Original Article

DOI: 10.14235/bas.galenos.2025.80090
Bezmialem Science 2025;13(4):281-290

Burnout Levels and Contributing Factors Among Radiation Oncology Resident Physicians

Radyasyon Onkolojisi Asistanlarının Tükenmişlik Seviyeleri ve Etken Faktörler

Kimia ÇEPNİ[1], Esranur TAŞTAN EKİNCİ[2], Sedanur SEİR[1], Ayşegül YABACI TAK[3], Huriye KIZILTAN[1]

[1]University of Health Sciences Türkiye, Başakşehir Çam and Sakura City Hospital, Clinic Of Radiation Oncology, İstanbul, Türkiye
[2]University of Health Sciences Türkiye, Başakşehir Çam and Sakura City Hospital, Clinic of Psychology, İstanbul, Türkiye
[3]Bezmialem Vakıf University Faculty of Medicine, Department of Statistics, İstanbul, Türkiye

ABSTRACT

Objective: Burnout is a psychological syndrome that emerges as a long-term response to chronic workplace stress that has not been successfully managed. In fields with high emotional and physical stress, such as oncology, the prevalence of burnout is significantly high. Burnout can lead to decreased productivity among healthcare professionals, poor mental and physical health, and negative impacts on personal relationships. This study aims to assess the burnout levels of radiation oncology resident physicians in Türkiye and examine the sociodemographic factors contributing to this condition.

Methods: A total of 52 radiation oncology resident physicians in Türkiye participated in this study. A "Demographic Information Form" consisting of seven questions was used to determine the demographic characteristics of the participants, and the "the Maslach Burnout Inventory" was applied to assess professional burnout levels. This scientifically validated scale evaluates burnout in three subdimensions: emotional exhaustion, depersonalization, and personal accomplishment.

Results: A significant negative correlation was found between the emotional exhaustion and personal accomplishment dimensions, while a significant positive correlation was observed between the emotional exhaustion and depersonalization dimensions ($p<0.01$). No significant correlation was detected between the Personal Accomplishment and Depersonalization subdimensions.

ÖZ

Amaç: Tükenmişlik; kronik iş yeri stresine karşı, başarısız bir şekilde yönetilen, uzun vadeli bir yanıt olarak ortaya çıkan psikolojik bir sendromdur. Onkoloji gibi duygusal ve fiziksel stresin yüksek olduğu alanlarda tükenmişlik prevalansı yüksektir. Tükenmişlik bu alandaki sağlık profesyonellerinin üretkenliğinin azalmasına, zayıf zihinsel ve fiziksel sağlığa ve kişisel ilişkiler üzerinde olumsuz etkilere yol açabilir. Bu çalışma, Türkiye'deki radyasyon onkolojisi asistanlarının tükenmişlik düzeylerini değerlendirmeyi ve bu duruma katkıda bulunan sosyodemografik faktörleri incelemeyi amaçlamaktadır.

Yöntemler: Çalışmamıza Türkiye'deki radyasyon onkolojisi asistanları arasından 52 hekim katılmıştır. Çalışmaya katılan asistanların demografik özelliklerini tespit etmek için 7 soruluk "Demografik Bilgi Formu" ve mesleki tükenmişlik düzeylerini belirlemek için "Maslach Tükenmişlik Ölçeği" kullanılmıştır. Ölçek; duygusal tükenme, duyarsızlaşma ve kişisel başarı olmak üzere üç alt boyutta tükenmişliği değerlendiren bilimsel bir ölçektir.

Bulgular: Çalışmamızda duygusal tükenme ile kişisel başarı boyutları arasında negatif yönlü, duygusal tükenme ile duyarsızlaşma boyutları arasında pozitif yönlü anlamlı bir ilişki tespit edilmiştir ($p<0,01$). Kişisel başarı ile duyarsızlaşma alt boyutları arasında anlamlı ilişki tespit edilmemiştir.

Sonuç: Maslach Tükenmişlik Ölçeği için tanımlı cut-off değerleri bulunmadığından, ortalama puanlar ölçek aralıkları

Address for Correspondence: Asst. Sedanur Seir, University of Health Sciences Türkiye, Başakşehir Çam and Sakura Training and Research Hospital, Clinic Of Radiation Oncology, İstanbul, Türkiye
E-mail: sedanur_seir@hotmail.com
ORCID IDs of the authors: K.Ç.: 0000-0001-7467-6917, E.T.E.: 0009-0005-3798-3498, S.S.: 0009-0001-5603-5961, A.Y.T.: 0000-0002-5813-3397, H.K.: 0000-0002-9930-7197

Cite this article as: Çepni K, Taştan Ekinci E, Seir S, Yabacı Tak A, Kızıltan H. Burnout levels and contributing factors among radiation oncology resident physicians. Bezmialem Science. 2025;13(4):281-290

Received: 31.01.2025
Accepted: 22.06.2025
Epub: 04.09.2025
Published date: 17.10.2025

ABSTRACT

Conclusion: Since no cut-off values have been defined for the Maslach Burnout Inventory, mean scores were interpreted within the context of the scale ranges. Accordingly, radiation oncology residents did not generally exhibit high levels of burnout, although emotional exhaustion appeared more pronounced compared to the other subscales.

Keywords: Oncology, Maslach Burnout Inventory, burnout, emotional exhaustion, depersonalization, achievement

ÖZ

bağlamında değerlendirilmiştir. Bu bağlamda, radyasyon onkolojisi asistanlarının genel olarak yüksek tükenmişlik düzeyleri göstermediği ancak duygusal tükenmenin diğer alt boyutlara kıyasla daha belirgin olduğu görülmektedir.

Anahtar Kelimeler: Onkoloji, Maslach Tükenmişlik Ölçeği, tükenmişlik, duygusal tükenme, duyarsızlaşma, kişisel başarı

Introduction

Burnout syndrome is a complex occupational phenomenon resulting from chronic, unmanaged workplace stress. It is characterized by emotional and physical exhaustion, manifesting as persistent fatigue and behavioral distress, alongside depersonalization, reduced productivity, and diminished job satisfaction, often accompanied by depression and demoralization (1).

Oncology, a medical specialty particularly susceptible to burnout, involves significant emotional demands due to the accumulation of distress from patients' life-and-death experiences, frequent delivery of distressing news, and care for terminally ill individuals. Oncologists often face heavy workloads (1,2). Repeated exposure to death and suffering may lead to depression, cynicism, a sense of meaninglessness, and even nihilism (3).

The mental well-being of healthcare professionals in oncology plays a critical role in enhancing both the quality of life of patients and the healthcare providers themselves. Among oncologists, burnout is frequently associated with reduced quality of patient care, loss of empathy and diminished compassion. Burnout syndrome may lead to serious consequences, including depression, substance abuse, suicide, and medical errors (2).

Studies conducted across various medical specialties worldwide indicate that approximately one in three physicians experiences burnout at some point. Among oncology-related specialties, burnout prevalence has been reported to range between 25-35% among medical oncologists (4), 38% among radiation oncologists (5), and between 28-36% among surgical oncologists (6).

For many physicians, the first encounter with depression and burnout occurs during medical school. Although medical students typically enter training with mental health profiles comparable to those of other university graduates, the risk of burnout and depression tends to increase within a short period.

Research shows that up to 50% of medical students experience burnout, 25% suffer from depression, and many report chronic anxiety and poor mental health (7). The prevalence of such problems often persists at graduation and does not vary significantly according to future specialty choices (8).

During residency, burnout prevalence tends to increase, and several studies indicate that a majority of young physicians experience burnout before completing their specialty training (9). More than 50% of residents are reported to suffer from this syndrome (10).

Burnout levels are particularly high among radiation oncology residents. Providing medical care to individuals diagnosed with cancer is both a rewarding and challenging task. Oncologists are often required to make critical decisions regarding life preservation and the management of complex treatment protocols (3).

The chronic stress arising from these responsibilities frequently leads to burnout, which in turn adversely impacts residents' mental health and professional performance.

The aim of this study is to evaluate sociodemographic factors contributing to burnout and to examine the associations between these factors and the severity of burnout.

Through this survey-based study conducted among radiation oncology residents in our country, we sought to assess burnout symptoms, explore related variables, and review preventive strategies that may help mitigate the development of burnout.

Methods

This study was designed to determine the levels of occupational burnout among radiation oncology residents. To this end, the study aimed to assess the burnout levels of resident physicians and to investigate whether these levels significantly differed based on variables such as age, marital status, years of residency, willingness to choose the medical profession and the factors influencing that choice, willingness to specialize in radiation oncology, and duration of professional experience in the field.

A descriptive survey method was employed in this research. Descriptive surveys are studies conducted with large groups of participants to explore their thoughts on a particular phenomenon or event (11). This method is used to define the structure of objects, societies, and institutions, as well as the operation of events (12). Burnout levels among radiation oncology residents were examined using this approach, taking into account various variables.

This study was approved by the University of Health Sciences Türkiye, Başakşehir Çam and Sakura City Hospital, Ethics Committee (approval no: KAEK-11/11.09.2024.145, date: 17.09.2024).

The study population consisted of resident physicians currently pursuing their residency in the field of radiation oncology

in Türkiye. Data were collected from 52 participants using a purposive sampling method. The research data were obtained through an online questionnaire, distributed via Google Forms and social media platforms to relevant individuals. To ensure confidentiality, no IP addresses were recorded, responses were anonymous, and the data were used solely for scientific purposes. A total of approximately 340 resident physicians are currently enrolled in residency training programs in Türkiye. Of these, 52 residents voluntarily participated in the present study. Data collection was conducted between October 31, 2024, and April 30, 2025. The inclusion criterion was being a resident physician enrolled in a radiation oncology specialty program, whereas the exclusion criteria were lack of willingness to participate in the survey and being older than 40 years of age.

In this study, a "Demographic Information Form" was used to collect participants' sociodemographic data, and the "Maslach Burnout Inventory" (MBI) was used to assess their levels of occupational burnout.

Informed consent was obtained from all participating physicians, and participation was voluntary. Participant identities were kept confidential, and the data were used solely for scientific purposes.

The demographic form included questions on age, marital status, city of residence, duration of work in radiation oncology, whether the participant had willingly chosen the medical profession, the influencing factors behind their career choice, and whether they had voluntarily chosen the specialty of radiation oncology.

The MBI was originally developed by Maslach and Jackson in 1981 to measure burnout in professionals working in face-to-face services and was revised in 1986. The inventory consists of 22 items across three subscales: "emotional exhaustion" (9 items), "depersonalization" (5 items), and "personal accomplishment" (8 items). In the Turkish version of the scale, a five-point Likert scale was used instead of the original seven-point response format. Each subscale is scored separately. High scores in the emotional exhaustion and depersonalization subscales, and low scores in the personal accomplishment subscale indicate higher levels of burnout. The scale was adapted into Turkish by Canan Ergin in 1992, and its validity and reliability study was conducted by researcher Olcay Çam.

Based on reliability analyses, the Cronbach's alpha coefficients for the three subscales of the MBI were as follows: 0.83 for emotional exhaustion, 0.65 for depersonalization, and 0.72 for personal accomplishment. In subsequent test-retest analyses, the reliability coefficients were recalculated, resulting in 0.83 for emotional exhaustion, 0.72 for depersonalization, and 0.67 for personal accomplishment.

The data used in this study were obtained through the administration of the "Demographic Information Form" and the "MBI" to the participants. Quantitative analyses were conducted using SPSS version 27.0.1. The normality of data distribution was assessed through skewness and kurtosis analyses. The reliability of the study was tested using Cronbach's alpha analysis. To examine the differences between scale subdimensions and influencing variables, one-way analysis of variance (ANOVA) tests were conducted. To identify which groups contributed to significant differences, the Scheffé post-hoc multiple comparison test was applied. A p-value of less than 0.05 was considered statistically significant.

Results

Descriptive statistics related to the scales used in the study are as follows: the emotional exhaustion subscale had a mean score of 15.52, standard deviation (SD) of 5.943, skewness values of 0.530/0.330, kurtosis values of 0.754/0.650, and a Cronbach's alpha coefficient of 0.866. The personal accomplishment subscale had a mean score of 19.96, SD of 3.331, skewness value of -0.283/0.330, kurtosis value of 0.324/0.650, and a Cronbach's alpha of 0.649. The depersonalization subscale had a mean score of 5.88, SD of 3.027, skewness values of 0.018/0.330, kurtosis values of -0.969/0.650, and a Cronbach's alpha of 0.632 (Table 1).

In the study group, 30.8% (n=16) were married, and 69.2% (n=36) were single. Of the participants, 42.3% (n=22) lived in İstanbul, while the rest resided in other major cities. Of the participants, 88.5% (n=46) stated that they had chosen the medical profession willingly, whereas 11.5% (n=6) had not. In terms of the specialty field, 94.2% (n=49) reported willingly choosing radiation oncology, while 5.8% (n=3) had not. Among the physicians participating in the study, 28.8% (n=15) had been working in the field for 0-1 year, 13.5% (n=7) for 1-2 years, 25% (n=13) for 2-3 years, 11.5% (n=6) for 3-4 years, 15.4% (n=8) for 4-5 years, and 5.8% (n=3) for more than 5 years. Of the physicians 42.3% (n=22) had chosen their profession voluntarily, while 38.4% (n=20) had chosen it due to other reasons, and 19.2% (n=10) were influenced by both personal desire and other factors (Table 2).

Participants' ages ranged from 25 to 39, with a calculated mean age of 28.69 (Table 3).

Correlations between the subscales of the MBI were examined. A moderate, negative, and statistically significant correlation was found between emotional exhaustion and personal accomplishment subscales (r=-0.391, p<0.01). As low scores in

Table 1. Descriptive statistics of the scales used in the study

	N	$\bar{x}$: Mean	SD	Skewness	Kurtosis	α
Emotional exhaustion	52	15.52	5.943	0.530 (SE = 0.330)	0.754 (SE = 0.650)	0.866
Personal accomplishment	52	19.96	3.331	-0.283 (SE = 0.330)	0.324 (SE = 0.650)	0.649
Depersonalization	52	5.88	3.027	0.018 (SE = 0.330)	-0.969 (SE = 0.650)	0.632

N: Number of participants, $\bar{x}$: Mean, SD: Standard deviation, α: Cronbachs alpha

the personal accomplishment subscale and high scores in the emotional exhaustion subscale indicate high burnout, it can be inferred that as emotional exhaustion scores increase, personal accomplishment scores decrease. A moderate, positive, and statistically significant correlation was found between emotional exhaustion and depersonalization (r=0.411, p<0.01). Since high scores in both subscales are associated with high burnout, it can be concluded that emotional exhaustion and depersonalization scores tend to increase or decrease together. No significant relationship was found between the personal accomplishment and depersonalization subscales (Table 4).

The independent samples t-test used to compare the subscale scores of the MBI by marital status showed no statistically significant differences in emotional exhaustion, personal accomplishment, or depersonalization subscales (p=0.140, p=0.354, and p=0.089, respectively). However, it was observed that married participants had lower average burnout scores compared to single participants (Table 5).

Independent samples t-test results regarding the comparison of subscale scores by willingness to choose the medical profession revealed no significant differences in the personal accomplishment or depersonalization subscales (p=0.257 and p=0.274, respectively). However, a significant difference was found in the emotional exhaustion subscale to the disadvantage of those who had not willingly chosen the profession (t=-2.613, p=0.012). In other words, the emotional exhaustion level of those who willingly chose the profession was significantly lower than that of those who did not (Table 6).

According to the independent samples t-test results comparing subscale scores based on willingness to choose the field of radiation oncology, no statistically significant differences were found in emotional exhaustion, personal accomplishment, or depersonalization subscales (p=0.051; 0.077; and 0.947, respectively). Although the mean burnout scores of those who had willingly chosen the field were lower than those who had not, the difference was not statistically significant (Table 7).

The results of the one-way ANOVA test applied to determine whether age is associated with differences in the subscale scores showed that emotional exhaustion levels significantly differed by age (F=2.126; p=0.044). No significant differences were found in personal accomplishment and depersonalization subscales by age (p=0.364) However, the effect sizes were small ($\eta^2 \approx 0.02$), with mean differences of up to 5-6 points in personal accomplishment and 2-3 points in depersonalization, suggesting limited clinical relevance (Table 8).

The results of the one-way ANOVA test conducted to identify the differences between subscale scores and years of experience in radiation oncology showed no significant relationships (p=0.268) (Table 9).

The results of the one-way ANOVA test conducted to determine differences in subscale scores by city of residence showed no significant relationship between location and subscale scores (p=0.632) (Table 10).

Table 2. Demographic characteristics

	Groups	N	%
Marital status	Married	16	30.8
	Single	36	69.2
City of residence	İstanbul	22	42.3
	Ankara	8	15.4
	İzmir	7	13.5
	Antalya	3	5.8
	Bursa	3	5.8
	Konya	3	5.8
	Samsun	2	3.8
	Trabzon	2	3.8
	Kayseri	1	1.9
	Malatya	1	1.9
Willingness to choose the medical profession	Yes	46	88.5
	No	6	11.5
Willingness to choose radiation oncology as a specialty	Yes	49	94.2
	No	3	5.8
Years of experience in radiation oncology	0-1	15	28.8
	1-2	7	13.5
	2-3	13	25.0
	3-4	6	11.5
	4-5	8	15.4
	>5	3	5.8
Factors influencing career choice	Personal choice	22	42.3
	Personal choice and other factors	20	38.4
	Other factors	10	19.2

N: Number of participants

Table 3. Descriptive statistics for age

	N	Min.	Max.	$\bar{x}$: Mean	SD
Age	52	25	39	28.69	2.839

N: Number of participants, Min.: Minimum, Max.: Maximum, $\bar{x}$: Mean, SD: Standard deviation

Table 4. Correlation analysis of subscale scores

		1	2	3
1- Emotional exhaustion	r	1	-0.391**	0.411**
2- Personal accomplishment	r		1	-0.210
3- Depersonalization	r			1

**: p<0.01, r: Pearson correlation coefficient

Table 5. Independent samples t-test comparing subscale scores based on marital status

	Marital status	N	x̄: Mean	SD	t-value	DF	p-value
Emotional exhaustion	Married	16	13.69	5.016	-1.500	50	0.140
	Single	36	16.33	6.201			
Personal accomplishment	Married	16	19.31	3.092	-0.936	50	0.354
	Single	36	20.25	3.434			
Depersonalization	Married	16	4.81	2.786	-1.736	50	0.089
	Single	36	6.36	3.044			

x̄: Mean, SD: Standard deviation, DF: Degrees of freedom

Table 6. Independent samples t-test comparing subscale scores based on willingness to choose medical profession

	Willing dr choice	N	x̄: Mean	SD	t-value	DF	p-value
Emotional exhaustion	Yes	46	14.78	5.762	-2.613	50	0.012
	No	6	21.17	4.262			
Personal accomplishment	Yes	46	20.15	3.353	1.146	50	0.257
	No	6	18.50	3.017			
Depersonalization	Yes	46	5.72	2.896	-1.105	50	0.274
	No	6	7.17	3.971			

Willing dr choice: Willingness to choose the medical profession, x̄: Mean, SD: Standard deviation, DF: Degrees of freedom

Table 7. T-test comparison of subscale scores by willingness to choose radiation oncology

	Willing RO choice	N	x̄: Mean	SD	t-value	DF	p-value
Emotional exhaustion	Yes	49	15.12	0.772	-2.003	50	0.051
	No	3	22.00	11.533			
Personal accomplishment	Yes	49	20.16	3.319	1.803	50	0.077
	No	3	16.67	1.155			
Depersonalization	Yes	49	5.88	3.113	-0.067	50	0.947
	No	3	6.00	1.000			

Willing RO choice: Willingness to choose radiation oncology, x̄: Mean, SD: Standard deviation, DF: Degrees of freedom

Table 8. One-way ANOVA analysis comparing subscale scores based on age (one-way ANOVA, F (10.41) = 2.126)

	Groups	N	x̄: Mean	SD	F-value	p-value
Emotional exhaustion	25	5	16.00	4.637	2.126	0.044
	26	4	17.00	7.528		
	27	12	12.17	5.078		
	28	8	17.88	6.643		
	29	9	15.11	5.085		
	30	2	28.00	7.071		
	31	6	14.50	3.886		
	33	2	14.50	2.121		
	34	2	20.50	0.707		
	35	1	12.00	.		
	39	1	9.00	.		

Table 8. Continued

	Groups	N	x̄: Mean	SD	F-value	p-value
Personal accomplishment	25	5	19.00	1.000	1.131	0.364
	26	4	20.25	6.946		
	27	12	20.08	2.999		
	28	8	19.38	1.685		
	29	9	18.56	3.575		
	30	2	17.00	1.414		
	31	6	23.33	3.141		
	33	2	20.50	2.121		
	34	2	20.00	4.243		
	35	1	23.00	.		
	39	1	21.00	.		
Depersonalization	25	5	7.20	2.588	1.111	0.377
	26	4	7.50	1.915		
	27	12	5.42	3.288		
	28	8	7.13	1.885		
	29	9	5.44	3.046		
	30	2	6.00	1.414		
	31	6	3.67	3.933		
	33	2	3.50	0.707		
	34	2	7.00	5.657		
	35	1	4.00	.		
	39	1	10.00	.		

ANOVA: Analysis of variance, x̄: Mean, SD: Standard deviation

Table 9. One-way ANOVA analysis comparing subscale scores based on duration of work in radiation oncology (one-way ANOVA, F (5.46) = 1.332)

	Groups	N	x̄: Mean	SD	F-value	p-value
Emotional exhaustion	0-1	15	15.33	5.219	1.332	0.268
	1-2	7	16.86	8.194		
	2-3	13	13.15	4.828		
	3-4	6	19.83	2.041		
	4-5	8	16.38	8.141		
	>5	3	12.67	3.512		
Personal accomplishment	0-1	15	19.33	2.870	1.608	0.177
	1-2	7	18.57	4.756		
	2-3	13	21.15	2.911		
	3-4	6	18.17	2.483		
	4-5	8	20.75	3.576		
	>5	3	22.67	2.082		
Depersonalization	0-1	15	6.73	2.738	0.591	0.707
	1-2	7	6.29	1.976		
	2-3	13	5.46	3.282		
	3-4	6	6.17	3.764		
	4-5	8	5.00	2.878		
	>5	3	4.33	5.132		

ANOVA: Analysis of variance, x̄: Mean, SD: Standard deviation

The one-way ANOVA test results used to examine the differences between subscale scores and factors affecting career choice revealed a statistically significant difference in emotional exhaustion levels based on career decision factors (F=3.966; p=0.025). The Scheffé post-hoc test conducted to determine the source of the group differences showed that those who had chosen medicine based on personal interest had significantly lower emotional exhaustion scores than those influenced by other factors (Table 11).

Discussion

In recent years, burnout has become an increasingly recognized issue, particularly among healthcare providers working in cancer care (1). Although various factors contribute to physician burnout, excessive workload, a sense of inefficacy, and loss of autonomy appear to be primary contributors. Historically, physicians often owned their own practices, hired support staff, and had considerable control over their schedules, pace of work, hours, and the number of patients seen per day. Today, however, most oncologists-especially radiation oncologists-are employees of hospital groups, cancer centers, academic medical centers, or multi-specialty groups, with significantly less control over these aspects of practice. Productivity targets are often set by practice administrators and are quantitatively measured in great detail (13).

Other studies suggest that emotionally demanding professional responsibilities-such as breaking bad news, weighing the risks and benefits of selected treatments, choosing therapies with side effects, or coping with administrative burdens-may increase the risk of burnout among oncologists (13).

This study presents findings from an investigation into burnout levels and related factors among radiation oncology residents in Türkiye.

Descriptive statistics and reliability testing via Cronbach's alpha for the emotional exhaustion, depersonalization, and personal accomplishment subscales were consistent with the original MBI values (α=0.83, 0.72, and 0.65, respectively). Our study found similar reliability coefficients of 0.866, 0.649, and 0.632, respectively, demonstrating consistency with the original instrument (14).

Table 10. One-way ANOVA analysis comparing subscale scores based on city of residence (one-way ANOVA, F (3.48) = 0.784)

	Groups	N	$\bar{x}$: Mean	SD	F-value	p-value
Emotional exhaustion	İstanbul	22	14.86	5.480	0.784	0.632
	Ankara	8	19.00	8.246		
	İzmir	7	14.86	6.962		
	Other cities*	15	14.60	5.100		
Personal accomplishment	İstanbul	22	19.32	2.998	0.431	0.911
	Ankara	8	20.13	3.523		
	İzmir	7	20.29	5.122		
	Other cities*	15	20.40	3.780		
Depersonalization	İstanbul	22	6.05	3.498	0.892	0.541
	Ankara	8	5.38	2.825		
	İzmir	7	5.86	2.340		
	Other cities*	15	6.27	2.890		

ANOVA: Analysis of variance, $\bar{x}$: Mean, SD: Standard deviation, *: Antalya, Bursa, Konya, Samsun, Trabzon, Kayseri, Malatya

Table 11. One-way ANOVA analysis comparing subscale scores based on factors influencing career choice (one-way ANOVA, F (2.49) = 3.966)

	Groups	N	$\bar{x}$: Mean	SD	F-value	p-value	Difference*
Emotional exhaustion	Personal choice	22	14.23	5.580	3.966	0.025	1<2
	Other factors	10	20.00	5.774			
	Personal choice and other factors	20	14.70	5.602			
Personal accomplishment	Personal choice	22	19.68	3.045	2.364	0.105	
	Other factors	10	18.40	4.088			
	Personal choice and other factors	20	21.05	3.000			
Depersonalization	Personal choice	22	5.55	2.890	0.849	0.434	
	Other factors	10	7.00	3.771			
	Personal choice and other factors	20	5.70	2.793			

*: Difference 1<2. 1 = personal choice, 2 = other factors the emotional exhaustion scores of those who chose their profession voluntarily were significantly lower than those of individuals who chose it due to other factors, $\bar{x}$: Mean, SD: Standard deviation

According to the 2024 data collected from radiation oncology residents in Türkiye, the mean emotional exhaustion score (range 0-36) was 15.52, the personal accomplishment score (range 0-32) was 19.96, and the depersonalization score (range 0-20) was 5.88. Although the MBI does not have defined cutoff scores, high scores in emotional exhaustion and depersonalization, combined with low scores in personal accomplishment, indicate high levels of burnout (15). When comparing these averages to the maximum possible scores, the participants in this study did not exhibit high levels of burnout overall.

However, considering the total number of residents in this specialty, the low participation rate in an online survey that required only a few minutes to complete is noteworthy. This may increase the likelihood of selection bias and limit the generalizability of the results. Oncologists are under immense stress. Symptoms such as lack of empathy and dissatisfaction with work-often observed in themselves and colleagues-may be manifestations of burnout. While prioritizing patient care is expected, the well-being of physicians is equally critical. This has implications not only for healthcare providers but also for patients and their families (16).

The participants' ages ranged from 25 to 39 years, with a mean of 28.69. Our analysis found a statistically significant relationship between age and emotional exhaustion (F=2.126; p=0.044), but not with Depersonalization or personal accomplishment (p=0.364 and 0.377, respectively).

No significant associations were found between years of experience in radiation oncology and burnout subscale scores. However, numerous studies have identified age and professional experience as significant factors associated with burnout, with higher prevalence among younger physicians. These findings emphasize the increased burnout risk in junior physicians and residents at lower hierarchical levels (13,17).

To avoid gender bias, this study did not include gender-based analysis. Other studies in the literature have similarly reported no significant gender-based differences in burnout rates among male and female oncologists (17).

Among our participants, 30.8% (n=16) were married, while 69.2% (n=36) were single. No statistically significant differences were observed in emotional exhaustion, personal accomplishment, or depersonalization scores based on marital status (p=0.140, 0.354, and 0.089, respectively). However, average burnout scores were lower among married participants.

Research suggests that marital status may meaningfully influence the burnout experience of oncologists. While marriage can provide emotional support and stability, it may also present challenges in balancing personal responsibilities with demanding work schedules, which could contribute to feelings of burnout (18).

No significant differences were found in the personal accomplishment or depersonalization subscales based on whether physicians had willingly chosen their profession (p=0.257 and 0.274). However, the mean differences were 1.65 points in personal accomplishment and 1.45 points in depersonalization, with small-to-moderate effect sizes ($d\approx0.49$ and $d\approx0.42$, respectively), suggesting potential clinical relevance despite the lack of statistical significance (Table 6). However, emotional exhaustion scores were significantly higher among those who had not willingly chosen the medical profession (t=-2.613, p=0.012).

Moreover, emotional exhaustion scores significantly differed based on the factors influencing career choice (F=3.966; p=0.012). Post-hoc Scheffé analysis revealed that those who chose the profession voluntarily had significantly lower emotional exhaustion scores than those influenced by other factors.

This finding raises important questions about the long-term impact of career choice on mental health in medicine. Individuals who enter the field with genuine passion may be better equipped to manage the emotional demands of their work, resulting in lower burnout levels and higher job satisfaction. Conversely, individuals who enter the field due to pressure or obligation may experience higher stress levels, which not only impact them personally but may also compromise the quality of patient care (19).

No significant differences were found in any subscales based on whether participants had willingly chosen the field of radiation oncology (p=0.051, 0.077, and 0.947). Although mean burnout scores were lower among those who had voluntarily chosen the field, the differences were not statistically significant. However, the mean differences were 6.88 points in emotional exhaustion and 3.49 points in personal accomplishment, corresponding to large effect sizes ($d\approx0.92$ and $d\approx1.15$, respectively). In contrast, the difference in depersonalization was negligible (mean difference =0.12; $d\approx0.04$) (Table 7). These findings highlight broader questions about the impact of specialty choice on burnout in radiation oncology. It is essential to consider additional factors contributing to emotional exhaustion and job satisfaction. For example, insufficient clinical support and heavy administrative burdens have been widely identified as major contributors to burnout across various specialties. Additionally, the emotional toll of patient interactions in oncology may lead to frustration and eventual depersonalization, regardless of initial enthusiasm (20).

According to our survey data, no significant associations were found between years of experience in radiation oncology and the emotional exhaustion, personal accomplishment, and depersonalization subscales (p=0.268, 0.177, and 0.707, respectively).

However, global data show that oncologists often face long working hours, which significantly contribute to stress and burnout. The demanding nature of the job-particularly rising patient loads and expectations-can lead to reduced job satisfaction and increased burnout (21).

No significant differences were found between city of residence and any of the burnout subscales (p=0.632, 0.911, and 0.541). Effect sizes were small ($\eta^2<0.05$), with mean differences of up

to 5-6 points across cities, suggesting limited clinical relevance. Given that radiation oncology clinics in Türkiye are primarily located in major cities, this result is expected.

A review of the literature reveals that burnout is a significant concern for healthcare professionals worldwide. The limited participation in our study may stem from reluctance to acknowledge the issue. There is a pressing need for more comprehensive research in Türkiye to explore this topic in greater depth.

Recommendations

Beyond examining sociodemographic factors, it is critical to consider the institutional environment and support systems provided to oncology residents, as these factors can substantially impact burnout levels. Research has shown that residency programs that include time for academic development and mental health support can reduce emotional exhaustion and depersonalization among young physicians (22).

Furthermore, promoting a culture of open communication with senior physicians and fostering peer support within residency programs can enhance resilience and facilitate a healthier work-life balance, ultimately improving the overall well-being of oncology residents.

Mentorship and guidance from senior physicians play a crucial role in combating burnout. Studies have shown that effective mentorship provides not only emotional support but also practical strategies for navigating the complexities of residency, helping to alleviate feelings of isolation and stress (23).

In addition to structured wellness programs, regular meetings with mentors may help detect early signs of burnout and allow timely interventions. Addressing systemic issues such as work-hour policies and workload distribution is also essential. Research has demonstrated that balanced approaches to these factors are associated with lower burnout rates and increased job satisfaction among residents (22,24).

By prioritizing both individual support mechanisms and institutional reforms, residency programs can foster environments that promote resilience and professional fulfillment, ultimately benefiting both healthcare providers and their patients.

In addition to the strategies outlined above, integrating mindfulness practices and resilience training into residency programs has emerged as a promising approach to combating burnout among oncology residents. Mindfulness-based stress reduction programs have been shown to significantly reduce stress levels while enhancing emotional regulation and self-compassion, which are critical in high-pressure medical environments. Such initiatives can help residents feel more connected and less isolated, thereby alleviating the depersonalization often associated with burnout (23).

Moreover, several European countries have systematically embedded practices aimed at mitigating burnout into their institutional frameworks. For instance, in some clinics in Germany, weekly group therapy sessions are held, where early-career physicians are actively supported by more senior colleagues through shared experiences. Furthermore, regular team-based activities such as running and meditation promote both physical and mental well-being, while fostering stronger team cohesion. In certain institutions, artistic initiatives-such as physician-led choirs and orchestras-are organized to encourage creative, non-clinical approaches to stress relief. These practices contribute not only to individual well-being but also to the cultivation of institutional solidarity, thereby serving as a meaningful support structure in addressing burnout.

By adopting a holistic approach that equally values mental health and professional development, institutions can not only empower their residents but also enhance the overall effectiveness of cancer care (25).

Study Limitations

This study has several limitations. This study included 52 radiation oncology residents. The limited sample size may restrict the generalizability of the findings. To avoid gender bias, this study did not include gender-based analysis. Other studies in the literature have similarly reported no significant gender-based differences in burnout rates among male and female oncologists (16).

The research was conducted using a voluntary sampling approach and a cross-sectional design. This may introduce participant bias and limit the ability to assess changes in burnout levels over time.

Future studies with larger samples are needed to more comprehensively understand the dynamics of burnout among radiation oncology residents. Finally, the MBI used in this study does not have established cut-off values, which limits the ability to categorize burnout severity. The anonymized dataset generated and analyzed during the current study will be made available upon reasonable request.

Conclusion

Burnout, which has emerged as a defining issue of our era for working populations both globally and within our country, exerts its influence on physicians from the very outset of medical education. In the early stages of our professional careers-particularly in emotionally demanding disciplines such as oncology, where continuous patient interaction and complex decision-making are inherent-this phenomenon tends to escalate progressively.

Strategies proposed to safeguard physicians' mental well-being and enhance job satisfaction are regarded as a significant step toward mitigating burnout levels. Within this framework, our objective is to underscore the importance of both individual support mechanisms and systemic institutional reforms.

Ethics

Ethics Committee Approval: This study was approved by the University of Health Sciences Türkiye, Başakşehir Çam and

Sakura City Hospital Hospital Ethics Committee (approval no: KAEK-11/11.09.2024.145, date: 17.09.2024).

Informed Consent: Informed consent was obtained from all participating physicians, and participation was voluntary.

Footnotes

Authorship Contributions

Concept: K.Ç., E.T.E., H.K., Design: K.Ç., E.T.E., S.S., H.K., Data Collection or Processing: S.S., Analysis or Interpretation: E.T.E., A.Y.T., Literature Search: K.Ç., S.S., Writing: K.Ç., E.T.E.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Sobczuk P, Gawlik-Urban A, Sigorski D, Kiszka J, Osmola M, Machulska-Ciuraj K, et al. Prevalence and factors associated with professional burnout in Polish oncologists-results of a nationwide survey. ESMO Open. 2024;9:102230.
2. Hlubocky FJ, Back AL, Shanafelt TD. Addressing burnout in oncology: why cancer care clinicians are at risk, what individuals can do, and how organizations can respond. Am Soc Clin Oncol Educ Book. 2016;35:271-9.
3. Shanafelt T, Dyrbye L. Oncologist burnout: causes, consequences, and responses. J Clin Oncol. 2012;30:1235-41.
4. Asai M, Morita T, Akechi T, Sugawara Y, Fujimori M, Akizuki N, et al. Burnout and psychiatric morbidity among physicians engaged in end-of-life care for cancer patients: a cross-sectional nationwide survey in Japan. Psychooncology. 2007;16:421-8.
5. Dyrbye LN, Shanafelt TD. Physician burnout: a potential threat to successful health care reform. Jama. 2011;305:2009-10.
6. Balch CM, Shanafelt TD, Sloan J, Satele DV, Kuerer HM. Burnout and career satisfaction among surgical oncologists compared with other surgical specialties. Ann Surg Oncol. 2011;18:16-25.
7. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. Acad Med. 2006;81:354-73.
8. Dyrbye LN, Moutier C, Durning SJ, Massie FS Jr, Power DV, Eacker A, et al. The problems program directors inherit: medical student distress at the time of graduation. Med Teach. 2011;33:756-8.
9. Campbell J, Prochazka AV, Yamashita T, Gopal R. Predictors of persistent burnout in internal medicine residents: a prospective cohort study. Acad Med. 2010;85:1630-4.
10. West CP, Shanafelt TD, Kolars JC. Quality of life, burnout, educational debt, and medical knowledge among internal medicine residents. Jama. 2011;306:952-60.
11. Karakaya İ. Bilimsel araştırma yöntemleri. In: A. Tanrıöğen editor. Bilimsel araştırma yöntemleri. Ankara: Anı Yayıncılık; 2012.
12. Cohen L, Manion L, Morrison K. Research methods in education. New York: Routledge. 2007.
13. Shanafelt T, Dyrbye L. Oncologist burnout: causes, consequences, and responses. J Clin Oncol. 2012;30:1235-41.
14. Çam OE. Tükenmişlik envanterinin geçerlik ve güvenirliğinin araştırılması. VII. Ulusal Psikoloji Kongresi Bilimsel Çalışmaları, Hacettepe Üniversitesi VII. Ulusal Psikoloji Kongresi Düzenleme Kurulu ve Türk Psikologlar Derneği Yayını, Ankara. 1992
15. Lin CY, Alimoradi Z, Griffiths MD, Pakpour AH. Psychometric properties of the Maslach Burnout Inventory for Medical Personnel (MBI-HSS-MP). Heliyon. 2022;8:e08868.
16. Lavasani S. Surviving burnout as an oncologist. Curr Oncol Rep. 2023;25:131-4.
17. Helaß M, Haag GM, Bankstahl US, Gencer D, Maatouk I. Burnout among German oncologists: a cross-sectional study in cooperation with the Arbeitsgemeinschaft Internistische Onkologie Quality of Life Working Group. Journal of Cancer Research and Clinical Oncology. 2023;149:765-77.
18. Bondil P, Habold D, Carnicelli D. Cancer and sexuality: the couple, a too neglected determining factor. Sexologies. 2016;25:e29-e33.
19. Kutsal YG, Aslan D, Aydos TR, Kut A, Özen NE, Saygun M, et al. Brief notes on the awareness of the physicians on elderly neglect and abuse. STED. 2022;31:81-9.
20. Beltràn Ponce S, Small CJ, Amini A, Johnstone C, Parikh JR, Rosenthal SA, et al. Overcoming burnout and promoting wellness in radiation oncology: a report from the ACR commission on radiation oncology. J Am Coll Radiol. 2023;20:487-93.
21. Epstein R. Ronald Epstein, MD: Bringing mindfulness into the examination room. Adv Mind Body Med. 2017;31:21-8.
22. Small CJ, Beltran Ponce SE, Lichter K, Hirshberg J, Apps J, Ortiz S, et al. Understanding burnout among us radiation oncology residents. Int J Radiat Oncol Biol Phys. 2023;117:e544-e5.
23. Blanchard P, Truchot D, Albiges-Sauvin L, Dewas S, Pointreau Y, Rodrigues M, et al. Prevalence and causes of burnout amongst oncology residents: a comprehensive nationwide cross-sectional study. European Journal of Cancer. 2010;46:2708-15.
24. Noronha J, Malik A, Bindhulakshmi P, Karimundackal G. Oncology residency–a burning issue, results of a questionnaire-based survey on psychological well-being of oncology residents. Indian J Surg Oncol. 2020;11:387-93.
25. Zacharia M, Karekla M. The role of psychologists and psychological approaches in cancer care. In: Kassianos AP, editor. Handbook of Quality of Life in Cancer. Cham: Springer International Publishing; 2022. p.311-337.