

The Impact of Unmet Needs on Fear of Cancer Recurrence in Cancer Survivors: A Cross-Sectional and Multivariate Analysis

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Purpose: This study aims to determine the fear of recurrence and the unmet needs among cancer survivors. It also explores the associations between the fear of recurrence, unmet needs and sociodemographic factors.

Patients and Methods: This descriptive study was carried out with 147 cancer survivors. The study was conducted between September 2023 and December 2024 in the training and research hospital. The data were collected using the Participant Assessment Form, the Fear of Cancer Recurrence Inventory (FCRI), the Cancer Survivors' Unmet Needs (CaSUN-TR) Scale.

Results: The findings of this study indicates that the median age of the survivors was 56 years. It was found that the fear of recurrence significantly increased with family history of cancer ($p=0.001$) and total unmet needs were significantly higher among females and those receiving psychological support ($p=0.016$; $p=0.017$). The regression analysis was found having a family history of cancer ($\beta=9.878$), and total unmet needs ($\beta=9.939$) and psychosocial support ($\beta=0.433$) predicted the fear of cancer recurrence. Gender ($\beta=-0.171$), psychological support ($\beta=0.188$), and quality of life ($\beta=0.485$) were identified as predictors of the unmet needs of cancer survivors.

Conclusion: It was determined that increased unmet needs and a family history of cancer influence on the fear of cancer recurrence in cancer survivors. Therefore, determining the needs of patients receiving cancer treatment and informing patients, particularly those with a family history of cancer, is clinically important.

Keywords: cancer, fear of recurrence, unmet needs, survivors

Introduction

Due to aging, advancements in medical technology and pharmaceutical research, the number of people living with and beyond cancer is rapidly increasing.¹ Across a wide range of cancers, including advanced or metastatic stages, these developments have increased survival rates and extended survival periods.² However, as more individuals live longer after cancer treatment, they not only experience new physical, emotional, and psychosocial challenges that affect their quality of life,³ but also face various concerns beyond the difficulties encountered during the disease process.¹ These comprise the long-term and late effects of treatment, restrictions in physical abilities, adaptations in lifestyle, changes in relationships and caregiving arrangements, influences on employment or education and psycho-social issues.⁴⁻⁷ It seems that many patients are not well-prepared or supported when they move from critical care to the posttreatment phase leading to significant unmet needs.⁸

Unmet needs in cancer patients may result in worsening symptoms, increased anxiety and depression, decreased social engagement, and a general decline in quality of life.⁹ Unmet needs are most commonly observed in the physical, functional dimensions psychological, and informational with additional needs identified in areas such as social, activities of daily living, healthcare, economic aspects spiritual and sexual.^{9,10} A systematic review indicated that the most frequently reported unmet needs of cancer survivors are related to psychosocial issues, including fear of cancer recurrence (FCR), uncertainty about the future, concerns about partners, friends, and family, the need for stress reduction, and sexual changes.⁴

The term cancer survivor refers to individuals who have received a cancer diagnosis and have completed treatment, while continuing to cope with the physical, psychological, and social challenges that may persist or emerge throughout the remainder of their lives.¹¹ Among the most commonly reported unmet needs in this population is the fear of cancer recurrence (FCR), which is frequently observed in individuals with a history of cancer.^{2,7} FCR is defined as the fear, worry, or concern that cancer may return or progress following treatment.¹² This phenomenon has been associated with a range of adverse outcomes, including physical symptoms, heightened emotional distress, anxiety, depression, impaired psychosocial adjustment, and diminished quality of life.² According to findings from a systematic review and meta-analysis, approximately 19% of individuals report experiencing high levels of FCR, while more than half (59%) report at least a moderate level of fear.¹³ Although low levels of FCR may have a motivational effect promoting adherence to medical recommendations and encouraging healthy lifestyle changes elevated levels of FCR can negatively affect the daily functioning and overall well-being of cancer survivors.¹² In many cases, such high levels necessitate professional psychological support.^{10,14,15}

It is critical to determine which issues require the greatest attention in order to deliver quality and effective care.⁵ For this, assessing unmet needs and determining the FCR in cancer survivors is crucial for identifying the symptoms and challenges they face, highlighting areas where further assistance is needed, and measuring the severity of those needs.^{15,16} This will ultimately improve their quality of life and enable better healthcare provision. Even though several studies have evaluated the kinds of issues faced by cancer survivors,^{1,3,7,10,14} it is still unclear whether cancer survivors receive the necessary assistance and to what extent assistance is needed to manage these issues. For example, high levels of FCR have been reported to coexist with limited access to supportive psychosocial services.⁷ In addition, the importance of linking patient-reported outcomes to function-based classification systems has been emphasized.¹⁰ While these studies highlight the multidimensional nature of FCR and unmet needs, they have addressed the influence of cultural context and the interaction with sociodemographic factors only to a limited extent. Moreover, the assessment and prioritization of needs may be influenced by cultural differences, which can hinder the development of targeted support strategies. From a public health policy perspective, the transition from active treatment to survivorship is often characterized by a lack of structured follow-up services, psychosocial support, and personalized survivorship care plans. Additionally, the scoring of needs may be influenced by cultural differences. Therefore, this descriptive study aims to determine the unmet needs and the FCR among cancer patients. It also explores the associations between unmet needs, the FCR and sociodemographic factors.

Materials and Methods

Study Design and Setting

This study was conducted as a descriptive study. It was carried out on participants with cancer who applied to medical oncology clinics between September 2023 and December 2024. Post hoc power analysis was conducted using G*Power (version 3.1.9.7). Given an effect size of $d = 0.65$, $\alpha = 0.05$, and a sample size of $n = 147$, the analysis revealed a power of 1.00, indicating that the study had sufficient power to detect a statistically significant effect. The inclusion criteria were: (a) having been diagnosed with cancer; (b) currently receiving cancer treatment or being in post-treatment follow-up for control purposes; (c) being 18 years or older; (d) having the ability to speak, read, and write in Turkish; and (e) agreeing to participate in the study. The exclusion criteria were: (a) having a diagnosis of major psychiatric disorders; (b) experiencing cognitive impairment. A total of 155 individuals with cancer were enrolled in the study. Among them, eight participants withdrew from the study without completing the questionnaire. As a result, the analysis was conducted using the data of the remaining 147 participants. The data were collected through face-to-face interviews, and completing the questionnaire took an average of 20 minutes.

Data Collection Tools

Data were collected using the “Participant Assessment Form”, “Fear of Cancer Recurrence Inventory (FCRI)”, and “The Cancer Survivors’ Unmet Needs (CaSUN-TR) Scale”.

Participant Assessment Form: This form was used to collect data on sociodemographic (age, diagnosis date, gender, education, marital, working, and socioeconomic status) and clinical characteristics (type of cancer, stage of cancer, family history of cancer, psychological support) of the participants.

Fear of Cancer Recurrence Inventory (FCRI)

The English version of the scale, originally developed in French by Simard and Savard (2009), was developed by Lebel et al under the name Fear of Cancer Recurrence Inventory (FCRI).^{17,18} The Turkish form of the scale was adapted by Eyrenci and Sertel Berk in 2018.¹⁹ The original version of the scale is a Likert-type scale measuring fear of recurrence in cancer patients, consisting of 42 items and 7 sub-dimensions. The adapted Turkish version consist of 24 items and 5 sub-dimensions. These are; Triggers, Functional Impairments, Recurrence Related Meta-Cognitions, Emotion-Focused Coping Strategies and Quality of Life. A higher total score indicates a greater fear of recurrence. The Cronbach-alpha value was calculated as 0.94 in the original version of the scale. In the present study, the Cronbach's alpha value of the scale was found to be 0.92.

The Cancer Survivors' Unmet Needs (CaSUN-TR) Scale

Originally developed by Hodgkinson et al in 2007, the scale was adapted and validated in Turkish by Cihan and Vural in 2023.^{20,21} It comprises five sub-dimensions: Psychosocial Support, Information, Economic Concerns, Relationships, and Quality of Life. The total score is obtained by summing all items, with higher scores indicating greater unmet needs (ranging from 0 to 35). Sub-dimension scores are calculated by summing the items within each respective sub-dimension. Since the sub-dimensions contain varying numbers of items, the average number of needs within each sub-dimension is reported. The original version of the scale had a Cronbach's alpha value of 0.92, while in the present study, the Cronbach's alpha value was found to be 0.96.

Statistical Analysis

Data were analyzed using SPSS 24.0 (IBM, Armonk, NY, USA). Continuous variables were expressed median [Interquartile Range (IQR) (Q1-Q3)]. Categorical variables were expressed as numbers and percentages. The compatibility of the continuous data with a normal distribution was examined using the Shapiro–Wilk test. The Mann–Whitney *U*-test was used to compare scores between two groups. The Kruskal–Wallis test was used to compare scores between three or more groups. In the evaluation of correlation coefficients, coefficients between 0.10 and 0.29 are considered low, a coefficient between 0.30 and 0.49 is considered a moderate relationship, and a coefficient above 0.50 is considered a high degree of relationship.²² Multiple Linear Regression (MLR) analysis was used to examine the relationship between the dependent variable and multiple independent variables. Prior to analysis, key MLR assumptions were checked, including linearity, absence of multicollinearity ($VIF < 10$), normal distribution of residuals (Q-Q plot, Shapiro–Wilk test), homoscedasticity (Breusch-Pagan test), and independence of errors (Durbin-Watson test). Outliers were assessed using Cook's Distance. Cancer stage (Stage I–IV) was evaluated using group comparisons of clinical variables. However, it was not included as a covariate in multivariable analyses. For all the analyses, a *p*-value of less than 0.05 was accepted to be statistically significant.

Ethical Approval

The study was approved by the Ethics Committee of the Gülhane Training and Research Hospital (Decision date: 12.04.2023, Decision No: 2023/83). After the volunteer participants were verbally informed about the study, all participants read and signed the informed consent form. All procedures followed were in accordance with the ethical standards of the scientific research ethics committee and with the Helsinki Declaration of 1975, as revised in 2000.

Results

Comparison of Fear of Cancer Recurrence Inventory and Cancer Survivors' Unmet Needs Scores with Participants' Characteristics

According to the findings of the current study, the median age of the participants (71 male, 76 female) was 56.0 (40.0–67.0) years. When the FCRI total, total CaSUN-TR needs, sociodemographic, clinical characteristics were compared, it was found that the FCRI significantly increased with family history of cancer ($Z = -3.243$, $p = 0.001$). It

was found that participants' total CaSUN-TR needs were significantly higher among females and those receiving psychological support ($Z = -2.406$, $p = 0.016$; $t = -2.385$, $p = 0.017$, respectively). The FCRI total and total CaSUN-TR needs were not changed with any other variables (Table 1).

Fear of Cancer Recurrence Inventory and Cancer Survivors' Unmet Needs Scale Scores

Table 2 shows the mean scores for the fear of cancer recurrence inventory and unmet needs level of cancer survivors. The FCRI total was 43.65 ± 18.22 , the unmet needs score of CaSUN-TR was 10.16 ± 10.50 and total CaSUN-TR needs score was 24.71 ± 7.22 (Table 2).

Table 1 Comparison of Fear of Cancer Recurrence Inventory and Cancer Survivors' Unmet Needs Scores with Participants' Characteristics (N=147)

Variables	n (%)	FCRI Total Median (Q1-Q3)	Statistics p	Total CaSUN- TR Total Needs Median (Q1-Q3)	Statistics p
Age (years) Median (Q1-Q3)	56.0 (40.0–67.0)				
Date of Cancer Diagnosis (years) Median (Q1-Q3)	2.0 (2.0–4.0)				
Gender					
Female	76 (51.7)	48.0 (34.5–58.5)	–1.541*	26.0 (23.0–31.0)	–2.406*
Male	71 (48.3)	42.0 (27.0–55.5)	0.123	23.0 (16.0–30.0)	0.016
Educational status					
Secondary	62 (42.2)	48.5 (30.0–60.0)	1.067**	27.0 (20.0–31.0)	1.194**
High school	42 (28.6)	43.0 (35.0–52.0)	0.587	23.5 (19.0–28.5)	0.550
University and over	43 (29.3)	43.0 (36.0–56.5)		26.0 (21.0–31.0)	
Marital status					
Married	110 (74.8)	44.0 (32.0–58.0)	–0.987*	26.0 (19.0–31.0)	–0.937*
Single	37 (25.2)	44.0 (21.0–52.0)	0.324	27.0 (2.0–31.0)	0.349
Working status					
Working	34 (23.1)	43.0 (32.0–52.0)	–0.391*	25.5 (16.0–28.2)	–0.527*
Not Working	113 (76.9)	48.0 (30.0–57.0)	0.696	26.0 (25.0–31.0)	0.598
Socioeconomic status					
Expenses less than income	43 (29.3)	43.0 (33.5–56.5)	5.699**	26.0 (21.0–31.0)	0.808**
Income equal to expenses	82 (55.8)	49.0 (37.0–60.0)	0.058	26.0 (19.0–30.2)	0.668
Expenses more than income	22 (15.0)	41.0 (14.0–48.0)		26.5 (16.0–32.7)	
Type of cancer					
Lung cancer	36 (24.5)	43.5 (33.5–55.0)	1.692**	21.0 (19.0–26.0)	7.152**
Breast cancer	35 (23.8)	43.0 (38.0–61.5)		26.0 (23.0–30.0)	
Colorectal cancer	15 (10.2)	42.0 (31.0–54.0)		28.0 (23.0–33.0)	
Gastric cancer	13 (8.8)	57.0 (21.0–66.0)		27.0 (16.0–33.0)	
Other	48 (32.7)	44.5 (25.0–55.0)		27.0 (17.2–32.0)	
Stage of cancer					
Stage I	14 (9.5)	41.0 (27.0–56.0)	2.588**	23.5 (16.0–31.0)	1.061**
Stage II	37 (25.2)	43.0 (21.0–54.0)		26.0 (19.5–33.0)	
Stage III	47 (32.0)	49.0 (38.0–57.0)		26.0 (20.0–30.0)	
Stage IV	49 (33.3)	53.0 (31.0–58.0)		26.0 (20.0–30.0)	

(Continued)

Table 1 (Continued).

Variables	n (%)	FCRI Total Median (Q1-Q3)	Statistics p	Total CaSUN- TR Total Needs Median (Q1-Q3)	Statistics p
Treatment method					
Chemotherapy	72 (49.0)	42.0 (32.25–55.0)		25.0 (19.0–30.0)	
Chemotherapy - Surgery	23 (15.6)	50.0 (28.0–60.0)		31.0 (25.5–32.0)	
Chemotherapy - Surgery- Radiotherapy	19 (12.9)	48.0 (20.0–66.0)	8.352**	24.0 (20.5–30.0)	9.271**
Chemotherapy - Radiotherapy	17 (11.6)	41.0 (30.0–53.0)	0.213	20.0 (19.0–28.0)	0.099
Chemotherapy- Surgery- Radiotherapy - Hormone Therapy	8 (5.5)	54.5 (33.75–66.5)		26.0 (23.0–29.0)	
Radiotherapy	8 (5.4)	60.0 (29.267.25)		27.0 (22.0–30.0)	
Family history of cancer					
Yes	62 (42.2)	52.0 (57.0–66.0)	3.243*	26.0 (21.0–30.0)	0.318*
No	85 (57.8)	42.0 (30.0–52.0)	0.001	26.0 (19.0–32.0)	0.750
Psychological support					
Yes	12 (8.2)	48.0 (23.5–58.5)	–0.142*	30.5 (25.5–34.2)	–2.385*
No	135 (91.8)	43.0 (31.0–56.5)	0.887	26.0 (19.0–30.0)	0.017
Comorbidity					
Yes	49 (33.3)	48.0 (30.0–62.0)	–0.329	24.0 (19.0–30.0)	–0.998
No	98 (66.7)	45.5 (32.0–55.0)	0.742	26.0 (20.0–31.0)	0.318
Alternative Therapies					
No	137 (93.2)	43.0 (31.0–56.0)	–0.793	26.0 (19.5–31.0)	–0.474
Yes (Phytotherapy)	10 (6.8)	48.0 (29.0–66.0)	0.428	22.5 (20.0–31.0)	0.636
Coping with Recurrence					
No	117 (79.6)	44.0 (32.0–57.0)	–0.387	25.0 (19.0–30.0)	–1.555
Yes	30 (20.4)	45.5 (21.0–54.0)	0.699	26.0 (24.0–31.0)	0.120
Coping Methods with Recurrence***					
Praying	22 (73.4)	43.0 (21.0–52.0)	2.824**	26.0 (24.0–33.0)	1.560
Mental motivation	5 (13.3)	68.0 (49.0–68.0)	0.244	26.0 (19.0–30.0)	0.458
Support from family and friends	3 (10.0)	51.0 (36.0–53.0)		31.0 (28.0–31.5)	

Notes: *Mann Whitney U-test, **Kruskal–Wallis test, ***Calculations were based on the value of n. Bold values indicate statistically significant differences at $p < 0.05$.

Abbreviations: FCRI, Fear of Cancer Recurrence Inventory; CaSUN-TR, Cancer Survivors' Unmet Needs Turkish.

The Most Highly Ranked Unmet Needs of Cancer Survivors

Table 3 shows the participants' the most highly ranked unmet needs. The greatest unmet needs reported by cancer survivors were “coping with changes to his/her belief that nothing bad will ever happen in his/her life” (40.1%), “adjusting to changes in his/her quality of life as a result of his/her cancer” (38.1%), and “making his/her life meaningful”, “moving on with his/her life (as he/she used to)” (37.4%), “reducing stress in life” (36.7%), (Table 3).

The Relationship Between Fear of Cancer Recurrence Inventory and Cancer Survivors' Unmet Needs Scale Scores

Table 4 shows a correlation between all sub-dimensions of the FCRI scale and all sub-dimensions of the CaSUN-TR scale. A positive moderate correlation was found between the participants' total CaSUN-TR score with FCRI total score ($r=0.353$, $p<0.001$) and Quality of Life ($r=0.431$, $p<0.001$). A weak positive correlation was determined between the participants' total CaSUN-TR score with Triggers ($r=0.203$, $p=0.014$), Functioning Impairments ($r=0.289$, $p<0.001$) and Emotion-Focused Coping Strategies ($r=0.258$, $p=0.002$). A weak positive correlation was determined between Psychosocial Support with Recurrence Related Meta-Cognitions ($r=0.193$, $p=0.019$), Emotion-Focused Coping

Table 2 Fear of Cancer Recurrence Inventory and Cancer Survivors' Unmet Needs Scale Scores (N= 147)

	Mean $\pm$ SD	Min-Max
Fear of Cancer Recurrence Inventory (FCRI)		
FCRI Total (0–96)*	43.65 $\pm$ 18.22	0-76
Triggers (0–28)*	13.59 $\pm$ 6.13	0-28
Functioning Impairments (0–8)*	2.82 $\pm$ 2.54	0-8
Recurrence Related Meta-Cognitions (0–16)*	7.28 $\pm$ 4.17	0-16
Emotion-Focused Coping Strategies (0–20)*	9.69 $\pm$ 4.60	0-19
Quality of Life (0–24)*	10.29 $\pm$ 5.94	0-24
Cancer Survivors' Unmet Needs Turkish (CaSUN-TR)		
Met needs	14.55 $\pm$ 9.62	0-35
Unmet needs	10.16 $\pm$ 10.50	0-34
Total needs	24.71 $\pm$ 7.22	8-35
Sub domains of CaSUN-TR		
Psychosocial Support (0–5)*	1.74 $\pm$ 2.01	0-5
Information (0–6)*	1.29 $\pm$ 2.12	0-6
Economic Concerns (0–3)*	0.80 $\pm$ 1.24	0-3
Relationships (0–6)*	1.46 $\pm$ 1.87	0-6
Quality of Life (0–4)*	1.26 $\pm$ 1.51	0-4

Note: *The lowest and highest possible score.

Table 3 The Most Highly Ranked Unmet Needs of Cancer Survivors (N= 147)

The Most Highly Ranked Unmet Needs	n	%
"Help to cope with changes to my belief that nothing bad will ever happen in my life"	59	40.1
"Help to adjust to changes in my quality of life as a result of my cancer"	56	38.1
"I need help making my life meaningful"	55	37.4
"I need help moving on with my life (as I used to)"	55	37.4
"Help to reduce stress in my life"	54	36.7
"Help to adjust to changes to the way I feel about my body"	51	34.7
"I need help coping with my own expectations/other people's expectations of me as a "cancer survivor"	51	34.7
"Help to try to make decisions about my life in the context of uncertainty"	51	34.7
"I need help exploring my spiritual beliefs"	49	33.3
"Emotional support to be provided for me"	47	32.0

Strategies ($r=0.167$, $p=0.043$) and Quality of Life ($r=0.191$, $p=0.02$). A weak positive correlation was found between Information and Emotion-Focused Coping Strategies ($r=0.164$, $p=0.047$). A weak positive correlation was determined between the CaSUN-TR sub-dimension Quality of Life with the FCRI Total ($r=0.185$, $p=0.025$), Recurrence Related

Table 4 The Relationship Between Fear of Cancer Recurrence Inventory and Cancer Survivors' Unmet Needs Scale Scores (N= 147)

CaSUN-TR	FCRI					
	FCRI Total	Triggers	Functioning Impairments	Recurrence Related Meta-Cognitions	Emotion-Focused Coping Strategies	Quality of Life
Total needs	r= 0.353 p<0.001	r= 0.203 p= 0.014	r= 0.289 p<0.001	r= 0.136 p= 0.102	r= 0.258 p= 0.002	r= 0.431 p<0.001
Psychosocial Support	r= 0.150 p= 0.069	r= -0.005 p= 0.954	r= 0.074 p= 0.374	r= 0.193 p= 0.019	r= 0.167 p= 0.043	r= 0.191 p= 0.020
Information	r= 0.077 p= 0.353	r= -0.026 p= 0.758	r= 0.057 p= 0.493	r= 0.048 p= 0.565	r= 0.164 p= 0.047	r= 0.103 p= 0.217
Economic Concerns	r= 0.129 p= 0.119	r= -0.010 p= 0.900	r= 0.032 p= 0.700	r= 0.117 p= 0.158	r= 0.174 p= 0.035	r= 0.141 p= 0.088
Relationships	r= -0.001 p= 0.990	r= -0.101 p= 0.221	r= -0.043 p= 0.605	r= 0.061 p= 0.465	r= 0.100 p= 0.228	r= 0.030 p= 0.723
Quality of Life	r= 0.185 p= 0.025	r= 0.088 p= 0.290	r= 0.066 p= 0.430	r= 0.202 p= 0.014	r= 0.176 p= 0.033	r= 0.171 p= 0.039

Note: Spearman correlation. Bold values indicate statistically significant differences at $p < 0.05$.

Abbreviations: CaSUN-TR, Cancer Survivors' Unmet Needs Turkish Scale; FCRI, Fear of Cancer Recurrence Inventory.

Meta-Cognitions ($r=0.202$, $p=0.014$), Emotion-Focused Coping Strategies ($r=0.176$, $p=0.033$) and the FCRI sub-dimension Quality of Life ($r=0.171$, $p=0.039$).

Multivariate Analysis of Risk Factors Associated with Fear of Cancer Recurrence and Cancer Survivors' Unmet Needs

Table 5 shows the regression analysis of the factors affecting fear of cancer recurrence and the unmet needs of cancer survivors among the individuals participating in the study. The regression analysis conducted to determine the cause-effect relationship regarding the risk factors for fear of cancer recurrence was found to be significant ($F=6.337$; $p<0.001$). A total of 18.1% of the variance in fear of cancer recurrence was explained by having a family history of cancer, the total CaSUN-TR needs score, and the CaSUN-TR psychosocial support subscale ($R^2=0.181$). Having a family history of cancer ($\beta=9.878$), total CaSUN-TR needs score ($\beta=9.939$), and CaSUN-TR psychosocial support subscale ($\beta=0.433$) were identified as predictors of fear of cancer recurrence. The regression analysis conducted to determine the cause-effect

Table 5 Multivariate Analysis of Risk Factors Associated with Fear of Cancer Recurrence and Cancer Survivors' Unmet Needs

Covariate	β	SE	t	p	95% Confidence Interval	
					Lower	Upper
Fear of Cancer Recurrence						
Constant	33.188	6.339	5.207	<0.001	21.827	48.549
Family History of Cancer	9.878	0.269	3.528	0.001	15.412	4.343
CaSUN-TR Total Needs	0.939	0.372	4.387	<0.001	0.516	1.362
CaSUN TR Psychosocial Support	0.433	1.360	2.885	0.005	1.235	6.612
F=6.367, R ² =0.181, p<0.001						

(Continued)

Table 5 (Continued).

Covariate	β	SE	t	p	95% Confidence Interval	
					Lower	Upper
Cancer Survivors' Unmet Needs						
Constant	22.852	4.065	5.621	<0.001	14.814	30.890
Gender	−0.171	1.091	−2.255	0.026	−4.617	−0.303
Psychological support	0.188	0.564	2.040	0.043	0.035	2.265
FCRI Quality of Life	0.485	0.157	3.750	<0.001	0.279	0.900
F=5.943, R ² =0.213, p<0.001						

Note: Multiple Linear Regression Analysis. Bold values indicate statistically significant differences at $p < 0.05$.

Abbreviations: CaSUN-TR, Cancer Survivors' Unmet Needs Turkish Scale; FCRI, Fear of Cancer Recurrence Inventory.

relationship regarding the risk factors for the unmet needs of cancer survivors was also found to be significant ($F=5.943$; $p<0.001$). A total of 21.3% of the variance in unmet needs was explained by female gender, psychological support, and the FCRI quality of life subscale ($R^2=0.213$). Female gender ($\beta=-0.171$), psychological support ($\beta=0.188$), and the FCRI quality of life subscale ($\beta=0.485$) were identified as predictors of the unmet needs of cancer survivors.

Discussion

This study offers an important and comprehensive contribution by jointly examining FCR, unmet needs, and socio-demographic factors, and their collective impact on the quality of life of cancer survivors. It addresses a gap in the existing literature by revealing how FCR intersects with psychosocial needs, thereby supporting the development of more targeted and holistic survivorship care strategies. Findings of this study indicate that survivors with a family history of cancer experience higher levels of fear of cancer recurrence. An increase in unmet needs and inadequate psychosocial support were shown to significantly predict this fear. While most demographic characteristics did not have a significant impact on unmet needs or fear of recurrence, being female, receiving psychological support, and the quality of life subscale of the FCRI were found to be significant predictors of unmet needs.

One of the key findings of this study is that individuals with a family history of cancer experience a higher level of FCR. This result is consistent with previous research conducted among Australian breast cancer patients, breast/ovarian cancer patients, melanoma patients, and gynecological cancer patients.^{23–26} Faraji et al reported in their study that cancer patients with a family history of cancer were more aware of the challenges brought by cancer or felt that family resources were depleted after fighting cancer.²⁷ In this study, it was assessed that genetic predisposition and witnessing disease progression in close relatives may increase fear of cancer recurrence. Furthermore, it is reasonable to assume that the presence of cancer in family members may serve as a constant reminder of the disease and the increased psychological burden associated with the symptoms. It is particularly important to incorporate FCR screening into routine follow-up care protocols for individuals with a family history of cancer. Early identification of at-risk individuals will enable timely psychological referrals and the development of personalized support plans.

This study found that unmet needs, particularly the need for psychosocial support, significantly contributed to increased FCR. It was reported that 91.8% of participants had not received any psychosocial support, with psychosocial needs being identified as the most commonly unmet category. These findings underscore the critical role of addressing psychosocial support needs in reducing FCR among cancer survivors. Supporting this, a meta-analysis by Tauber et al demonstrated that psychological interventions such as cognitive-behavioral therapy, mindfulness-based therapy, and psychoeducation yielded small but significant reductions in FCR.²⁸ Similarly, social support has been shown to play an important role in alleviating FCR and improving patients' quality of life.²⁹ In studies involving prostate cancer patients, coping strategies were found to have a notable influence on FCR, while research conducted with breast cancer survivors revealed that uncertainty, social support, and coping abilities had both direct and indirect effects on FCR.^{30,31}

Furthermore, unmet needs related to psychological well-being, physical health, and daily functioning have been associated with heightened levels of anxiety and depression, which in turn may exacerbate FCR.³² Supporting this, a comprehensive meta-analysis revealed significant associations between FCR and psychological distress, including depression and anxiety.³³ In light of these findings, targeted survivorship programs, increased access to psychological services, and structured follow-up care are important for addressing unmet needs and reducing FCR. Survivorship programs should prioritize accessible and culturally sensitive psychosocial interventions, and healthcare providers should be trained to recognize FCR and psychosocial needs. Additionally, integration of psychosocial services into oncology care should be promoted.

In the literature, FCR has been reported to be associated with both cancer stage and cancer type. For example, Luigjes-Huizer et al found that FCR levels were higher among patients with advanced-stage cancers such as lung cancer and melanoma.¹³ Similarly, Springer et al reported that patients with advanced stage cancer experienced more pronounced unmet needs, particularly in areas such as psychosocial support, information, and physical care.³⁴ Although some differences in FCR levels have been observed across cancer types, FCR is widely recognized as a common concern among cancer survivors regardless of the type of cancer.²⁶ These findings underscore the importance of considering not only clinical variables but also psychological and environmental factors in the assessment of FCR. Moreover, numerous studies have shown that individual characteristics such as the level of social support, coping strategies, and psychological resilience may have a greater impact on FCR and unmet needs than cancer stage alone.^{30,31} In the present study, no significant differences were found in FCR levels based on cancer type or stage. This may be due to several reasons. First, the sample size for certain cancer types and stages in the study may have been insufficient to detect significant differences. Additionally, individual differences such as psychosocial support, coping mechanisms, and health literacy may have a stronger effect on FCR than medical variables alone. Therefore, it is essential to take into account not only clinical characteristics but also psychological and social factors when evaluating FCR among cancer survivors.

Previous research has presented conflicting findings regarding the influence of gender on unmet needs among cancer patients. While some studies suggest that females experience higher levels of unmet psychological needs,³⁻⁶ others indicate that males may report greater unmet needs in certain domains.³⁴ Despite these inconsistencies, our study aligns with the literature highlighting gender-based differences, as we found that females reported significantly higher levels of unmet needs compared to males. This disparity may be attributed to differences in coping strategies, social roles, and emotional expressiveness. Women are often more likely to express concerns about their health, seek supportive care, and articulate their needs more openly than men,³⁵ which could contribute to their higher reported levels of unmet needs. Additionally, psychological distress related to body image, fertility concerns, and the long-term effects of treatment may further exacerbate these unmet needs among female cancer survivors. These findings underscore the necessity of adopting gender-sensitive approaches in survivorship care to ensure that the unique needs of female cancer survivors are effectively addressed.

The study found that individuals receiving psychological support reported higher levels of unmet needs. The term “unmet needs” in cancer patients refers to the deficiencies in different aspects of a patient’s life that arise from the challenges of coping with the disease and its treatment.³⁶ Studies have indicated that psychological needs constitute the most significant portion of unmet needs among cancer patients.³⁻⁶ This finding may seem paradoxical at first glance; however, it is possible that those seeking psychological support are more aware of their emotional and practical difficulties, leading to an increased perception of unmet needs. This suggests that although psychological support plays an important role in addressing mental health concerns, it may also increase patients’ awareness of additional areas where they need help. Healthcare professionals should take a holistic approach when addressing these concerns and ensure that all aspects of survivorship care, including social, financial, and practical concerns, are adequately addressed. Furthermore, examining whether existing emotional and psychosocial support services effectively meet the needs of cancer survivors and remain accessible both during and after active treatment could also be beneficial.³⁷

This study found that one of the subdimensions of FCR, namely quality of life, predicts cancer-related needs. The findings suggest that a decline in quality of life may lead to an increased need for support during the cancer coping process. Deterioration in quality of life is associated with multidimensional factors such as impaired physical functionality, psychological distress, and a lack of social support. These factors may increase individuals’ need for information, psychosocial support, and rehabilitation services.³⁸ Previous studies have also shown that cancer patients with lower

quality of life tend to have more unmet needs, which, in turn, increases the demand for psychosocial interventions.³⁹ Therefore, evaluating the quality of life dimension of FCR can contribute not only to understanding the patients' psychological condition but also to developing intervention plans targeting the specific types of support they need. These findings highlight the importance of addressing survivorship care plans with a holistic approach to quality of life.

Strength and Limitations

This study has several strengths that contribute to its significance. First, it was conducted with a well-defined sample of cancer survivors who applied to medical oncology clinics, ensuring the relevance of the findings to real-world clinical settings. Second, the use of validated questionnaires to measure unmet needs and cancer survivors' fear of cancer recurrence are additional strengths of this study. Despite its strengths, this study also has some limitations. The sample was heterogeneous in terms of cancer type, and the study did not investigate whether certain cancer types are more strongly associated with fear of cancer recurrence and unmet needs. Therefore, it remains unclear whether specific cancer types or treatment modalities have a greater impact on these outcomes.

Conclusion

This study highlights the significance of FCR and unmet needs among cancer survivors. FCR was found to be particularly elevated in individuals with a family history of cancer, females, and those receiving psychological support. Gender and psychological support emerged as key sociodemographic factors associated with both FCR and unmet needs, underscoring the necessity of comprehensive survivorship care that integrates psychological and social support services. Although cancer stage and treatment types were not significant factors in this study, previous research suggests their potential impact on FCR, warranting further investigation. Therefore, it is recommended to develop programs that regularly assess survivors' unmet psychosocial needs and provide tailored psychological support accordingly. Early identification of patients at high risk for FCR through standardized assessment tools and continuous monitoring of psychosocial needs are essential. Future longitudinal and intervention based studies will be critical to better understand causal relationships and to advance targeted survivorship care.

Abbreviations

FCRI, Fear of Cancer Recurrence Inventory; CaSUN-TR, Cancer Survivors' Unmet Needs –Scale; IQR, Interquartile Range.

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References

1. Gu YF, Lin FP, Epstein RJ. How aging of the global population is changing oncology cancer nursing. *Ecancermedicalscience*. 2021;13(15):119.
2. Bergerot CD, Philip EJ, Bergerot PG, et al. Fear of cancer recurrence or progression: what is it and what can we do about it? *Am Soc Clin Oncol Educ Book*. 2022;(42):18–27. doi:10.1200/EDBK_100031
3. Zomerdijs N, Jongenelis M, Short CE, et al. Prevalence and correlates of psychological distress, unmet supportive care needs, and fear of cancer recurrence among haematological cancer patients during the COVID-19 pandemic. *Support Care Cancer*. 2021;29(12):7755–7764. doi:10.1007/s00520-021-06369-5
4. Lisy K, Langdon L, Piper A, Jefford M. Identifying the most prevalent unmet needs of cancer survivors in Australia: a systematic review. *Asia Pac J Clin Oncol*. 2019;15(5):68–78. doi:10.1111/ajco.13176
5. Schmidt ME, Goldschmidt S, Hermann S, Steindorf K. Late effects, long-term problems and unmet needs of cancer survivors. *Int J Cancer*. 2022;151(8):1280–1290. doi:10.1002/ijc.34152
6. Luo X, Xu H, Zhang Y, et al. Identifying the unmet needs of post-treatment colorectal cancer survivors: a critical literature review. *Eur J Oncol Nurs*. 2024;70:102570. doi:10.1016/j.ejon.2024.102570
7. Li MC, Cheng HL. Fear of cancer recurrence, supportive care needs, and the utilization of psychosocial services in cancer survivors: a cross-sectional survey in Hong Kong. *Psychooncology*. 2021;30(4):602–613. doi:10.1002/pon.5609

8. Fitch MI, Nicoll I, Lockwood G. Cancer survivor's perspectives on the major challenge in the transition to survivorship. *Patient Educ Couns*. 2020;103(11):2361–2367. doi:10.1016/j.pec.2020.04.018
9. Rimmer B, Crowe L, Todd A, Sharp L. Assessing unmet needs in advanced cancer patients: a systematic review of the development, content, and quality of available instruments. *J Cancer Surviv*. 2022;16(5):960–975. doi:10.1007/s11764-021-01088-6
10. Schiavi M, Costi S, Barbieri I, et al. Identifying unmet needs in cancer survivorship by linking patient-reported outcome measures to the international classification of functioning, disability and health. *Support Care Cancer*. 2024;32(12):835. doi:10.1007/s00520-024-09019-8
11. Parry C, Kent EE, Mariotto AB, et al. Cancer survivors: a booming population. *J Cancer Surviv*. 2011;5(2):105–111.
12. Lebel S, Ozakinci G, Humphris G, et al. From normal response to clinical problem: definition and clinical features of fear of cancer recurrence. *Support Care Cancer*. 2016;24(8):3265–3268. doi:10.1007/s00520-016-3272-5
13. Luijckes-Huizer YL, Tauber NM, Humphris G, et al. What is the prevalence of fear of cancer recurrence in cancer survivors and patients? A systematic review and individual participant data meta-analysis. *Psychooncology*. 2022;31(6):879–892. doi:10.1002/pon.5921
14. Tran TXM, Jung SY, Lee EG, et al. Fear of cancer recurrence and its negative impact on health-related quality of life in long-term breast cancer survivors. *Cancer Res Treat*. 2022;54(4):1065–1073. doi:10.4143/crt.2021.835
15. Elsous A, Radwan M, Najjar S, et al. Unmet needs and health-related quality of life of breast cancer survivors: survey from Gaza Strip, Palestine. *Acta Oncol*. 2023;62(2):194–209. doi:10.1080/0284186X.2023.2180326
16. Bahçeli PZ, Küçük BY. Fear of cancer recurrence in women with breast cancer: a cross-sectional study after mastectomy. *Med Records*. 2022;4(3):315–320. doi:10.37990/medr.1094338
17. Simard S, Savard J. Fear of cancer recurrence inventory: development and initial validation of a multidimensional measure of fear of cancer recurrence. *Support Care Cancer*. 2009;17(3):241–251. doi:10.1007/s00520-008-0444-y
18. Lebel S, Ozakinci G, Humphris G, et al. Current state and future prospects of research on fear of cancer recurrence. *Psychooncology*. 2017;26(4):424–427. doi:10.1002/pon.4103
19. Eyrenci A, Sertel Berk HÖ. Validity and reliability of the Turkish version of fear of cancer recurrence inventory. *Turk J Oncol*. 2018;33(2):54–64.
20. Cihan E, Vural F. Gastrointestinal and breast cancer survivors' unmet needs during survivorship journey: a reliability and validity study. *J Nursol*. 2023;26(2):113–119. doi:10.5152/JANHS.2023.23319
21. Hodgkinson K, Butow P, Hunt GE, et al. The development and evaluation of a measure to assess cancer survivors' unmet supportive care needs: the CaSUN (Cancer Survivors' Unmet Needs Measure). *Psychooncology*. 2007;16(9):796–804. doi:10.1002/pon.1137
22. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. Lawrence Erlbaum Associates; 1988.
23. Mellon S, Gold R, Janisse J, et al. Risk perception and cancer worries in families at increased risk of familial breast/ovarian cancer. *Psychooncology*. 2008;17(8):756–766. doi:10.1002/pon.1370
24. Dumalaon-Canaria J, Prichard I, Hutchinson A, Wilson C. Fear of cancer recurrence and psychological well-being in women with breast cancer: the role of causal cancer attributions and optimism. *Eur J Cancer Care*. 2018;27(1):e12579.
25. Wijayanti T, Afyanti Y, Rahmah H, Milanti A. Fear of cancer recurrence and social support among Indonesian gynecological cancer survivors. *Arch Oncol*. 2018;24(2):12–19. doi:10.2298/AOO180201004W
26. Iglesias-Puzas Á, García-González V, Conde-Taboada A, López-Bran E. Fear of cancer recurrence in patients with non-metastatic melanoma: Spanish validation and disease-related factors. *Australas J Dermatol*. 2022;63(4):e312–e319. doi:10.1111/ajd.13907
27. Faraji A, Dehghani M, Khatibi A. Familial aspects of fear of cancer recurrence: current insights and knowledge gaps. *Front Psychol*. 2023;14:1279098. doi:10.3389/fpsyg.2023.1279098
28. Tauber NM, O'Toole MS, Dinkel A, et al. Effect of psychological intervention on fear of cancer recurrence: a systematic review and meta-analysis. *J Clin Oncol*. 2019;37(31):2899–2915. doi:10.1200/JCO.19.00572
29. Saeed AA, Arifin WN, Ismail IZ, Ali RM. Fear of cancer recurrence and its relationship with quality of life and psychological distress in cancer patients. *Asian Pac J Cancer Prev*. 2020;21(11):3191–3198. doi:10.31557/APJCP.2020.21.11.3191
30. Lyu W, Shen Y, Jin X, Liu Y, Tian L. The mediating role of coping strategies between fear of cancer recurrence and quality of life among prostate cancer survivors. *BMC Urol*. 2024;24(49):1–7. doi:10.1186/s12894-023-01386-4
31. Jiang Y, Li H, Xiong Y, et al. Association between fear of cancer recurrence and emotional distress in breast cancer: a latent profile and moderation analysis. *Front Psychiatry*. 2025;16:1521555. doi:10.3389/fpsyg.2025.1521555
32. Erdoğan Yüce G, Döner A, Muz G. Psychological distress and its association with unmet needs and symptom burden in outpatient cancer patients: a cross-sectional study. *Semin Oncol Nurs*. 2021;37(5):151214. doi:10.1016/j.soncn.2021.151214
33. Podina IR, Todea D, Fodor LA. Fear of cancer recurrence and mental health: a comprehensive meta-analysis. *Psychooncology*. 2023;32(10):1503–1513. doi:10.1002/pon.6205
34. Springer F, Mehnert-Theuerkauf A, Gebhardt C, et al. Unmet supportive care needs among cancer patients: exploring cancer entity-specific needs and associated factors. *J Cancer Res Clin Oncol*. 2024;150(4):190. doi:10.1007/s00432-024-05715-4
35. Liu M, Liu L, Zhang S, et al. Fear of cancer recurrence and hope level in patients receiving surgery for non-small cell lung cancer: a study on the mediating role of social support. *Support Care Cancer*. 2022;30(11):9453–9460. doi:10.1007/s00520-022-07318-6
36. Okediji PT, Salako O, Fatiregun OO. Pattern and predictors of unmet supportive care needs in cancer patients. *Cureus*. 2017;9(5):e1234. doi:10.7759/cureus.1234
37. Tzelepis F, Paul CL, Sanson-Fisher RW, et al. Unmet supportive care needs of haematological cancer survivors: rural versus urban residents. *Ann Hematol*. 2018;97(7):1283–1292. doi:10.1007/s00277-018-3285-x
38. Wen KY, Hu A, Ma GX, et al. Psychosocial health and unmet needs of Chinese cancer survivors: a systematic review. *Support Care Cancer*. 2020;28(6):2543–2557.
39. Luijckes-Huizer YA, Suurmeijer TPBM, Mols F, et al. Colorectal cancer survivors' quality of life: a qualitative study of unmet need. *BMJ Open*. 2020;10(5):e035370. doi:10.1136/bmjopen-2019-035370

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