to have a lower cancer care needs and it was determined that this variable constituted 72% of the total explained variance. In the second model, it was observed that the age variable ($B = 0.01, SE = 0.00, \exp [B] = 0.16, p < 0.001$) caused 0.02% change in the total variance. In the third model, PSNCQQ variable ($B = -0.18, SE = 0.04, \exp [B] = -0.12, p < 0.001$) was found to cause .01% change in the total variance. In the fourth model, it was observed that the cancer stage variable ($B = 0.14, SE = 0.04, \exp [B] = 0.12, p < 0.001$) changed the total variance at a rate of 01%. In the fourth model, it was determined that on the one hand, those with positive perceived health status ($B = -0.63, SE = 0.03, \exp [B] = 0.70, p < 0.001$) and those with high PSNC-QQ scores ($B = -0.17, SE = 0.04, \exp [B] = 0.12, p < 0.001$) had lower cancer care needs and on the other, as age ($B = 0.01, SE = 0.00, \exp [B] = 0.11, p < 0.001$) and cancer stage increase ($B = 0.14, SE = 0.04, \exp [B] = 0.12, p < 0.001$) patients had higher cancer care needs and these variables accounted for 76% of the total explained variance.

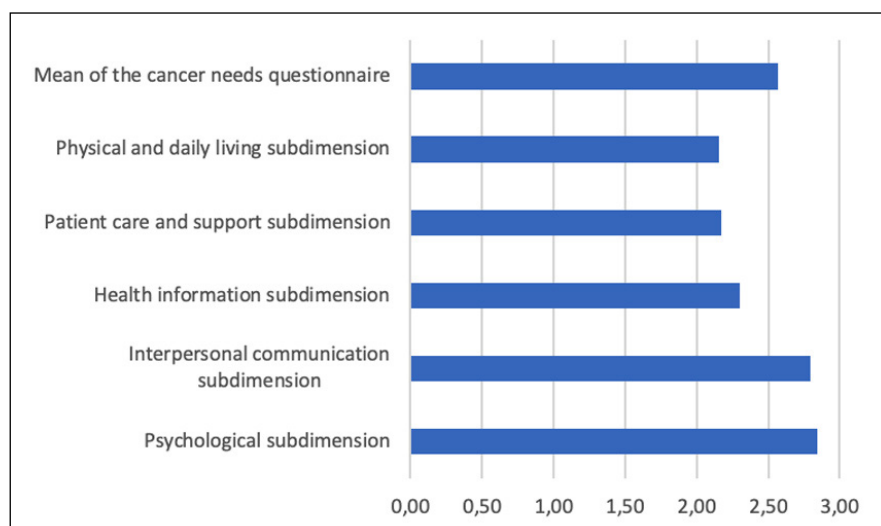


Fig. 2. Mean of the cancer needs questionnaire and subdimensions.

TABLE 3. The relationship between participants' socio-demographic, cancer needs, and patient satisfaction with nursing care quality.

Variables	CNQ						PSNCQQ				
	Psychological	Health information	Physical and daily living	Patient care and support	Interpersonal communication	Total CNQ	1	2	3	4	Total PSNCQQ
Age, years											
(a) ≤ 34	2.28±1.06	2.31±1.08	2.08±0.57	2.02±0.47	2.13±0.50	2.20±0.76	4.62±0.49	4.55±0.51	4.52±0.51	3.90±0.94	4.42±0.43
(b) 35-44	2.23±0.87	2.18±0.90	1.91±0.59	1.86±0.55	2.02±0.54	2.10±0.68	4.48±0.63	4.50±0.63	4.48±0.66	3.50±1.09	4.39±0.57
(c) 45-54	2.59±1.00	2.57±1.00	2.06±0.62	2.14±0.61	2.23±0.62	2.40±0.75	4.40±0.60	4.44±0.70	4.38±0.66	3.23±1.15	4.33±0.48
(d) 55-64	2.79±0.99	2.72±1.08	2.10±0.52	2.12±0.51	2.20±0.51	2.50±0.74	4.45±0.60	4.45±0.61	4.45±0.62	3.12±1.26	4.29±0.50
(e) ≥ 65	3.43±0.92	3.36±0.94	2.40±0.64	2.40±0.63	2.59±0.64	3.00±0.71	4.28±0.67	4.24±0.73	4.24±0.79	2.98±1.33	4.12±0.57
F/ p	19.664/<0.001	12.010/<0.001	7.981/<0.001	8.974/<0.001	16.880/<0.001	18.889/<0.001	2.565/0.038	2.820/0.025	2.198/0.068	4.174/0.003	4.070/0.003
LSD	a < d, e	a, b, c, d < e b < c, d, e c, d < e	a < e	a < e b < d, e c, d < e	a < d, e b < c, d, e c, d < e	a < d, e b < c, d, e c, d < e	a, b, d > e b < c, d, e c, d < e	a, b, c, d > e	a, b, d > e	a > c, d, e	a, b, c, d > e b > d, e
Gender											
Female	2.79±1.03	2.27±0.60	2.13±0.63	2.15±0.59	2.74±1.07	2.52±2.52	4.45±0.63	4.43±0.67	4.44±0.71	3.34±1.24	4.29±0.54
Male	2.92±1.07	2.34±0.62	2.20±0.58	2.21±0.59	2.88±1.09	2.63±0.80	4.35±0.62	4.35±0.66	4.29±0.65	2.99±1.23	4.24±0.51
t/ p	-1.251/0.212	-1.088/0.277	-1.300/0.194	-1.088/0.277	-1.298/0.197	-1.341/0.181	1.615/0.107	1.316/0.189	2.109/0.036	2.819/0.005	1.016/0.310
Education											
(a) Illiterate	3.75±0.64	2.80±0.74	2.48±0.83	2.56±0.75	3.64±0.70	3.25±0.61	4.16±0.75	4.16±0.78	4.09±0.91	3.09±1.36	4.03±0.65
(b) Primary school	2.98±1.02	2.37±0.59	2.19±0.59	2.24±0.60	2.95±1.05	2.67±0.77	4.34±0.61	4.33±0.68	4.34±0.67	3.05±1.28	4.21±0.53
(c) High school	2.57±0.98	2.15±0.48	2.07±0.50	2.04±0.45	2.50±1.03	2.35±0.70	4.48±0.60	4.47±0.62	4.45±0.65	3.42±1.23	4.34±0.49
(d) University or higher	2.35±1.03	2.03±0.55	2.02±0.61	1.97±0.55	2.33±1.06	2.20±0.76	4.61±0.53	4.64±0.52	4.57±0.53	3.21±1.00	4.46±0.40
F/ p	21.796/<0.001	19.202/<0.001	6.153/<0.001	12.390/<0.001	19.032/<0.001	22.446/<0.001	5.714/0.001	5.742/0.001	4.808/0.003	2.243/0.083	7.470/<0.001
LSD	a > b, c, d b > c, d	a > b, c, d b > c, d	a > b, c b > c	a > b, c, d b > c, d	a > b, c, d b > c, d	a > b, c, d b > c, d	a, b < c, d	a < c, d b < d	a < b, c, d b < d	a, b < c, d	a < b, c, d b < c, d
Working status											
Yes	2.51±1.01	2.17±0.56	2.07±0.52	2.07±0.50	2.50±1.05	2.34±0.74	4.41±0.59	4.47±0.63	4.41±0.63	3.10±1.17	4.33±0.50
No	2.94±1.04	2.34±0.62	2.19±0.63	2.20±0.61	2.89±1.08	2.63±0.79	4.40±0.63	4.38±0.68	4.37±0.70	3.22±1.26	4.25±0.54
t/ p	-3.518/<0.001	-2.383/0.018	-1.657/0.098	-1.959/0.051	-3.103/0.002	-3.250/0.001	0.177/0.159	1.167/0.244	0.593/0.048	-0.882/0.382	1.322/0.087

Continued

TABLE 3 (CONTINUED). The relationship between participants' socio-demographic, cancer needs, and patient satisfaction with nursing care quality.

Variables	CNQ						PSNCQQ				
	Psychological	Health information	Physical and daily living	Patient care and support	Interpersonal communication	Total CNQ	1	2	3	4	Total PSNCQQ
Perceived income level											
Low or medium	3.19±0.99	2.50±0.65	2.27±0.63	2.30±0.63	2.57±1.07	2.83±0.75	4.26±0.66	4.26±0.74	4.16±0.78	2.99±1.27	4.14±0.59
High	2.62±1.03	2.17±0.55	2.09±0.58	2.09±0.55	2.17±0.55	2.39±0.77	4.50±0.58	4.49±0.60	4.52±0.59	3.33±1.21	4.34±0.47
t/ p	12.794/ <0.001	8.188/ <0.001	4.310/ 0.004	4.966/ <0.001	12.046/ <0.001	12.6016/ <0.001	-3.825/ <0.001	-3.377/ <0.001	-5.309/ <0.001	-2.739/ 0.006	-3.726/ <0.001
Perceived health status											
(a) Low	4.20±0.45	3.02±0.65	2.65±0.80	2.71±0.75	4.14±0.41	3.60±0.41	4.07±0.71	3.95±0.86	3.95±0.86	2.36±1.51	3.90±0.60
(b) Medium	3.27±0.54	2.44±0.42	2.29±0.49	2.31±0.46	3.26±0.56	2.87±0.40	4.33±0.60	4.31±0.63	4.31±0.63	3.00±1.18	4.17±0.49
(c) High	1.87±0.60	1.87±0.34	1.83±0.40	1.82±0.36	1.80±0.66	1.85±0.44	4.62±0.52	4.63±0.53	4.63±0.53	3.73±0.88	4.51±0.40
F/ p	542.466/ <0.001	184.394/ <0.001	542.466/ <0.001	70.800/ <0.001	92.514/ <0.001	491.133/ <0.001	25.044/ <0.001	28.877/ <0.001	30.728/ <0.001	41.606/ <0.001	46.511/ <0.001
LSD	a > b, c b > c	a > b, c b > c	a > b, c b > c	a > b, c b > c	a > b, c b > c	a > b, c b > c	a < b, c b < c	a < b, c b < c	a < b, c b < c	a < b, c b < c	a < b, c b < c
Comorbidity											
Yes	3.21±0.97	2.46±0.63	2.46±0.63	2.32±0.63	3.14±1.01	2.83±0.75	4.38±0.65	4.33±0.68	4.33±0.73	3.01±1.30	4.20±0.55
No	2.44±0.99	2.13±0.54	2.13±0.54	2.02±0.50	2.41±1.03	2.27±0.73	4.45±0.59	4.67±0.64	4.44±0.63	3.39±1.15	4.34±0.50
t/ p	7.939/ <0.001	5.594/ <0.001	5.000/ <0.001	5.530/ <0.001	7.230/ <0.001	7.669/ <0.001	-0.960/ 0.338	-2.004/ 0.046	-1.630/ 0.104	-3.131/ 0.002	-2.780/ 0.026
Cancer stage											
(a) Stage II	2.03±0.81	1.92±0.46	1.88±0.51	1.90±0.46	1.97±0.84	1.96±0.60	4.55±0.54	4.55±0.60	4.54±0.54	3.47±1.01	4.43±0.45
(b) Stage III	3.00±0.89	2.35±0.49	2.17±0.49	2.19±0.51	2.95±0.92	2.67±0.65	4.40±0.61	4.43±0.65	4.40±0.66	3.20±1.23	4.26±0.52
(c) Stage IV	3.78±0.76	2.79±0.69	2.58±0.75	2.57±0.71	3.75±0.79	3.29±0.63	4.18±0.71	4.07±0.72	4.07±0.84	2.74±0.47	4.02±0.58
F/ p	115.029/ <0.001	70.246/ <0.001	39.817/ <0.001	70.246/ <0.001	110.990/ <0.001	117.514/ <0.001	9.086/ <0.001	14.200/ <0.001	12.585/ <0.001	9.017/ <0.001	16.882/ <0.001
LSD	a < b, c b < c	a < b, c b < c	a < b, c b < c	a < b, c b < c	a < b, c b < c	a < b, c b < c	a > b, c b > c	a, b > c	a, b > c	a > b, c b > c	a > b, c b > c
Duration of cancer treatment											
< 1 year	2.93±1.02	2.34±0.62	2.19±0.60	2.19±0.58	2.89±1.04	2.63±0.77	4.33±0.62	4.31±0.68	4.28±0.68	3.06±1.23	4.20±0.51
1-10 years	2.75±1.08	2.25±0.60	2.12±0.62	2.15±0.60	2.70±1.11	2.50±0.80	4.48±0.62	4.49±0.65	4.47±0.68	3.33±1.25	4.34±0.54
t/ p	1.761/ 0.079	1.460/ 0.146	1.218/ 0.224	0.646/ 0.519	1.812/ 0.071	1.745/ 0.082	-2.391/ 0.017	-2.760/ 0.006	-2.832/ 0.005	-2.154/ 0.032	-2.647/ 0.008

1. Overall quality of care and services you received during your hospital stay
- 2 Overall quality of nursing care you received during your hospital stay
- 3 On the basis of nursing care I received, I would recommend this hospital to my family and friends
- 4 Perception of overall health

TABLE 4. Pearson correlations among study variables.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Age	56.49	12.98										
2. Perceived income level	3.70	0.74	-.008									
3. Perceived health status	3.25	0.88	-.249*	.259*								
4. Cancer stage	2.88	0.71	.409*	-.148*	-.575*							
5. Total patient satisfaction with nursing care quality	4.27	0.53	-.173*	-.186*	.406*	.275*						
6. Psychological subscale of cancer needs questionnaire	2.84	1.05	.372**	-.254**	-.849**	.599**	-.396**					
7. Interpersonal communication subscale of cancer needs questionnaire	2.80	1.08	.340**	-.255**	-.828**	.593**	-.415**	.954**				
8. Health information subscale of cancer needs questionnaire	2.30	0.61	.263**	-.267**	-.700**	.507**	-.479**	.741**	.763**			
9. Patient care and support subscale of cancer needs questionnaire	2.17	0.59	.252**	-.188**	-.576**	.407**	-.418**	.610**	.620**	.815**		
10. Physical and daily living subscale of cancer needs questionnaire	2.16	0.61	.220**	-.134**	-.529**	.401**	-.404**	.549**	.579**	.742**	.804**	
11. Total score of cancer needs questionnaire	2.57	0.79	.356*	-.265*	-.848*	.605*	-.455*	.966**	.966**	.867**	.755**	.698**

*Correlation is significant at the 0.01 level (2-tailed); Strong correlation, between ± 0.50 and ± 1 ; **Medium correlation, between ± 0.30 and ± 0.49 ; Small correlation, below $\pm .29$.

TABLE 5. Multiple stepwise linear regression analysis of predictors of cancer needs.

Variables	Model 1		Model 2		Model 3		Model 4	
	B (SE)	Exp(B)	B (SE)	Exp(B)	B (SE)	Exp(B)	B (SE)	Exp(B)
(Constant)	5.04 (.08)*		4.40 (.13)*		5.06 (.20)*		4.58 (.23)*	
Perceived health status	-.76 (.02)*	-.85	-.73 (.02)*	-.81	-.69 (.03)*	-.76	-.63 (.03)	-.70
Age			.01 (.00)*	.16	.01 (.00)*	.15	.01 (.00)*	.11
The total score of PSNCQQ					-.18 (.04)*	-.12	-.17 (.04)*	-.12
Cancer stage							.14 (.04)*	.12
R2	0.72		0.74		0.75		0.76	
R2 change			0.02		0.01		0.01	
F change	1040.22		35.35		19.62		15.46	

* $p < .001$; PSNCQQ: Patient Satisfaction with Nursing Care Quality Questionnaire.



Quality of Nursing Care and Affecting Factors

The total score of patients received of their satisfaction with the quality of nursing care was 81.08+10.07 (Min=53, Max=95). As a result of the assessment it was determined that satisfaction with the quality of nursing care was lower in patients who were 65 years of age or older ($F= 4.174; 0.003$) compared to patients under 65 years of age, in male patients compared to female patients ($t=2.819; p=0.005$), in patients who perceived their income level as low or medium compared to patients who perceived their income level as high ($t = -2.739 p= 0.006$), in patients who perceived their health status as poor compared to patients who perceived their health status as good or moderate ($F= 41.606; p < 0.001$), in patients with stage 4 metastatic disease compared to stage 2 and stage 3 patients ($F= 9.017; p < 0.001$), in patients with comorbidity compared to patients without comorbidity ($t= 3.131; p=0.002$), and in patients who received treatment for less than one year compared to patients who received treatment for one year or longer ($t= -2.154; p=0.032$) (Table 3.).

Results of multiple stepwise regression analyses of predictors of patient satisfaction with the quality of nursing care quality are not presented in the tables. However, as a result of the assessment, it was observed that patients with higher cancer care needs ($B = -0.01, SE = 0.01, \exp [B] = -0.46, p < 0.001$) had low satisfaction with nursing care and this variable explained 21% of the total explained variance. VIF values ranged from 1.076 to 3.550 and tolerance values changed between 0.635 and 0.930.

DISCUSSION

Overall, this cross-sectional study demonstrated that the most significant factors in predicting cancer needs were patients' perception of health status, age, cancer stage, and satisfaction level of quality of nursing care. It was found that age, sex, level of income, perception of health status, cancer stage, comorbidity, and duration of treatment were effective in the level of satisfaction of cancer patients with the quality of nursing care.

Cancer patients encounter many symptoms during their diagnosis and treatment. Patients have physiological, social, and interpersonal needs¹⁸. In this study, when these needs encountered by cancer patients were examined together with effecting factors, perceived health status was found to be the most important variable predict-

ing cancer needs. The health status of cancer patients is inversely proportional to both the stage of cancer and the length of the treatment process. The fact that cancer patients in advanced stages in our study had the highest score of cancer needs also explains this situation. In the literature, it was noted that the cancer needs of individuals in an advanced stage of cancer were highest than other stages in^{2,3,19-23}. Prolongation of the treatment period may cause some complications as well as unexpected side effects. In this case, it may increase the psychological and physiological needs of patients.

As a result of this study, it was observed that the patients had the highest score higher in the interpersonal relationships and psychological sub-dimensions of the CNQ scale. Studies have also established that psychological needs were the most frequently care needs^{2,19,24}. In a systematic review by de Heus et al², it was observed that those needs of cancer patients that are not met the most are the lack of information about the health system, while the second unmet need is the psychological needs, and the third unmet need is the physical and daily life needs.

The results of this study show that the cancer needs of the patients increase with age. One study inquiring about the effect of age on cancer needs found that for every increment of age by 1 year, the odds of unmet psychological and physical needs increased by 6% and 3%, respectively¹⁹. In contrast, other studies found that younger ages had the highest score in cancer care needs^{2,3,21,25-28}. Comparison of young and older cancer patients reveals certain difficulties regarding cancer and its interactions with other age-based illnesses. Older patients have a higher incidence of polypharmacy, and different drug responses compared to younger²⁹. However, cancer needs of young patients are higher since they have expectations about the future while their work life and social relations are negatively affected.

Regarding the identified needs in the educational level of cancer patients, it was reported that patients who are high education level had lower cancer needs. This result was closely similar to Amane et al¹⁹ study that showed that individuals with low education levels have higher levels of care needs. In contrast to our study, some studies mention that cancer needs level increase with higher education level^{2,3,21,25}.

In this study, it was found that the care needs of employed individuals with higher income were lower, while Amane et al¹⁹ found that individuals with high-income levels had a higher need for health information. In our study, it was observed that the care needs of the patients increase as the

duration of treatment increases. Similarly, Amane et al¹⁹ found that for every 1-month increase of time since diagnosis, the unmet patient care/supportive needs increased by 2% (AOR = 1.02; 95% CI: 1.00–1.04). Harrison et al³ reported that patients in the treatment process needed more support. Cancer treatment is a long and difficult process. The prolongation of this process reduces the quality of life in patients and brings uncertainties. Therefore, it could be argued that the long duration of treatment increases cancer needs.

According to the results of this study, the satisfaction of older cancer patients with the quality of nursing care was found to be lower. In the study of Davidson and Mills³⁰, it was observed that older patients were less satisfied than younger patients. But in the literature many studies supported that older patients were significantly more satisfied than younger patients^{31,32}. The low satisfaction with care of older cancer patients in this study may partially reflect the increased likelihood of cognitive, physical, and mental deficits in older patient populations, suggesting that this group may be less understanding of their caregiver's communication compared to younger patients. The difference in the literature can be argued to be dependent on the higher trust of older individuals in nurses resulting in higher satisfaction compared to young people. According to the results of this study, it was found that female cancer patients were less satisfied with the quality of nursing care than male patients. In another study, it was found that there was no difference between males and females³³. According to the results of this study, the satisfaction of cancer patients in an advanced stage from the quality of nursing care was lower. In the study of Lam et al³⁴, it was found that stage 3 cancer patients were more satisfied with the communication with nurses. Increasing psychological, physiological, and social needs with the advanced cancer stage indicates that there was a higher need for nursing care. According to the results of this study, cancer patients with comorbidities were less satisfied with the quality of nursing care. A similar result was found in a study⁹. Since the existence of comorbidity in cancer patients creates a burden for the patients besides the cancer treatment, their need for more care may have decreased satisfaction. According to the results of this study, it was observed that cancer patients with low income, low perception of health status, and cancer patients who received treatment for one year or less were less satisfied with the quality of nursing care. Nguyen et al¹² found that cancer patients' satisfaction with a poor perception of health status was low-

er. Different explanations for this relationship have been proposed; for example, poor health conditions may negatively affect a person's attitude towards medical care, or caregivers may respond less favorably to patients in poor health, thus resulting in lower satisfaction levels¹². According to the results of this study, it was seen that as the satisfaction level of patients with the quality of nursing care decreases, cancer needs increase. Abegaz et al³⁵ found in their study that patients with a low level of satisfaction with the provided care of 0.82 [0.76–0.93] and those with unmet needs of 0.85 [0.80–0.95] experienced a reduced level of HRQoL. Moreno et al²⁵ found that satisfaction regarding cancer care reduced care needs.

Limitations

This is a cross-sectional study which covers only cancer patients that receive treatment. Lastly, the study was conducted at a single center.

Learning Points

This study is a guide that provides important results to improve the quality of care given by oncology nurses to cancer patients. According to the results of this study, perceived health status, cancer stage, and age are common variables that impact the cancer care needs of patients and the satisfaction level of nursing care quality. It is important that oncology nurses, who are the coordinator of care, should provide individualized care according to elderly patients, advanced cancer patients, and the level of perceived health status.

CONCLUSIONS

Our results brought to light the main impact of patient characteristics and predictive factors associated with cancer needs and satisfaction levels with the quality of nursing care. To the best of our knowledge, this is the first longitudinal study to report on the impact of patient satisfaction from nursing care on cancer needs. Finally, our findings suggest there is a need to implement cancer needs and satisfaction with the quality of nursing care screening as routine practice in patients on follow-up. Following the care needs of cancer patients provides a person-centered approach to care and improves the quality of care and coordinates new strategies in cancer patients' care for health-care services.



CONFLICT OF INTEREST:

The authors have no conflict of interest to declare.

ETHICAL APPROVAL:

This study was approved by the University of Health Sciences Scientific Research Ethics Committee (Document Date and Number: 03.11.2021/75062).

INFORMED CONSENT:

The consent of the patients who agreed to be included in the study was obtained through the informed consent form and the Declaration of Helsinki principles were strictly followed to protect participants' right.

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- Study conception and design: ED
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- Interpretation: ED, İD, GC
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DATA AVAILABILITY STATEMENT:

The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials. Other supplementary materials can be accessed upon request via email to the corresponding authors of this study.

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