ORIGINAL RESEARCH ORİJİNAL ARAŞTIRMA

DOI: 10.5336/medsci.2023-97992

Evaluation of the Satisfaction, Quality of Life and Anxiety Among Cancer Patients and Patient Relatives in the Radiotherapy Unit During the COVID-19 Pandemic: A Cross-Sectional Survey Study

COVID-19 Pandemisi Döneminde Radyoterapi Ünitesindeki Kanser Hastaları ve Hasta Yakınlarının Memnuniyeti, Yaşam Kalitesi ve Kaygılarının Değerlendirilmesi: Kesitsel Bir Anket Çalışması

İlknur ALSAN ÇETİN[a], Bennur Zeynan DEVRAN[a], Türkan ŞÜKÜROV[b], Mehmet Kutluhan AKARÇAY[b], Zeynep Miray ONAYLAR[b], Esra Gül ANLAR[b], Meryem DEMİR[b]

[a]Department of Radiation Oncology, Marmara University Faculty of Medicine, İstanbul, Türkiye
[b]Marmara University Faculty of Medicine, İstanbul, Türkiye

This study was presented as an oral presentation at MasCo (Marmara Student Congress), May 22, 2022, İstanbul, Türkiye.

ABSTRACT Objective: It was aimed to investigate the psychological effects of the coronavirus disease-2019 (COVID-19) pandemic on cancer patients receiving radiotherapy and their relatives, as well as their satisfaction level and the effects of the pandemic on patients' quality of life. **Material and Methods:** 118 cancer patients who applied to our clinic between November 2021-February 2022 and 111 patients relatives were included in the study. The Short Form-36 Quality of Life Scale was only applied to patients, whereas the Hospital Anxiety and Depression Scale and COVID-19 Knowledge and Satisfaction survey were applied to both patients and their relatives. **Results:** A statistically significant difference was found between gender and anxiety and depression in females (p=0.009). While there was a significant difference between social functioning and age (p=0.042), no significant difference was found in other parameters. Comparison of anxiety levels among patient and patient relatives demonstrated that anxiety levels were significantly higher among patient relatives (p=0.044). Comparison of the quality of life among gender groups demonstrated that physical function was significantly higher among males compared to females (p=0.043). Comparison of the quality of life among different cancer types demonstrated that physical function was lower in the breast and gynecology cancer group than in the genito-urinary cancer group (p=0.020). **Conclusion:** It was determined that female gender was more inclined toward anxiety, social functioning was better in the old age group, patient relatives exhibited higher anxiety levels than patients, and physical function scores were higher in men than in women.

Keywords: COVID-19; quality of life; cancer; radiotherapy

ÖZET Amaç: Koronavirüs hastalığı-2019 [coronavirus disease-2019 (COVID-19)] pandemisinin radyoterapi alan kanser hastaları ve yakınları üzerindeki psikolojik etkilerinin yanı sıra memnuniyet düzeylerinin ve pandeminin hastaların yaşam kalitelerine etkilerinin araştırılması amaçlandı. **Gereç ve Yöntemler:** Kasım 2021-Şubat 2022 tarihleri arasında kliniğimize başvuran 118 kanser hastası ve 111 hasta yakını çalışmaya dâhil edildi. Yaşam Kalitesi Ölçeği olan Kısa Form-36 sadece hastalara uygulanırken, Hastane Anksiyete ve Depresyon Ölçeği ile COVID-19 Bilgi ve Memnuniyet Ölçeği ise hem hastalara hem de hasta yakınlarına uygulandı. **Bulgular:** Kadınlarda cinsiyet ile anksiyete ve depresyon arasında istatistiksel olarak anlamlı fark bulundu (p=0,009). Sosyal işlevsellik ile yaş arasında anlamlı fark varken (p=0,042), diğer parametrelerde anlamlı fark bulunmadı. Hasta ve hasta yakınlarının kaygı düzeylerinin karşılaştırılması, hasta yakınlarının kaygı düzeylerinin anlamlı olarak yüksek olduğunu gösterdi (p=0,044). Cinsiyet grupları arasında yaşam kalitesinin karşılaştırılması, fiziksel fonksiyonun erkeklerde kadınlara göre anlamlı olarak daha yüksek olduğunu gösterdi (p=0,043). Farklı kanser türleri arasında yaşam kalitesinin karşılaştırılması, fiziksel fonksiyonun meme ve jinekoloji kanseri grubunda genitoüriner kanser grubuna göre daha düşük olduğunu gösterdi (p=0,020). **Sonuç:** Kadın cinsiyetin kaygıya daha yatkın olduğu, sosyal işlevsellik yaşlı grupta daha iyi olduğu, hasta yakınlarının anksiyete düzeylerinin hastalara göre daha yüksek olduğu ve fiziksel işlev puanlarının erkeklerde kadınlara göre daha yüksek olduğu belirlendi.

Anahtar Kelimeler: COVID-19; yaşam kalitesi; kanser; radyoterapi

Correspondence: İlknur ALSAN ÇETİN
Department of Radiation Oncology, Marmara University Faculty of Medicine, İstanbul, Türkiye
E-mail: ilknurcet@gmail.com

Peer review under responsibility of Turkiye Klinikleri Journal of Medical Sciences.

Received: 16 May 2023 ***Received in revised form:*** 09 Sep 2023 ***Accepted:*** 14 Sep 2023 ***Available online:*** 22 Sep 2023

The severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) was identified during the outbreak of severe acute respiratory syndrome in January 2020 in Wuhan, Hubei province, China.[1] It was declared a pandemic by the World Health Organization on March 11, 2020 due to the rapidly increasing cases.[2] A large number of deaths were reported spreading all over the world.[3] In coronavirus disease-2019 (COVID-19) patients, various risk factors increase the risk of severity and death. Many studies reported higher COVID-19-related mortality rates in cancer patients with weakened immune systems due to drug therapies and the disease itself.[4-6]

In China, a study on the general population during the COVID-19 pandemic found that individuals were psychologically affected by stress, anxiety and depression at the rate of 8.1%, 28.8%, and 16.5%, respectively.[7] However, the epidemic also caused an increase in psychological problems among cancer patients. The COVID-19 pandemic has significantly affected patients' access to healthcare. Patients with malignant tumors were adversely affected psychologically due to obstacles such as treatment interruptions during the pandemic and difficulty in receiving medical help.[8] Social support and social networking were found to be associated with cancer mortality in cancer patients, reducing mortality by 25%. However, the effects of quarantine and isolation on these patients during the epidemic are not clear.[9,10] The risk of COVID-19 infection and interruption of cancer treatment are likely to worsen anxiety and depression symptoms of cancer patients and adversely affect their clinical prognosis.[8] The prevalence of anxiety and depression is higher in cancer patients than in the general population. Negative emotions such as anxiety and depression may lead to increased side effects in cancer treatment, such as slowed physical recovery, decreased quality of life, and decreased survival rates.[8,11-13] It is not very difficult to predict the potential threats of the COVID-19 pandemic on the psychological health of cancer patients.[14] During the pandemic, cancer patients faced a dilemma that significantly affected their quality of life where they had to choose between staying at home, which could increase the tumor progression, or visiting the hospital for radiotherapy, which increased the risk of contracting COVID-19 infection.[15] These concerns negatively affected cancer patients and patient relatives mentally and psychologically.[16] Considering the sensitivity of cancer patients to mental health problems, it is a fact that they need more attention and care from their relatives and caregivers to protect themselves from the adverse psychological effects of COVID-19.[17]

In cancer patients, general satisfaction with treatment is associated with decreased anxiety and patient compliance with treatment. There is a significant relationship between patient satisfaction and health-related quality of life.[17,18]

In the light of this information, this cross-sectional survey study aimed to investigate the psychological effects of the COVID-19 pandemic on cancer patients receiving radiotherapy, how their quality of life is affected, and their perspectives on the measures taken by the treatment clinic. Based on this data, this cross-sectional survey aimed to explore the psychological impacts of the COVID-19 pandemic on patients undergoing radiotherapy for cancer. The study assessed how their quality of life has been influenced and also sought their opinions on the measures implemented by the treatment clinic in response to the pandemic. In addition, the results of Hospital Anxiety and Depression (HAD) Scale and COVID-19 Satisfaction Surveys applied to patients and patient relatives were compared in two groups.

MATERIAL AND METHODS

This study is an observational, cross sectional type survey study. This study was performed in line with the principles of the Declaration of Helsinki. Approval was obtained from the Marmara University Faculty of Medicine Clinical Research Ethics Committee with the protocol dated November 05, 2021 and numbered 09.2021.1254. In our study, surveys were applied to the patients and their relatives who applied to the Radiation Oncology Clinic between November 2021 and February 2022. A total of 229 people were recruited for the study, in which we evaluated the satisfaction, quality of life and anxiety status of cancer patients and their relatives who received treatment during the SARS-CoV-2 pandemic. After the written consent of patients and patient relatives

were obtained, 3 different scales consisting of 67 questions, including the Short Form-36 (SF-36) Health Survey Questionnaire, the Knowledge and Satisfaction Survey on COVID-19 measures, and the HAD Scale were applied through face-to-face interviews. While all three tests were applied to the patients, HAD Scale and Knowledge-Satisfaction Survey on COVID-19 measures were applied to the relatives of the patients.[19] HAD Scale was prepared to screen for anxiety and depression in patients with physical illness. The SF-36 is a test consisting of 36 items answered by the patient himself/herself to obtain information about the health status of the person. Knowledge-Satisfaction Survey on COVID-19 measures translated into Turkish and used with permission of Desideri et al.[19] Prior to the survey, patient and patient relatives were questioned about disease stages and treatments and their sociodemographics were obtained. Independent variables include age, treatment purpose, cancer type, stage of cancer, gender, and educational status while dependent variables include anxiety, depression, quality of life subscales (Physical Function, Physical Role Challenge, Emotional Role Challenge, Energy-Life-Vitality, Mental Health, Social Functioning, Pain, General Health), Satisfaction with COVID-19-related Knowledge and Precautions. Data were collected and transferred onto the IBM SPSS 28.0.1 (Armonk, NY: USA) program for analysis. One-Way analysis of variance or Kruskal-Wallis, Independent t-test or Mann-Whitney U tests were used to evaluate continuous variables of the SF-36 questionnaire, and chi-square and Fisher's exact tests were used to compare categorical variables in the HAD Scale. Pearson correlation or Spearman correlation tests were used to determine the correlation of the survey results with each other. A value of $p<0.05$ was considered significant.

RESULTS

Patients between the ages of 18-80 and their relatives were included in the study. 118 (51%) of the respondents were patients and 111 (49%) were patient relatives. 84.7% of the respondents are married and 15.6% are single. Patient and patient relative characteristics are shown in Table 1. As can be seen in Tables 2.1, Table 2.2 and Table 2.3, the participants reported a high level of COVID-19-related knowledge and satisfaction regarding the pandemic measures taken by the radiation oncology clinic by ticking the options "I agree" and "I strongly agree".

The results of the SF-36 Health Survey questionnaire revealed that 75.4% (n=89) of our participants had difficulties in physical roles, 72.8% (n=86) had impaired social functioning, 68.6% (n=81) had difficulties in emotional roles, 58.4% (n=69) had very good mental health status. No significant difference was noted in the quality of life parameters between different patient groups. No significant difference was noted between the patient groups with different disease stages in terms of quality of life parameters.

TABLE 1: Patient and caregiver/relative characteristics.

		Patient		Relative	
		n	%	n	%
Gender	Women	45	38	58	52
	Men	73	62	53	48
Age	18-40	16	13	36	32
	41-65	65	55	63	57
	>66	37	32	12	11
Education status	Illiterate	7	5.9	3	2.7
	Primary school	51	43.2	49	44.1
	Middle school	16	13.6	15	13.5
	High school	24	20.3	26	23.5
	University	16	13.6	18	16.2
	Master degree/doctorate	4	3.4	0	0

TABLE 2.1: Patient level of knowledge about COVID-19 precautions and satisfaction with health-related measures during the pandemic.

	Answers [n (%)]			
	Strongly disagree	**Disagree**	**Agree**	**Strongly agree**
1. I have heard about COVID-19 epidemy	0 (0.0)	3 (2.6)	45 (38.1)	70 (59.3)
2. I have heard about recommended sanitation precautions to prevent the COVID-19 epidemic.	0 (0.0)	1 (0.8)	42 (35.6)	75 (63.6)
3. I have heard about the COVID-19 vaccine.	1 (0.8)	5 (4.3)	45 (38.1)	67 (56.8)
	Yes		**No**	
4. Have you benn vaccinated?	108 (91.5)		10 (8.5)	
	Strongly disagree	**Disagree**	**Agree**	**Strongly agree**
5. Being vaccinated made me feel safer during the pandemic process.	2 (1.8)	3 (2.8)	34 (31.5)	69 (63.9)
6. I have heard about the behaviors and limitations that must be followed in case of flu symptoms (fever, cough, dyspnea) or positive/result in progress swab.	3 (2.5)	5 (4.2)	39 (33.1)	71 (60.2)
7. I have heard about precautions in turkiye implemented to prevent the spread of the COVID-19 epidemy.	4 (3.4)	6 (5.1)	39 (33.0)	69 (58.5)
8. I believe that communication with local services (general practitioners, local health companies, continuity health care service, pharmacy) about COVID-19 epidemy management is effective.	1 (0.8)	8 (6.8)	42 (35.6)	67 (56.8)

TABLE 2.2: Patient level of knowledge about COVID-19 precautions and satisfaction with health-related measures during the pandemic.

9. I am satisfied about triage measures applied at the entrance checkpoint of the radiotherapy centre body temperature check, hand sanitation and mask supply).	5 (4.2)	8 (6.8)	41 (34.8)	64 (54.2)
10. I feel comfortable enough wearing a mask in the radiotherapy centre.	3 (2.5)	5 (4.2)	35 (29.7)	75 (63.6)
11. I accept limitations about caregivers attendance in the radiotherapy centre	1 (0.8)	2 (1.7)	41 (34.8)	74 (62.7)
12. I feel comfortable about doctors wearing personal protective equipment during visits in the radiotherapy centre.	0 (0.0)	1 (0.8)	34 (28.9)	83 (70.3)
13. I feel comfortable about healthcare personnel (nurses, technicians, social health operators) wearing personal protective equipment when attending me in the radiotherapy centre.	0 (0.0)	1 (0.8)	32 (27.2)	85 (72.0)
14. I believe that the COVID-19 precautions implemented in the radiotherapy centre are adequate and necessary.	2 (1.7)	10 (8.5)	38 (32.2)	68 (57.6)
15. I am aware that there may be delays in clinical visits because of the precautions taken during COVID-19 epidemy.	1 (0.8)	2 (1.7)	42 (35.6)	73 (61.9)
16 I am aware that there may be delays in my treatment because of the precautions taken during COVID-19 epidemy.	1 (0.8)	3 (2.5)	45 (38.2)	69 (58.5)
17. I am satisfied about the doctor-patient relationship despite the precautions taken by the radiotherapy centre during COVID-19 epidemy.	1 (0.8)	2 (1.7)	29 (24.6)	86 (72.9)

There were no significant difference in Physical Function (p=0.33), Physical Role Challenge (p=0.85), Emotional Role Challenge (p=0.67), Energy/Life/Vitality (p=0.13), Mental Health (p=0.26), Social Functioning (p=0.44), and Pain (p=0.75) parameters between the groups with different educational backgrounds. Although a significant difference was observed in the comparison of educational status in the General Health Parameter (p=0.046), there were no difference between the groups.

There were a significant difference in Physical Function between the Breast/Gynecology cancer groups and Genitourinary cancer groups (p=0.034). Higher physical functions were observed in the Genitourinary cancer group.

There were no significant difference in the parameters of Physical Role Challenge (p=0.1), Emotional Role Challenge (p=0.38), Energy/Life/Vitality (p=0.58), Mental Health (p=0.4), Social Functioning (p=019), Pain (p=0.12) and General Health (p=0.49) between the groups with different diagnoses.

As seen in Table 3, a significant difference was noted in social functioning between the 18-40 and >66 age groups (p=0.041). Social functioning was observed to be higher in the old age group. Comparison between genders demonstrated a significant difference in physical functions between males and females. Physical function was found to be higher in the male group.

Statistically, it was shown that moderate anxiety mood disorder is higher in women than in men (p=0.009), (Figure 1). In addition, it has been demonstrated that relatives of the patients have a higher level of moderate anxiety and mood disorder than patients. (p=0.044), (Figure 2).

TABLE 2.3: Patient's relatives level of knowledge about COVID-19 precautions and satisfaction with health-related measures during the pandemic.

	Answers [n (%)]			
	Strongly disagree	**Disagree**	**Agree**	**Strongly agree**
1. I have heard about COVID-19 epidemy	1 (0.9)	4 (3.6)	39 (35.1)	67 (60.4)
2. I have heard about recommended sanitation precautions to prevent the COVID-19 epidemic	2 (1.8)	3 (2.7)	39 (35.1)	67 (60.4)
3. I have heard about the COVID-19 vaccine	0 (0.0)	4 (3.6)	37 (33.3)	70 (63.1)
	Yes		**No**	
4. Have you been vaccinated?	100 (90.1)		11 (9.9)	
	Strongly disagree	**Disagree**	**Agree**	**Strongly agree**
5. Being vaccinated made me feel safer during the pandemic process	4 (4.0)	10 (10.0)	32 (32.0)	54 (54.0)
6. I have heard about the behaviors and limitations that must be followed in case of flu symptoms (fever, cough, dyspnea) or positive/result in progress swab	1 (0.9)	5 (4.5)	34 (30.6)	71 (64.0)
7. I have heard about precautions in turkiye implemented to prevent the spread of the COVID-19 epidemy	0 (0.0)	7 (6.3)	36 (32.4)	68 (61.3)
8. I believe that communication with local services (general practitioners, local health companies, continuity health care service, pharmacy) about COVID-19 epidemy management is effective	3 (2.7)	11 (9.9)	41 (36.9)	56 (50.5)
9. I am satisfied about triage measures applied at the entrance checkpoint of the radiotherapy centre (body temperature check, hand sanitation and mask supply)	7 (6.4)	16 (14.4)	43 (38.7)	45 (40.5)
10. I feel comfortable enough wearing a mask in the radiotherapy centre	3 (2.7)	13 (11.8)	47 (42.3)	48 (43.2)
11. I accept limitations about caregivers attendance in the radiotherapy centre	2 (1.8)	7 (6.3)	46 (41.4)	56 (50.5)
12. I feel comfortable about doctors wearing personal protective equipment during visits in the radiotherapy centre	1 (0.9)	3 (2.7)	37 (33.3)	70 (63.1)
13. I feel comfortable about healthcare personnel (nurses, technicians, social health operators) wearing personal protective equipment when attending me in the radiotherapy centre	2 (1.8)	0 (0.0)	42 (37.8)	67 (60.4)
14. I believe that the COVID-19 precautions implemented in the radiotherapy centre are adequate and necessary	3 (2.7)	14 (12.7)	44 (39.6)	50 (45.0)
15. I am aware that there may be delays in clinical visits because of the precautions taken during COVID-19 epidemy	0 (0.0)	3 (2.7)	49 (44.1)	59 (53.2)
16. I am aware that there may be delays in treatment process because of the precautions taken during COVID-19 epidemy	0 (0.0)	5 (4.5)	50 (45.0)	56 (50.5)
17. I am satisfied about the doctor-patient relationship despite the precautions taken by the radiotherapy centre during COVID-19 epidemy	1 (0.9)	1 (0.9)	43 (38.7)	66 (59.5)

TABLE 3: Comparison of participant's ages/gender and QoL.

		Age				Gender		
		18-44	**41-65**	**>66**	**p value**	**Women**	**Men**	**p value**
Physical functionality	M (IQR)	77.50 (18.75)	75 (42.50)	80 (47.50)	0.9632	70 (42.50)	85 (40.00)	0.0434
Difficulties in Physical role	M (IQR)	0.00 (25.00)	25 (62.50)	25 (100.00)	0.2642	32.22 (39.39)	32.53 (38.79)	0.9663
Difficulties in Emotional role	M (IQR)	0.00 (33.33)	33.33 (100)	33.33 (100)	0.2772	45.19 (44.47)	39.27 (41.70)	0.4673
Energy/Vitality	Mn (SD)	44.68 (25.06)	53.62 (26.05)	52.25 (27.58)	0.5011	50.67 (26.94)	53.22 (28.10)	0.6273
Mental health	Mn (SD)	70.31 (30.63)	83.30 (25.77)	85.68 (34.12)	0.2011	77.78 (27.93)	85.07 (30.16)	0.1923
Social functionality	Mn (SD)	39.06 (27.72)	53.27 (33.53)	63.85 (34.46)	0.0421	54.72 (34.37)	54.62 (33.63)	0.9883
Pain	Mn (SD)	46.72 (30.72)	59.27 (32.45)	65.81 (35.52)	0.1621	54.67 (32.26)	62.67 (34.04)	0.2083
General health	Mn (SD)	58.44 (23.29)	64.46 (21.72)	59.46 (23.80)	0.4831	59.67 (25.00)	63.56 (23.08)	0.3903

[1]One-Way analysis of variance; [2]Kruskal-Wallis analysis; [3]Independent Samples t-test; [4]Mann-Whitney U Test; M: Median; Mn: Mean; SD: Standart deviation; IQR: Interquartile range; QOL: Quality of life.

The comparison of age groups, educational status, treatment goal, disease stages and diagnosis according to HAD anxiety categories was not statistically significant (p=0.204, p=0.623, p=0.449, p=0.485, and p=0.236, respectively). The comparison of age groups, educational status, treatment goal, gender, disease stages and diagnoses between patient and patient relatives groups based on HAD depression categories was not found statistically significant (p=0.290, p=0.329, p=0.324, p=0.255, p=0.316, p=0.339, respectively).

There was no significant difference between physical function and pandemic-related knowledge (p=0.998) and physical function and health service

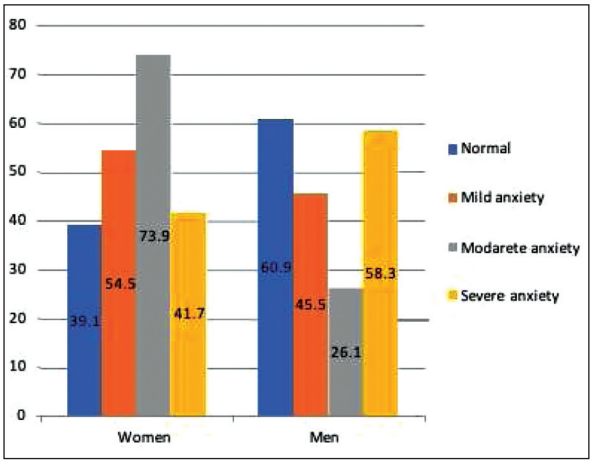

FIGURE 1: The relationship between anxiety level and gender.

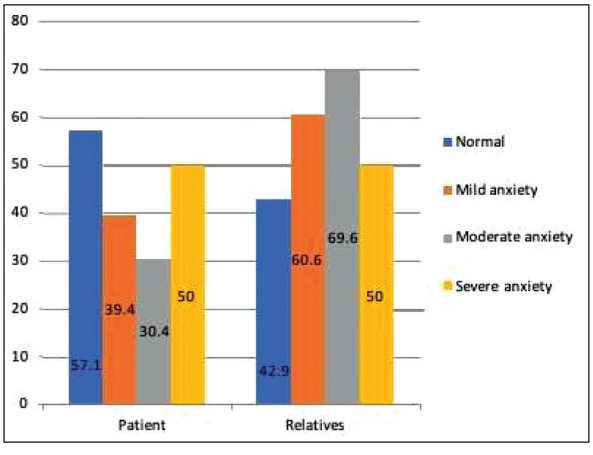

FIGURE 2: Anxiety level and relationship between patient and relatives.

satisfaction scores (p=0.167). There was no significant difference between physical role challenge and pandemic-related knowledge (p=0.700) and physical role challenge and health service satisfaction (p=0.424) scores. There was no significant difference between emotional role challenge and pandemic-related knowledge (p=0.693) and emotional role challenge and health service satisfaction scores (p=0.262). There was no significant difference between energy/vitality and pandemic-related knowledge (p=0.414) and health service satisfaction scores (p=0.063). There was no significant difference between mental health and pandemic-related knowledge (p=0.174). A positive correlation was found between mental health status and health service satisfaction scores (p=0.015). There was no significant difference between social functionality and pandemic-related knowledge (p=0.944) and social functioning and health service satisfaction scores (p=0.900).

There was no significant difference between pain and pandemic-related knowledge (p=0.669) and pain and health service satisfaction scores (p=0.493). There was no significant difference between general health status and pandemic-related knowledge (p=0.108). A positive correlation was found between general health status and health service satisfaction scores (p=0.006).

A negative correlation was found between anxiety and pandemic-related knowledge (p=0.014). A negative correlation was found between anxiety and health service satisfaction scores (p=0.022). A negative correlation was found between depression and pandemic-related knowledge (p=0.033). A positive correlation was found between depression and health service satisfaction scores (p=0.013).

DISCUSSION

Cancer patients receiving radiotherapy during the COVID-19 pandemic are required to visit the hospital frequently. In our study, we investigated the effects of the pandemic on the quality of life of cancer patients receiving radiotherapy, as well as the anxiety levels of patients and their relatives as well as their satisfaction with health care.

Depression and anxiety are known to exacerbate in caregiver relatives, and our study also found that the level of anxiety was higher in patient relatives compared to the patients. Edwards and Clarke found that cultural values play a significant role in coping with the disease and stress management for patients and their relatives.[20,21] Since there is a tendency in the eastern culture to refrain from being direct to cancer patients regarding their diagnosis, patient relatives take over even greater responsibility.[22] Consistently, it was thought that the firmer sociocultural relationship between Turkish family members compared to the Western society, similar to the Eastern culture, may have lead to more anxiety in patient relatives. In a similar study conducted by Fumis et al. on intensive care patients, they observed higher anxiety among patient relatives than patients themselves, possibly due to the

fact that patient relatives adopt a more realistic approach to the situation.[23] Similarly, the non-acceptance of cancer may have caused less anxiety in our patients.

In parallel with other studies, we determined that the female gender was a negative characteristic in terms of anxiety in cancer patients receiving active treatment during the COVID-19 pandemic. It has been reported that women are more psychologically affected by the pandemic at a higher level.[24] Similarly, Parás-Bravo et al. reported anxiety symptoms at a higher rate in female cancer patients.[25] Examination of stress and coping mechanisms between genders revealed that women mostly turned to emotion-oriented methods while men were more problem-oriented, which may be one of the reasons why female patients felt more depression and anxiety while coping with stress associated with both cancer and the COVID-19 epidemic.[26]

In the literature, different rates of depression and anxiety have been reported according to cancer type. Higher stress rates are observed in patients with lung, gynecological, or hematological cancer.[11] In our study, no significant difference was found between cancer types in terms of anxiety, however, we observed that physical function parameters were lower in the breast and gynecological cancer groups.

It was observed that social communication patterns remained unchanged between those with and without cancer in the elderly.[27] Similar to our study, Mor et al. reported that elderly cancer patients had fewer psychosocial problems than young patients. This was attributed to the fact that elderly patients have less anxiety toward time and work, which may reduce the negative effects of the disease and the psychosocial consequences of treatment.[28]

Uncertainty and lack of knowledge are one of the major causes of stress during the unexpected and novel pandemic. Receiving sufficient information about the pandemic helps reduce anxiety.[29] Wang et al. reported an improvement in patients' anxiety scores after receiving accurate information.[30] Similarly, in our study, a negative correlation was noted between anxiety and pandemic knowledge levels in cancer patients.

Satisfaction with health services might affect both the stress and the general health status of patients. We observed that the general health and mental health status of our patients are in parallel with their satisfaction with health services. Another study conducted on small cell lung cancer patients reported a significant relationship between patient satisfaction with health services and survival.[31]

CONCLUSION

In the present study, we found that patient relatives experienced anxiety at a higher rate due to sociocultural reasons compared to patients themselves and that the female gender was more inclined to anxiety. We observed that the elderly patients were less affected by the pandemic compared to young patients in terms of social functionality. We also observed that patient satisfaction and accurate information played a role in reducing stress and anxiety in cancer patients during the pandemic. The importance of psychological support has come to the fore during the pandemic, and providing patient and patient relatives with sufficient information bears great importance in terms of quality of life.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *İlknur Alsan Çetin;* ***Design:*** *İlknur Alsan Çetin, Bennur Zeynan Devran, Türkan Şükürov, Meryem Demir;* ***Control/Supervision:*** *İlknur Alsan Çetin, Bennur Zeynan Devran, Türkan Şükürov, Esra Gül Anlar;* ***Data Collection and/or Processing:*** *Türkan Şükürov, Mehmet Kutluhan Akarçay, Zeynep Miray Onaylar, Meryem Demir;* ***Analysis and/or Interpretation:*** *Mehmet Kutluhan Akarçay, Zeynep Miray Onaylar, Esra Gül Anlar;* ***Literature Review:*** *Zeynep Miray Onaylar, Esra Gül Anlar, Meryem Demir;* ***Writing the Article:*** *İlknur Alsan Çetin, Bennur Zeynan Devran;* ***Critical Review:*** *İlknur Alsan Çetin, Bennur Zeynan Devran, Türkan Şükürov.*

REFERENCES

1. Ciotti M, Ciccozzi M, Terrinoni A, Jiang WC, Wang CB, Bernardini S. The COVID-19 pandemic. Crit Rev Clin Lab Sci. 2020;57(6):365-88. [Crossref] [PubMed]
2. World Health Organization. COVID 19 Public Health Emergency of International Concern (PHEIC): Global Research and Innovation Forum: Towards a Research Roadmap. 2020. [Link]
3. World Health Organization. Coronavirus disease 2019 (COVID-19): situation report, 73. World Health Organization; 2020. [Link]
4. Sah GS, Shrestha G, Dhakal A, Mulmi R, Sapkota A, Poudel S. Knowledge, attitudes, and practices of cancer patients towards COVID-19: a cross-sectional study in Central Nepal. Cancer Manag Res. 2020;12:10173-80. [Crossref] [PubMed] [PMC]
5. Zheng Z, Peng F, Xu B, Zhao J, Liu H, Peng J, et al. Risk factors of critical & mortal COVID-19 cases: a systematic literature review and meta-analysis. J Infect. 2020;81(2):e16-e25. [Crossref] [PubMed] [PMC]
6. Liang W, Liang H, Ou L, Chen B, Chen A, Li C, et al; China Medical Treatment Expert Group for COVID-19. Development and validation of a clinical risk score to predict the occurrence of critical illness in hospitalized patients with COVID-19. JAMA Intern Med. 2020;180(8):1081-9. [Crossref] [PubMed] [PMC]
7. Wang Y, Duan Z, Ma Z, Mao Y, Li X, Wilson A, et al. Epidemiology of mental health problems among patients with cancer during COVID-19 pandemic. Transl Psychiatry. 2020;10(1):263. [Crossref] [PubMed] [PMC]
8. Yu H, Zhou Z, Mo Q, Zhou X, Liu Y, Feng S. Prevalence of anxiety and depression among cancer patients during the COVID-19 pandemic: a systematic review and meta-analysis. Research Square. 2020:1-16. [Crossref]
9. Pinquart M, Duberstein PR. Associations of social networks with cancer mortality: a meta-analysis. Crit Rev Oncol Hematol. 2010;75(2):122-37. [Crossref] [PubMed] [PMC]
10. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet. 2020;395(10227):912-20. [Crossref] [PubMed] [PMC]
11. Linden W, Vodermaier A, Mackenzie R, Greig D. Anxiety and depression after cancer diagnosis: prevalence rates by cancer type, gender, and age. J Affect Disord. 2012;141(2-3):343-51. [Crossref] [PubMed]
12. Mystakidou K, Tsilika E, Parpa E, Katsouda E, Galanos A, Vlahos L. Assessment of anxiety and depression in advanced cancer patients and their relationship with quality of life. Qual Life Res. 2005;14(8):1825-33. [Crossref] [PubMed]
13. Pitman A, Suleman S, Hyde N, Hodgkiss A. Depression and anxiety in patients with cancer. BMJ. 2018;361:k1415. [Crossref] [PubMed]
14. Nardone V, Reginelli A, Vinciguerra C, Correale P, Calvanese MG, Falivene S, et al. Mood disorder in cancer patients undergoing radiotherapy during the COVID-19 outbreak. Front Psychol. 2021;12:568839. [Crossref] [PubMed] [PMC]
15. Ciążyńska M, Pabianek M, Szczepaniak K, Ułańska M, Skibińska M, Owczarek W, et al. Quality of life of cancer patients during coronavirus disease (COVID-19) pandemic. Psychooncology. 2020;29(9):1377-9. [Crossref] [PubMed] [PMC]
16. Ayubi E, Bashirian S, Khazaei S. Depression and anxiety among patients with cancer during COVID-19 pandemic: a systematic review and meta-analysis. J Gastrointest Cancer. 2021;52(2):499-507. [Crossref] [PubMed] [PMC]
17. Jayadevappa R, Schwartz JS, Chhatre S, Wein AJ, Malkowicz SB. Satisfaction with care: a measure of quality of care in prostate cancer patients. Med Decis Making. 2010;30(2):234-45. [Crossref] [PubMed]
18. Muraj Z, Kwan M, Wake M, Tse K, Swanson LA. Assessing patient satisfaction in a radiation therapy department using a survey tool. J Med Imaging Radiat Sci. 2015;46(2):182-8. [Crossref] [PubMed]
19. Desideri I, Francolini G, Ciccone LP, Stocchi G, Salvestrini V, Aquilano M, et al. Impact of COVID-19 on patient-doctor interaction in a complex radiation therapy facility. Support Care Cancer. 2021;29(6):2931-7. Erratum in: Support Care Cancer. 2022;30(2):1891-2. [Crossref] [PubMed] [PMC]
20. Unsar S, Erol O, Ozdemir O. Caregiving burden, depression, and anxiety in family caregivers of patients with cancer. Eur J Oncol Nurs. 2021;50:101882. [Crossref] [PubMed]
21. Edwards B, Clarke V. The psychological impact of a cancer diagnosis on families: the influence of family functioning and patients' illness characteristics on depression and anxiety. Psychooncology. 2004;13(8):562-76. [Crossref] [PubMed]
22. Wang H, Zhao F, Wang X, Chen X. To Tell or Not: The Chinese doctors' dilemma on disclosure of a cancer diagnosis to the patient. Iran J Public Health. 2018;47(11):1773-4. [PubMed] [PMC]
23. Fumis RR, Ranzani OT, Martins PS, Schettino G. Emotional disorders in pairs of patients and their family members during and after ICU stay. PLoS One. 2015;10(1):e0115332. [Crossref] [PubMed] [PMC]
24. Tsukamoto R, Kataoka Y, Mino K, Ishibashi N, Shibata M, Matsuo H, et al. Gender differences in anxiety among COVID-19 inpatients under isolation: a questionnaire survey during the first and second waves of the COVID-19 pandemic in Japan. Front Public Health. 2021;9:708965. [Crossref] [PubMed] [PMC]
25. Parás-Bravo P, Paz-Zulueta M, Boixadera-Planas E, Fradejas-Sastre V, Palacios-Ce-a D, et al. Cancer patients and anxiety: a gender perspective. Int J Environ Res Public Health. 2020;17(4):1302. [Crossref] [PubMed] [PMC]
26. Ptacek JT, Smith RE, Dodge KL. Gender differences in coping with stress: When stressor and appraisals do not differ. Personality and Social Psychology Bulletin. 1994;20(4):421-30. [Crossref]
27. Guida JL, Holt CL, Dallal CM, He X, Gold R, Liu H. Social relationships and functional impairment in aging cancer survivors: a longitudinal social network study. Gerontologist. 2020;60(4):607-16. [Crossref] [PubMed] [PMC]
28. Mor V, Allen S, Malin M. The psychosocial impact of cancer on older versus younger patients and their families. Cancer. 1994;74(7 Suppl):2118-27. [Crossref] [PubMed]
29. Quansah F, Hagan JE Jr, Ankomah F, Srem-Sai M, Frimpong JB, Sambah F, et al. Relationship Between COVID-19 Related knowledge and anxiety among university students: exploring the moderating roles of school climate and coping strategies. Front Psychol. 2022;13:820288. [Crossref] [PubMed] [PMC]
30. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. Int J Environ Res Public Health. 2020;17(5):1729. [Crossref] [PubMed] [PMC]
31. Gupta D, Rodeghier M, Lis CG. Patient satisfaction with service quality in an oncology setting: implications for prognosis in non-small cell lung cancer. Int J Qual Health Care. 2013;25(6):696-703. [Crossref] [PubMed] [PMC]