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Research Article

Burnout Among Medical Oncology Physicians and Related Factors: A Nationwide Survey

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Abstract

Objectives: We aimed to investigate the prevalence of burnout among medical oncology physicians and the relevant factors on a large scale in Turkey.

Methods: A total of 285 medical oncology physicians participated the study. Two forms were used to define sociodemographic and professional characteristics and Maslach burnout inventory was used to measure burnout levels. Logistic regression analyses were performed to determine the factors affecting burnout.

Results: Emotional exhaustion was observed in 37.5% of the participants. Emotional exhaustion was significantly higher in females (p=0.004), younger physicians (p=0.012), those without children (p<0.001), research assistants (p<0.001), those with less than 3 years of professional experience (p=0.022), those who work 40 hours and above per week (p=0.022), those with a monthly income less than $1.200 (p=0.003), those without a hobby (p: 0.001), and those who do not exercise regularly (p=0.001). In the multivariate analysis, not having any hobbies (p=0.01) and working more than 40 hours a week (p=0.003) were the significant factors affecting emotional exhaustion.

Conclusion: In this study, the factors affecting burnout were increased weekly working hours and not having any hobbies. Measures to reduce burnout in medical oncology physicians should be considered both on an organizational and personal basis.

Keywords: Burnout, medical oncology doctors, work overload

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The concept of burnout, first described by Freudenberger[1] and later developed by Maslach et al.,[2, 3] is a psychological syndrome in which the individual feels emotionally and physically tired, insensitive to people they encounter due to their work, and have a decreased sense of personal accomplishment. Although burnout syndrome may occur in any profession, one may assume that those in direct contact with the public (social service workers, teachers and healthcare professionals, especially doctors and nurses) tend to be more susceptible.[4] Studies conducted specifically for physicians also support this assumption.[5, 6] Ethical issues, emotional burden, challenging working hours (high work intensity, long working hours, frequent night shifts or weekend on-calls etc.), and patients' and the workplace's requests may be suggested as the main causes of burnout. Physician payment patterns also appear to affect burnout; doctors working on performance-based income experience higher burnout rates than salaried physicians.[7] Burnout affects patient care and the healthcare system and leads to medical errors and worse patient satisfaction.[8, 9] It also has negative consequences in both the professional and personal life of the affected individual.[10] Medical on-

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cology physicians may feel this situation more intensely due to some unique features. The most prominent features that lead to an increased risk in this regard may be the severity of the cancer disease, the use of long-term and toxic treatments, and the commonly encountered palliative patients and outcome of death in daily practice.

Maslach's three-dimensional model is a well-known and widely accepted burnout model that includes variables such as emotional exhaustion, depersonalization, and decreased personal accomplishment.[11] Of these, emotional exhaustion is the "core variable" and considered a kind of "negative" mentality.[11] Emotional burnout among physicians measures the feeling of being emotionally overextended, exhausted by work and having nothing left to offer patients emotionally at the end of the workday. Desensitization includes treating patients as objects rather than individuals and being less emotional towards them. Decreased sense of personal accomplishment refers to a decrease in self-esteem or perceived performance and includes the lack of value in the results of work-related activities such as patient care or professional achievements.

Unless burnout is recognized and precautions are taken to tackle this problem, it can have significant consequences, such as the early termination of a professional career. In light of all this information, we aimed to investigate the prevalence of burnout among medical oncology physicians and the relevant factors on a large scale in Turkey.

Methods

The study was approved by Namık Kemal University Non-Interventional Clinical Research Ethics Committee (approval number: 2020.66.03.16). This cross-sectionally designed study aimed to reach all actively working medical oncology doctors in Turkey. At the time of the study, there were a total of 710 medical oncology doctors, and we reached 560 of them between November 2018 and January 2019. The number of physicians who agreed to participate in the study on a voluntary basis was 285. Two forms were used in the study; i.e. the sociodemographic information form and the professional characteristics form. Apart from these, the Maslach Burnout Inventory (MBI), which is the most commonly used inventory all over the world, was used to measure the burnout status of the participants. All forms were prepared electronically and sent to the participants via mobile phone message or e-mail. Before sending to the participants, the forms were filled out by three independent medical oncologists to check that the questions were understandable. The electronic message was programmed in such a way that it cannot be completed without answering all questions. Thus, all participants answered all questions. A copy of the sociodemographic form and the professional characteristics form are provided in the Appendix.

Burnout Syndrome

MBI was used for the evaluation of burnout.[12] The validity and reliability study of the original scale in Turkish language was conducted by Ergin et al. in 1992.[13] After pre-application of the scale, which was carried out with 235 participants (doctor, nurse, teacher, etc.), it was decided to arrange the original 7-digit answer choices to a five-point rating as 'never', 'very rarely', 'sometimes', 'often', and 'always'.[13] The scale consists of 22 items and evaluates burnout in three dimensions: emotional exhaustion (9 items), depersonalization (5 items), and personal accomplishment (8 items). High scores for emotional exhaustion and depersonalization and low scores for personal accomplishment were associated with high levels of burnout. Cronbach's Alpha coefficients were 0.83 for emotional exhaustion, 0.71 for depersonalization, and 0.72 for personal accomplishment. Test-retest reliability coefficients for the sub-dimensions of the scale were 0.83, 0.72 and 0.67, respectively.[14] We realized that optimal cut-off values for burnout could not be determined in the literature. Thus, the cut off values developed by Leiter and Maslach in 2016 according to the population's norms, were used in our study to define high levels of burnout: mean + (Standard Deviation [SD] x 0.5) was used for emotional exhaustion, mean + (SD x 1.25) for depersonalization, and mean + (SD x 0.10) for personal accomplishment.[15] Median values were obtained for all three domains of the burnout scale since the distribution of the data was not homogeneous. In order to adapt it to the formula, the median mean converter program was used.[16] The cut-off values we determined were 30.3 for emotional exhaustion, 15.7 for depersonalization, and 30.3 for personal accomplishment.

Statistical Analysis

Demographic and professional characteristics were summarized using descriptive statistics. After the normality test (Kolmogorov-Smirnov test), the Mann Whitney U test and Kruskal Wallis test (with post hoc evaluations) were used to analyze the relationships between variables that did not show normal distribution. The Bonferroni correction method was used in multiple comparison tests. In order to clarify the information and because of the general correlation observed between all three subscales of burnout, only the emotional exhaustion subscale was used in the regression analysis, which is already accepted as the core component. Previous studies have also shown that this parameter psychometrically best represents overall burnout.[4] Univariate analysis was performed to determine the factors affecting

emotional exhaustion. According to the logistic regression model created by using the significant factors (p<0.05) in this analysis, variables affecting emotional exhaustion were subjected to multiple comparative analysis. Results with p<0.05 was considered statistically significant in the study where data analysis was performed with the SPSS for Windows version 23 program.

Results

Data of 285 medical oncology physicians were analyzed. When the data of the whole group were examined, emotional exhaustion was observed in 37.5% of the participants, depersonalization in 25%, and a decrease in personal accomplishment in 41.4%. While 42.1% of the participants did not have burnout according to all three scales, the rate of those for whom all three scales were positive was 11.9%.

In the study, there were more males (58.6%) than females, and most of the participants were married (80%). Only 23.5% of the doctors reported exercising regularly and 64.6% had at least one hobby. While 31.9% of the physicians reported working more than 40 hours per week, the majority (44.9%) were found to evaluate an average of 100 to 200 patients per week. The demographic and professional characteristics of the participants and the median MBI scores are presented in Table 1 and Table 2, respectively. The tables also show the relationships between the characteristics of the participants and their median MBI scores.

Emotional exhaustion was significantly higher in females

Table 1. Demographic characteristics and their relationship with median MBI scores of the participants

	MBI scores (median)		
Variable (n/%)	**Emotional exhaustion**	**Depersonalization**	**Personal accomplishment**
Gender			
Female (118/41.4%)	29±12	11±8	33±6.5
Male (167/58.6%)	26±10	11±6.25	31±7
	p=0.004	p=0.713	p=0.174
Age range, years			
24-30 (7/2.5%)	27.5±9[a]	14±4.25	30±7.5
31-40 (156/54.7%)	28±11*	12±7*	31±7*
41-50 (82/28.8%)	25±10	10±5.25*	33.5±6.75*
51 and above (40/14%)	23±12*[a]	10±6*	34±9*
	p=0.012	p=0.001	p=0.000
Marital status			
Married (228/80%)	26±11	11±7	32±8
Single (42/14.7%)	30±11	12±8	32±7
Divorced (15/5.3%)	25±15	10±7	34±10
	p=0.071	p=0.569	p=0.639
Parental status			
No children (77/27%)	30±11*[a]	14±8*	32±7
1 (87/30.5%)	27±10	12±7[a]	30±8*
2 (106/37.2%)	24±10*	10±5*[a]	33±7*
3 and more (15/5.3%)	22±13[a]	12±7	29±9.5
	p<0.001	p=0.009	p=0.072
Having a hobby			
Yes (184/64.6%)	25±10	11±7	32±8
No (101/35.4%)	30±12	12±7	31±6
	p=0.001	p=0.444	p=0.331
Regular exercise			
Yes (67/23.5%)	23±11*[a]	10±7	34.5±9*
Sometimes (108/37.9%)	27±12*	12±8	33±7*[a]
No (110/38.6%)	28±12[a]	11±7	30±6[a]
	p=0.001	p=0.568	p=0.000

MBI: Maslach Burnout Inventory; ¶ Mann-Whitney U test or Kruskal Wallis test was used for statistical analysis; depending on the variable type; *[a] Symbols indicate the factors that differ significantly (p <0.05) from each other in the post hoc analysis.

Table 2. Professional characteristics and their relationship with median MBI scores of the participants

	MBI scores (median)		
Variable (n/%)	**Emotional exhaustion**	**Depersonalization**	**Personal Accomplishment**
Institution			
University Hospital (114/40%)	26±11	12±6	32±8[a]
Training and Research Hospital (85/29.8%)	28±10	12±8	30±7*[a]
Public Hospital (25/8.8%)	26±14	12±7.5	32±6.5
Private Hospital (61/21.4%)	25±11	10±7	34±6.75*
	p=0.286	p=0.660	p=0.003
Professional Title			
Prof. (40/14%)	23±9*[a]	10±5[a]	36±8.5*[a°]
Assoc. Prof. (37/13%)	29±11	11.5±8	31±4.75
Assist. Prof. (31/10.9%)	23±12	9±5*	34±9[o]
Specialist Physician (116/40.7%)	27±11[a]	11±7.25	31.5±8[a°]
Research Assistant (61/21.4%)	29±11*	14±6*[a]	30±6.75*[o]
	p<0.001	p<0.001	p<0.001
Professional experience in oncology			
>15 years (45/15.8%)	23±12*	10±5*	34±9[a]†
11-15 years (42/14.7%)	26±11	11±7.25	34±6.25*[°]
4-10 years (134/47%)	27±11	11±8	31±7.25[°]†
≤3 years (64/22.5%)	29±12*	14±7*	30±7.25*[a]
	p=0.022	p=0.003	p=0.000
Average working hours per week			
>40 hours (91/31.9%)	29±11*	11±8*	33±7*[a]
33-40 hours (103/36.1%)	27±11	11±8	32±7.5
25-32 hours (62/21.8%)	26±10	12±6	30±7[a]
≤24 hours (29/10.2%)	23±10*	12±6.5*	30±8.5*
	p=0.022	p=0.003	p<0.001
Average number of patients followed-up weekly			
>300 patients (33/11.6%)	26±12	11±8	33±10
200-300 (64/22.5%)	26±11	11±8	32±7.5
100-199 (128/44.9%)	27±12	12±7	31±6
<100 (60/21.1%)	25±11	10±6.75	32±7.75
	p=0.307	p=0.511	p=0.669
Total number of oncologists in the clinic			
≥5 (139 (48.8%)	26±10	11±7	32±8
4 (22/7.7%)	30±15	12.5±6.25	29±8
3 (23/8.1%)	24±12	11±7	33±10
2 (51/17.9%)	29±10	13±7	32±6.5
1 (only me) (50/17.5%)	26±12	11±7.5	32±7.5
	p=0.257	p=0.254	p=0.399
Is a regular tumor council held in your clinic?			
Yes (234/82.1%)	27±10	11±8	32±8
No (51/17.9%)	26±13	11±7	30±6
	p=0.463	p=0.849	p=0.167
Monthly income			
>$4,900 (32/11.2%)	23.5±11[a]	11.5±15	34±6.75[°]†
$3,650-4,900 (20/7%)	22±11*	10±8	34±6[a]
$2,500-3,649 (44/15.4%)	25±11	10±8.5	33±6*
$1,200-2,499 (138/48.4%)	27±10	11±7*	31±7†
$600-1,199 (51/17.9%)	30±12*[a]	14±7*	28±7*[a°]
	p=0.003	p=0.024	p<0.001

MBI: Maslach Burnout Inventory; ¶ Mann-Whitney U test or Kruskal Wallis test was used for statistical analysis, depending on the variable type; *[a°]† Symbols indicate the factors that differ significantly (p <0.05) from each other in the post hoc analysis.

(p=0.004), physicians under 40 years of age (p=0.012), those without children (p<0.001), research assistants (p<0.001), those with less than 3 years of professional experience (p=0.022), those who work 40 hours and above per week (p=0.022) and those with a monthly income less than $1.200 (p=0.003). It was significantly lower in those who have a hobby (p=0.001) and those who exercise regularly (p=0.001).

When the factors affecting emotional exhaustion were examined in the univariate analysis, female gender (p=0.003), not having a hobby (0.003), not doing regular exercise (0.017), having a monthly income below $1,200 (p=0.014), being younger than 40 years of age (p=0.004), being single (p=0.047), not having children (p=0.006), having less than 15 years of professional experience (p=0.015), being a research assistant (p=0.029) and working more than 40 hours a week (0.016) were associated with a significantly increased risk. In the multivariate analysis, not having a hobby (p=0.01) and working more than 40 hours a week (p=0.003) were found to be significant (Table 3).

Discussion

In this study, we have revealed levels of burnout among medical oncology physicians on quite a large scale in Turkey. In addition, we tried to determine the predictive effects of both sociodemographic characteristics and working conditions as well as professional qualifications on burnout. The factors found to affect burnout among medical oncologists in this study were the average working hours per week and having a hobby.

Since there is no standard scale or cut-off points for measuring burnout levels, a wide range of results have been reported for medical oncology physicians.[17-21] In our study, the rate of emotional exhaustion was 37.5%, depersonalization 25%, and decrease in sense of personal accomplishment 41.4%. In a systematic review and meta-analysis in which oncologists were evaluated according to emotional exhaustion values, the prevalence of burnout was between 23% and 48%, with an average of 32%.[22] According to studies among medical oncologists, this rate varies between 25% and 48%.[23-25] In general, the results we obtained were consistent with the literature.

In a study conducted in our country, Demirci et al. investigated burnout levels in individuals working in oncology clinics. Apart from medical oncology physicians, there were also radiation oncologists, nurses and radiotherapy technicians included in that study. Emotional exhaustion was observed with a rate of 42%, depersonalization 20%, and a decrease in sense of personal accomplishment 35.6%. In our study, although the cut-off values were higher for all three subscales, it was noteworthy that the rates of depersonalization and sense of decreased personal accomplishment were higher.[26] Inclusion of only physicians in the present study may be the reason of this difference. In that study, similar to ours, higher burnout levels were observed in those younger than 35 years of age, those without children and those working more than 40 hours per week.[26] In a recent study from Asia, burnout levels in oncology physicians were examined in Korea. In that study, apart from medical oncologists, hematologists, radiation oncologists, surgical oncologists, gynecological oncologists and urologic oncologists were also included. Comparison of burnout levels against our findings would not be suitable since a different scale was used for measurement in the aforementioned study. However, when the subgroups were examined, burnout was found to be higher in females, as is the case in our study. Similarly, there was an inverse correlation with age and professional experience and burnout. In regression analyses, gender and increased working hours, similar to our study, were noted as factors affecting burnout.[21] Considering the relationship between working hours and burnout observed both in our study and other studies, it can

Table 3. The factors affecting emotional exhaustion - Univariate and Multivariate analyses

	Univariate analysis		Multivariate analysis	
	OR (95% CI)	P	OR (95% CI)	P
Gender (Female vs. male)	2.11 (1.28-3.49)	0.003		
Having a hobby (No vs. yes)	2.18 (1.31-3.62)	0.003	2.1 (1.19- 3.73)	0.01
Regular exercise (No vs. sometimes/yes)	2.01 (1.13- 3.59)	0.017		
Monthly income ($600-1,200 vs. $1,200 and above)	2.16 (1.16-4)	0.014		
Age group (≤40 years vs. >40 years)	2.14 (1.27-3.58)	0.004		
Marital status (Single vs. married/divorced)	1.96 (1.01-3.80)	0.047		
Parental status (No vs. yes)	2.11 (1.23-3.62)	0.006		
Professional experience in oncology (≤15 years vs. >15 years)	2.72 (1.21-6.11)	0.015		
Professional title (research assistant vs. other degrees)	1.9 (1.06-3.39)	0.029		
Average working hours per week (>40 hours vs. ≤40 hours)	1.88 (1.12-3.16)	0.016	2.38 (1.33-4.25)	0.003

be accepted that regulations on this issue will be protective against burnout in physicians. A meta analysis on interventions to reduce burnout in physicians demonstrated that organization based interventions were more beneficial than physician based interventions. The vast majority of organization based interventions reviewed were simple workload interventions that focused on rescheduling hourly shifts and reducing workload.[27]

Consistent with the literature, in our study, emotional exhaustion median values were significantly higher (29±12 vs. 26±10) in female physicians compared to males. In a study conducted with gynecological oncologists, burnout levels were found to be higher in female physicians.[28] In another study examining oncology professionals from Belgium, female gender was associated with an increased risk of burnout.[20] One of the potential reasons for this situation may be the male physician centered organizational culture. Another potential cause may be the work home conflict, which we did not investigate in our study. In the literature, it has been shown that female physicians are more affected by work home conflicts than their male counterparts.[29]

The scores in all subscales of burnout were significantly higher in younger physicians and in parallel with this, those with less professional experience. In other words, as the experience increased, burnout decreased. These findings were consistent with the literature.[26, 30] In experienced physicians, better ability to take independent decisions, and familiarity in coping with difficulties may have played a role in this regard. Findings from another study attributed the difference to lessons learned over the years of training and practice. They commented that in the transfer of these coping skills to younger colleagues, support can be obtained from experienced physicians in terms of mentorship.[31] Accordingly, these life lessons should be concretized and incorporated into the fellowship education program of medical oncology physicians. Besides, rapid innovations in the field of oncology have made the medical oncology branch very attractive for young physicians. The high burnout values among physicians at the beginning of their oncology career may be considered alarming for the future.

Higher degrees of burnout in those with no children and low monthly income may be influenced by some confounding factors. For example, in both cases, the findings represent the younger population as the age group in which burnout was also increased. The fact that parental status and monthly income were not found to be significant in the regression analysis supports this hypothesis.

Both having a hobby and exercising regularly were associated with less burnout. In addition, not having a hobby was one of the significant factors in the regression test. In other studies in the literature, having a hobby and regular exercise were found to have an inverse correlation with burnout.[17] Exercise has long been known to have positive effects on mood, with a fairly historic study showing that exercise increased mood, self-concept, and work performance including greater productivity.[32] A recent pilot study has assessed the impact of cardiovascular exercise on burnout and perceived stress, and significant results were obtained with a large effect size against emotional exhaustion (Cohen's d [d] = 1.84) and depersonalization (d=1.35) but not personal accomplishment (d = 0.31).[33] Exercise and maintaining hobbies are both cost effective and non invasive solutions to combat burnout. Medical oncology physicians should be encouraged personally and organizationally in these two subjects.

One of the limitations of our study may be the low number of physicians with higher academic degrees (professors and associate professors). Considering that burnout scores were higher in younger physicians, this may have caused bias in the study results. Another limitation was that the study was conducted with a cross sectional design, which created difficulties in ascertaining causality. Another limitation of our study may be that the relationship between medical oncology physicians and other physicians was not investigated. In future studies, it would be useful to question the characteristics of the teamwork the medical oncology physician has established with surgery or pathology and radiology in patient management.

Conclusion

In conclusion, burnout is one of the most challenging problems among medical oncology physicians and may lead to many occupational problems, including early retirement. In this study, the factors affecting burnout were increased weekly working hours and not having any hobbies. Measures to reduce burnout in medical oncology physicians should be considered both on an organizational and personal basis.

Disclosures

Ethics Committee Approval: The study was approved by Namık Kemal University Non-Interventional Clinical Research Ethics Committee (approval number: 2020.66.03.16).

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Conflict of Interest: None declared.

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Appendix:

Sociodemographic characteristics form

1- How old are you?
a) 24-30; b) 31-40; c) 41-50; d) 51-65; e) >65

2- What is your gender?
a) female; b) male

3- What is your marital status?
a) married; b) single; c) widowed/divorced

4- How many children do you have?
a) none; b) 1; c) 2; d) 3 and more

5- Do you have a hobby* that you are interested in?
a) yes; b) no

*Collecting themed items and objects, engaging in creative and artistic pursuits such as painting, photography, or cultural activities such as marbling or illumination regularly.

6- Do you exercise regularly?
a) yes; b) sometimes; c) never**

**Yes: At least 150 minutes of moderate-intensity aerobic physical activity per week
Sometimes: Below 150 minutes of moderate-intensity aerobic physical activity per week

Professional characteristics form

1- What kind of institution do you work at?
a) University Hospital; b) Training and Research Hospital; c) Public Hospital; d) Private Hospital

2- What is your professional title?
a) Professor; b) Associate Professor; c) Assistant Professor; d) Specialist; e) Research Assistant

3- How long is your professional experience in the field of oncology?
a) ≤3 years; b) 4-10 years; c) 11-15 years; d) >15 years

4- What is the average number of patients you see per week?
a) <100; b) 100-200; c) 201-300; d) >300

5- How many physicians are working as part of an oncology team in your clinic?
a) 1 (only me); b) 2; c) 3; d) 4; e) 5 and more

6- Is a multidisciplinary tumor council held regularly in your clinic?
a) yes; b) no

7- How many hours do you have an active outpatient clinic per week?
a) <24 hours; b) 25-32 hours; c) 33-40 hours; d) >40 hours

8- What is your monthly income?
a) $600 - 1,199; b) $1,200 - 2,499; c) $2,500 - 3,649; d) $3,650 - 4,899; e) ≥$4,900