

Oncologist Burnout Syndrome in Eastern Europe: Results of the Multinational Survey

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QUESTION ASKED: What is the prevalence of burnout in Eastern European oncologists, and are there any contributing and protective factors?

SUMMARY ANSWER: The study included 637 participants. The rate of burnout among Eastern European oncologists is alarmingly high (71.7%). In multivariate logistic regression analysis, burnout was significantly associated with standardized cancer mortality and fewer years of practice.

WHAT WE DID: The study was conducted as an online survey between October 2017 and March 2018. Oncologists (including medical, radiation, clinical, and surgical) from 19 countries were invited to participate. The survey consisted of 30 questions, including the standardized burnout instrument Maslach Burnout Inventory (MBI), and eight demographic questions. Burnout risk was scored according to the scoring manual for health care workers.

WHAT WE FOUND: Overall burnout risk was low or intermediate in 180 participants (28.3%) and high in 457 participants (71.7%). Forty-four percent of participants were at high risk for emotional exhaustion, 28.7% for depersonalization, and 47.3% for personal accomplishment.

BIAS, CONFOUNDING FACTORS: This was a cross-sectional study; therefore, there is a chance for response bias because results might reflect the oncologist's state only at the given moment of administration of the survey. Also, there is a possibility of selection

bias due to the voluntary nature of participation in this study. However, this form of limitation is often associated with survey-based studies. Moreover, the survey was conducted in English in all participating countries, and no translation to a native language was available to avoid possible legal issues with MBI. It is possible that this negatively affected the total response rate, as well as the quality of the response, due to potential difficulties in understanding the questions, especially among older oncologists.

REAL-LIFE IMPLICATIONS: According to this study, burnout should be tackled at both the individual and organizational levels, which includes timely recognition of burnout symptoms, learning resilience strategies, and cultivating positive relationships at work (individual level), and recognizing the problem, planning the action to reduce the risk of burnout, improving overall practice environment, and providing institutional resources (organizational level). Unattended burnout can affect the morale and satisfaction of physicians, increase absenteeism, and accelerate permanent leave of the profession, but can also lead to poorer quality of medical care, including an increased rate of medical errors and poor communication with patients and colleagues. Thus, increased awareness about the presence of burnout among oncologists is an important step toward implementation of adequate measures and prevention strategies, which are essential to improve the current state among oncologists.

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Oncologist Burnout Syndrome in Eastern Europe: Results of the Multinational Survey

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abstract

PURPOSE Burnout is defined as a three-dimensional syndrome—emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA)—caused by chronic occupational stress. The aim of the current study was to investigate the prevalence of burnout among oncologists in Eastern Europe and to identify the contributing factors.

METHODS The study was conducted as an online survey between October 2017 and March 2018. Oncologists (including medical, radiation, clinical, and surgical oncologists) from 19 countries were invited to participate. The survey consisted of 30 questions, including the standardized burnout instrument, Maslach Burnout Inventory, and eight demographic questions. Burnout risk was scored according to the scoring manual for health care workers.

RESULTS The study included 637 oncologists. Overall, 28% were at low or intermediate risk and 72% were at high risk for burnout. Forty-four percent of participants were at high risk for EE, 28.7% for DP, and 47.3% for PA. EE risk was associated with female sex. DP risk was highest among clinical and radiation oncologists, whereas PA risk was positively correlated with years of service, percentage of cancer deaths, and availability of the number of oncologists. In multivariate logistic regression analysis, burnout was significantly associated with standardized cancer mortality and fewer years of practice.

CONCLUSION Burnout among oncologists in Eastern Europe is high, and younger oncologists are the most vulnerable group. Preventive measures should be taken to address this issue, which negatively affects optimal care delivery and poses a threat to oncologists' health and well-being.

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INTRODUCTION

Burnout is defined as a three-dimensional syndrome, emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA) caused by chronic occupational stress.¹ Although burnout is not a psychiatric disease, current scientific evidence suggests that burnout is clinically associated with depression and suicidal ideation.² Burnout has been reported in the health care sector and has been shown to be associated with alarmingly high rates among health care professionals. Health care professionals, primarily oncologists, are at substantial risk for developing burnout as a result of many factors, including ineffective cancer therapies associated with low patient response rate to treatment, increased administrative burden of the profession, and limited personal work-life balance.³ Burnout among oncologists is

associated with low-quality patient care delivery, a higher rate of medical errors, and often, loss of compassion and empathy.⁴ Over the last decade, a number of studies reported the issue of burnout among health care professionals in Europe.⁵⁻¹⁰ These reports focused on medical specialties, such as primary care, internal medicine, urology, and palliative care. However, oncologists were poorly represented in these surveys, with only two reports providing conflicting and limited data on burnout levels for oncologists.^{5,7} Although relevant for benchmarking the problem of physician oncologist burnout in Europe, these studies were exclusively undertaken in Western Europe, providing no data for eastern Europe. More recently, there has been much attention devoted to awareness of the burnout issue among oncologists, and orchestrated efforts are being made to evaluate

ASSOCIATED CONTENT

Appendix

Author affiliations and support information (if applicable) appear at the end of this article.

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the prevalence of the problem and propose solutions.¹¹ In Europe, the European Society for Medical Oncology (ESMO) leads the efforts to chart burnout among oncologists and has reported a high level of burnout-related issues among the junior oncology workforce in Europe.¹² This study partly included participants from Eastern Europe but used a different stratification of countries by European regions. A recent study of the South Eastern European Research Oncology Group addressed the specific challenges of cancer care in Eastern Europe and proposed measures to improve both organizational and quality aspects of health care delivery in this specific region.¹³ However, the impact of these specific challenges in oncology health care professionals in Eastern Europe is largely unknown. Therefore, this study was initiated to gather baseline data to address the magnitude of the burnout problem among oncologists in the eastern half of Europe, to raise awareness about this issue, and to identify potential contributing and protective factors.

METHODS

Participant Sample

This study was conducted initially in Croatia as part of a bigger national project for assessment of burnout among Croatian physicians.¹⁴ It was supported under the auspices of the Croatian Medical Chamber, the independent body that regulates medical practice in Croatia. Given the overwhelming response among physicians in Croatia, a decision was made to expand the study to neighboring countries of Eastern Europe, primarily those that share similar historical and societal postcommunist transition backgrounds. Using a modified snowball methodology, we recruited study investigators from 19 countries through an informal network of physician oncologists. For each country participating in the study, a principal investigator was assigned to promote the Web-based survey among colleagues. Participating countries were assigned to one of the following geographic regions¹⁵: Central Europe (C-EUR; Hungary, Poland, Slovakia); Eastern Europe (E-EUR; Lithuania, Moldova, Russian Federation, Ukraine); Southeastern Europe (SE-EUR; Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania, Serbia, Slovenia); Southern Europe (S-EUR; Greece, Italy), and Southwestern Asia (SW-ASIA; Turkey). Italy and Turkey were included because of their geographic proximity and cultural similarities to included neighboring countries. Extensive demographic data were gathered for each country and analyzed for potential association with burnout risk, including cancer incidence, cancer mortality, population density, the proportion of cancer-related deaths among all deaths, standardized cancer death rate, number of oncologists, number of radiation therapy units, and gross national income (GNI).¹⁶⁻¹⁹

The study was conducted as an online survey between October 1, 2017, and March 1, 2018. The online survey

uploaded to the Google free platform consisted of the standardized burnout instrument, Maslach Burnout Inventory (MBI),²⁰ composed of 22 questions, and eight additional questions were added to capture demographics (age, sex, marital status, number of children, professional status, country, years of service, and specialty; Table 1). Practicing oncologists (clinical, radiation, medical, and surgical oncologists; Appendix, online only) working in the eastern half of Europe, Italy, and Turkey, regardless of their professional rank and age, were invited to participate in the survey. Participation was voluntary, and there was no incentive offered to participate. Burnout risk was scored according to the MBI scoring manual for health care workers: participants with a score > 27 on the EE subscale, > 13 on the DP subscale, or < 33 on the PA subscale were considered to have a high risk of burnout.²⁰

Statistical Analysis

Participant characteristics were assessed using descriptive statistics, presented as a median with interquartile range. Continuous variables were compared with one-way analysis of variance or Kruskal-Wallis test, when appropriate. Categorical variables were analyzed using the χ^2 test. To assess the association between burnout and other parameters, two steps of analyses were carried out: (1) multivariate linear regression using the backward conditional stepwise approach was used to determine which

TABLE 1. Characteristics of the Studied Population

Characteristic	No. (%)
Marital status	
Cohabitation	52 (8.2)
Divorced	34 (5.3)
Married	371 (58.2)
Never married	180 (28.3)
No. of children	
0	256 (40.2)
1	154 (24.2)
2	176 (27.6)
3	43 (6.8)
4	8 (1.3)
Professional status	
Resident	215 (33.8)
Specialist	307 (48.2)
Subspecialist/consultant	108 (17.0)
Other	7 (1.1)
Oncology specialty	
Clinical	167 (26.2)
Medical	330 (51.8)
Radiation	102 (16.0)
Surgical	24 (3.8)
Other	14 (2.2)

variables were independently associated with EE, DP, and PA score; and (2) univariate logistic regression was performed to detect predictors of high burnout risk. Variables that were associated with high burnout risk in univariate analyses were included in multivariate logistic regression using the backward conditional stepwise approach. Results were considered statistically significant when 2-tailed P values were $< .05$. No adjustments were made for multiple comparisons. All statistical analyses were performed using SPSS version 20.0 (SPSS, Chicago, IL).

RESULTS

The study included 637 physician oncologists. Characteristics of the studied population and demographic data are shown in [Tables 1](#) and [2](#). Median age was 37.0 years (range, 31.0–44.0 years), with a median of 8.0 years (range, 4.0–17.0 years) of service. Female physician oncologists comprised 68% of the total study population. Our results show that 43.5% of participants ($n = 277$) were at high risk for EE, 28.7% ($n = 183$) were at high risk for DP, and 47.3% ($n = 301$) were at low risk for PA. In contrast, low burnout risk was found in 32.5% ($n = 207$) of participants for EE, in 34.9% ($n = 222$) for DP, and in 19.6% ($n = 125$) for PA. A positive correlation was found between EE and DP ($\rho = 0.595$; $P < .001$), but there was no correlation between EE and PA nor between DP and PA. Detailed analysis of differences among participants from different European regions regarding burnout risk is shown in [Table 3](#) and [Appendix Figure A1](#) (online only).

Analysis of the Burnout Dimensions

A higher proportion of female physician oncologists had a high risk of EE than male physician oncologists (48.0% v 33.8%; $P = .003$). Similarly, a higher proportion of specialists had a high EE risk compared with residents (47.6% v 37.2%; $P = .031$). In a multivariate linear regression analysis, EE score was significantly positively associated with the number of cancer deaths ($\rho = 0.160$; $P = .043$), standardized cancer mortality ($\rho = 0.224$; $P < .001$), and availability of radiation therapy equipment ($\rho = 0.246$; $P < .001$), and significantly inversely associated with years of service ($\rho = -0.095$; $P = .032$) and the country's number of oncologists ($\rho = -0.198$; $P < .001$).

A significantly higher proportion of medical oncologists and other specialists had a high risk of DP compared with surgical oncologists (32.7% v 42.9% v 4.2%, respectively; $P = .013$). In multivariate linear regression analysis, DP score was inversely associated with years of service ($\rho = -0.125$; $P = .005$) and number of cancer deaths ($\rho = -0.096$; $P = .028$).

Among those with a low PA score, clinical oncologists (36.5%) showed lower risk compared with medical oncologists (49.7%) and radiation oncologists (52.9%; $P = .009$). Low PA score was positively correlated with years of service ($\rho = 0.432$; $P = .002$), patient cancer deaths

($\rho = 0.437$; $P < .001$), and the number of practicing oncologists ($\rho = 0.247$; $P < .001$), and inversely associated with age ($\rho = -0.287$; $P = .037$), standardized cancer mortality ($\rho = -0.447$; $P < .001$), and GNI per capita ($\rho = -0.387$; $P < .001$).

Overall Burnout Risk

Overall, burnout risk was low or intermediate in 180 participants (28.3%) and high in 457 (71.7%). In univariate logistic regression analysis, high burnout risk was independently associated with fewer years of experience (odds ratio [OR], 0.976; $P = .013$), fewer oncologists per 100,000 citizens (OR, 0.823; 95% CI, 0.716 to 0.945; $P = .006$), low rate of cancer deaths among all deaths (OR, 0.810; 95% CI, 0.718 to 0.914; $P = .001$), high standardized cancer mortality (OR, 1.024; 95% CI, 1.015 to 1.033; $P < .001$), and male sex (OR, 1.587; 95% CI, 1.106 to 2.276; $P = .012$). Overall burnout risk was highest in E-EUR compared with C-EUR (OR, 3.319; 95% CI, 1.465 to 7.520; $P = .004$); S-EUR (OR, 4.857; 95% CI, 2.007 to 11.755; $P < .001$); SE-EUR (OR, 2.532; 95% CI, 1.160 to 5.529; $P = .020$); and SW-ASIA (OR, 6.146; 95% CI, 2.383 to 15.849; $P < .001$). In SE-EUR, burnout risk was significantly higher compared with S-EUR (OR, 1.918; 95% CI, 1.109 to 3.318; $P = .020$) and SW-ASIA (OR, 2.427; 95% CI, 1.273 to 4.628; $P = .007$). However, in multivariate logistic regression analysis, burnout was significantly associated with standardized cancer mortality (OR, 1.010; 95% CI, 1.002 to 1.019; $P = .018$) and fewer years of experience (OR, 0.977; 95% CI, 0.956 to 0.997; $P = 0.028$).

DISCUSSION

The prevalence of burnout among oncologists working in the eastern part of Europe is alarmingly high (71.7%). To our knowledge, this is the largest study to explore burnout among Eastern European oncologists using a validated assessment tool. If the whole population of oncologists from all included countries is taken into account, total response rate was 4.89%. However, response rate was low in some countries (Italy, Moldova, Russia, Slovakia, and Ukraine), and if these countries are excluded, response rate increases to 11.29%. Also, because we used chain-referral sampling, the principal investigators assigned for each country exercised independent strategies for recruiting colleagues to participate in the study. Murali et al²¹ suggested that risks for burnout among oncologists are workplace related (long working hours, administrative workload), as well as impaired work-life balance (insufficient vacation, lack of hobbies). A recent study showed that oncologists' subjective perception of time pressure at work is a key predictor of their burnout and compassion fatigue. Moreover, demographics such as age and sex should not be discounted.²² In the current study, there was no significant difference in burnout prevalence between men and women, but fewer years of service correlated with

TABLE 2. Demographic Data of Participants From Each Country Included in the Study

Country	Mean Age, Years (range)	Sex: Male, Female	Marital Status: Never Married, Married, Cohabitation, Divorced	No. of Children, Mean (range)	Professional Status: Resident, Specialist, Consultant, Other	Years of Service, Mean (range)	Specialty: ClinO, MedO, RadO, Other
Albania (N = 21)	33.57 (28-41)	1 (4.76), 20 (95.24)	2 (9.52)	0.76 (0-2)	14 (66.67)	5.29 (2-13)	10 (47.62)
			0 (0)		4 (19.05)		10 (47.62)
			10 (47.62)		3 (14.28)		1 (4.76)
			9 (42.86)		0 (0)		0 (0)
Bosnia and Herzegovina (N = 43)	35.63 (26-47)	17 (39.53), 26 (60.47)	0 (0)	0.81 (0-3)	15 (34.88)	7.95 (1-18)	15 (34.88)
			2 (4.65)		22 (51.16)		19 (44.19)
			23 (53.49)		6 (13.96)		5 (11.63)
			18 (41.86)		0 (0)		4 (9.30)
Bulgaria (N = 26)	34.54 (26-54)	10 (38.46), 16 (61.54)	7 (26.92)	0.54 (0-2)	13 (50.00)	7.81 (2-29)	0 (0)
			0 (0)		8 (30.77)		26 (100)
			8 (30.77)		5 (19.23)		0 (0)
			11 (42.31)		0 (0)		0 (0)
Croatia (N = 83)	38.77 (26-63)	17 (20.48), 66 (79.52)	9 (10.84)	0.93 (0-4)	40 (48.19)	12.73 (1-37)	47 (56.63)
			4 (4.82)		32 (38.55)		36 (43.37)
			50 (60.24)		11 (13.26)		0 (0)
			20 (24.10)		0 (0)		0 (0)
Greece (N = 42)	45.33 (29-70)	23 (54.76), 19 (45.24)	4 (9.52)	1.07 (0-3)	8 (19.05)	14.12 (1-40)	5 (11.91)
			1 (2.38)		20 (47.62)		36 (85.71)
			27 (64.29)		12 (28.57)		0 (0)
			10 (23.81)		2 (4.76)		1 (2.38)
Hungary (N = 54)	53.55 (32-66)	21 (38.89), 33 (61.11)	7 (12.96)	1.94 (0-4)	0 (0)	25.33 (0-40)	35 (64.82)
			12 (22.22)		46 (85.19)		12 (22.22)
			31 (57.41)		8 (14.81)		5 (9.26)
			4 (7.41)		0 (0)		2 (3.70)
Italy (N = 26)	30.81 (26-49)	10 (38.46), 16 (61.54)	2 (7.69)	0.46 (0-3)	22 (84.62)	3.88 (1-12)	8 (30.77)
			0 (0)		2 (7.69)		18 (69.23)
			4 (15.39)		0 (0)		0 (0)
			20 (76.92)		2 (7.69)		0 (0)
Lithuania (N = 45)	42.20 (26-65)	7 (15.56), 38 (84.44)	1 (2.22)	1.56 (0-3)	5 (11.11)	16.87 (2-41)	1 (2.22)
			5 (11.11)		40 (88.89)		22 (48.89)
			37 (82.22)		0 (0)		22 (48.89)
			2 (4.45)		0 (0)		0 (0)
Macedonia (N = 10)	39.70 (34-53)	0 (0), 10 (100)	0 (0)	1.20 (0-2)	2 (20.00)	6.50 (3-11)	4 (40.00)
			0 (0)		8 (80.00)		6 (60.00)
			8 (80.00)		0 (0)		0 (0)
			2 (20.00)		0 (0)		0 (0)
Moldova (N = 1)	39 (39-39)	0 (0), 1 (100)	0 (0)	3 (3-3)	0 (0)	16.00 (16-16)	0 (0)
			0 (0)		1 (100)		1 (100)
			1 (100)		0 (0)		0 (0)
			0 (0)		0 (0)		0 (0)

(continued on following page)

TABLE 2. Demographic Data of Participants From Each Country Included in the Study (continued)

Country	Mean Age, Years (range)	Sex: Male, Female	Marital Status: Never Married, Married, Cohabitation, Divorced	No. of Children, Mean (range)	Professional Status: Resident, Specialist, Consultant, Other	Years of Service, Mean (range)	Specialty: ClinO, MedO, RadO, Other
Montenegro (N = 26)	42.38 (28-60)	12 (46.15), 14 (53.85)	1 (3.84)	0.88 (0-2)	3 (11.54)	15.69 (2-35)	0 (0)
			0 (0)		8 (30.77)		14 (53.85)
			19 (73.08)		15 (57.69)		8 (30.77)
			6 (23.08)		0 (0)		4 (15.38)
Poland (N = 48)	37.23 (25-67)	16 (33.33), 32 (66.67)	3 (6.25)	1.08 (0-3)	24 (50.00)	11.50 (1-39)	36 (75.00)
			2 (4.17)		24 (50.00)		1 (2.08)
			33 (68.75)		0 (0)		9 (18.75)
			10 (20.83)		0 (0)		2 (4.17)
Romania (N = 41)	29.68 (27-47)	11 (26.83), 30 (73.17)	3 (7.32)	0.12 (0-1)	31 (75.61)	3.93 (1-6)	3 (7.32)
			1 (2.44)		10 (24.39)		33 (80.49)
			11 (26.83)		0 (0)		5 (12.19)
			26 (63.41)		0 (0)		0 (0)
Russia (N = 20)	34.90 (24-56)	4 (20.00), 16 (80.00)	0 (0)	0.80 (0-2)	2 (10.00)	7.00 (2-13)	2 (10.00)
			4 (20.00)		14 (70.00)		10 (50.00)
			8 (40.00)		4 (20.00)		0 (0)
			8 (40.00)		0 (0)		8 (40.00)
Serbia (N = 63)	36.44 (25-59)	20 (31.75), 43 (68.25)	1 (1.59)	0.92 (0-4)	21 (33.33)	9.16 (0-32)	1 (1.59)
			1 (1.59)		28 (44.44)		24 (38.09)
			41 (65.08)		12 (19.05)		26 (41.27)
			20 (31.74)		2 (3.18)		12 (19.05)
Slovakia (N = 1)	37 (37-37)	1 (100), 0 (0)	0 (0)	1.00 (1-1)	0 (0)	11.00 (11-11)	0 (0)
			1 (100)		1 (100)		1 (100)
			0 (0)		0 (0)		0 (0)
			0 (0)		0 (0)		0 (0)
Slovenia (N = 42)	41.81 (28-63)	8 (19.05), 34 (80.95)	12 (28.57)	1.64 (0-4)	9 (21.43)	12.79 (1-36)	0 (0)
			0 (0)		18 (42.86)		31 (73.81)
			23 (54.76)		15 (35.71)		7 (16.67)
			7 (16.67)		0 (0)		4 (9.52)
Turkey (N = 44)	40.18 (29-56)	26 (59.09), 18 (40.91)	0 (0)	1.23 (0-3)	5 (11.36)	11.45 (1-27)	0 (0)
			1 (2.27)		21 (47.73)		30 (68.18)
			37 (84.09)		17 (38.64)		14 (31.82)
			6 (13.64)		1 (2.27)		0 (0)
Ukraine (N = 1)	25 (25-25)	0 (0), 1 (100)	0 (0)	0 (0-0)	1 (100)	3.00 (3-3)	0 (0)
			0 (0)		0 (0)		0 (0)
			0 (0)		0 (0)		0 (0)
			1 (100)		0 (0)		1 (100)

NOTE. Data presented as No. (%) unless otherwise indicated.

Abbreviations: ClinO, clinical oncology; MedO, medical oncology; RadO, radiation oncology.

higher burnout risk. Thus, to alleviate high rates of burnout, preventive measures need to be designed to target younger oncologists and residents in training because this group is

prone to burnout, as observed in our study.²³ The help of older colleagues could potentially prove to be beneficial in this setting.

TABLE 3. Differences Between European Regions in Burnout Score

Category	Central Europe (n = 145)	Southern Europe (n = 68)	Southeastern Europe (n = 313)	Eastern Europe (n = 67)	Southwestern Asia (n = 44)	P
EE total score (range)	26 (13-34)	17(13-28) ^{a,b,c,d}	25 (14-35)	27 (16-36)	22 (15-26)	< .001
DP total score (range)	9 (4-12)	8 (5-11)	9 (5-14)	9 (6-11)	11 (8-13) ^{b,e}	.030
PA total score (range)	35 (28-38) ^{b,c}	35 (29-39) ^c	31 (24-37) ^c	29 (23-34)	34 (28-37) ^c	.026
EE risk						.002
Low	43 (29.7)	32 (47.1)	99 (31.6)	18 (26.9)	15 (34.1)	
Intermediate	33 (22.8)	15 (22.1)	70 (22.4)	15 (22.4)	20 (45.5) ^{a,b}	
High	69 (47.6) ^d	21 (30.9)	144 (46) ^d	34 (50.7) ^d	9 (20.5)	
DP risk						.002
Low	54 (37.2)	26 (38.2)	114 (36.4)	20 (29.9)	8 (18.2)	
Intermediate	56 (38.6)	31 (45.6)	94 (30.0)	33 (49.3) ^b	18 (40.9)	
High	35 (24.1)	11 (16.2)	105 (33.5) ^e	14 (20.9)	18 (40.9) ^e	
PA risk						< .001
Low	49 (33.8)	27 (39.7)	162 (51.8) ^a	47 (70.1) ^{a,d,e}	16 (36.4)	
Intermediate	61 (42.1) ^b	23 (33.8)	86 (27.5)	19 (28.4)	22 (50.0) ^b	
High	35 (24.1) ^c	18 (26.5) ^c	65 (20.8) ^c	1 (1.5)	6 (13.6)	
High burnout risk						< .001
Overall	100 (69.0)	41 (60.3)	233 (74.4)	59 (99.1)	24 (54.5)	

NOTE. Data presented as No. (%) unless otherwise indicated.

Abbreviations: DP, depersonalization; EE, emotional exhaustion; PA, personal accomplishment.

^aStatistically significant difference to same data regarding Central Europe.

^bStatistically significant difference to same data regarding Southeastern Europe.

^cStatistically significant difference to same data regarding Eastern Europe.

^dStatistically significant difference to same data regarding Southwestern Asia.

^eStatistically significant difference to same data regarding Southern Europe.

Several national studies have addressed the issue of burnout in oncologists.^{24,25} However, drug availability, number of available oncologists, organization of the health care system, and other relevant factors vary significantly across the world. Furthermore, most of the published European studies have limited data regarding oncologists practicing in Eastern Europe. To illustrate this point, in the recent ESMO survey examining burnout among young European oncologists, only 20% of participants were from Eastern Europe.¹² Eastern Europe represents a unique territorial and socioeconomic region, with ongoing post-communist transition, prevalent corruption, and struggling emerging economies.²⁶ Eastern European countries are characterized by a lower cancer incidence, although by a higher mortality rate compared with Western European countries.²⁷ Moreover, in the health care setting, culturally related patient-physician interactions and patients' expectations from health care professionals are quite different compared with Western Europe.^{28,29} To complicate matters further, two previous studies (one from the United Kingdom and the other from Switzerland) reported conflicting data on the burnout issue among oncologists.^{5,7} The UK study, which examined burnout and mental health among physician oncologists practicing in a hospital setting, found high

burnout levels in surgical and clinical oncologists, whereas the Swiss study found lower risk of burnout in oncologists with low workloads.⁷ The authors suggested that opportunities in research and teaching, and continuing education as a potential explanation for the observed difference.

Results of our study are in accordance with those of the ESMO study (mostly including oncologists working in western and Northern Europe), in which the reported rate of burnout was 71%.¹² However, more detailed analysis shows that the causes of burnout in western and eastern Europe are quite different. In the current study, PA yielded the worst result (47.3% of participants had a high risk of burnout in this category). PA was also the category with the smallest proportion of low-risk participants (19.6%). The EE high-risk rate was 43.5%, and DP had the lowest high-risk rate (28.7%). The European study found that the PA high-risk rate was the lowest (34.5%), and the DP rate was the highest (50.4%); whereas, EE was in accordance with our results (44.7%). The difference observed in the eastern half of Europe in contrast to the western half can be due to the differences in the availability of drugs, radiotherapy units, and personnel needed to treat patients according to standard-of-care procedures.²⁷ A recent study that compared eastern and Western European countries based on

the national oncology service showed that there is lower financial and human resource investment in all aspects of oncology care in Eastern Europe compared with western European countries (national health care spending per capita in Eastern European countries is five times lower than in the western countries).¹³ Moreover, the availability of radiotherapy units and access to modern radiotherapy techniques between Western and Eastern European countries are incomparable, with the latter countries lacking drastically in the resources mentioned previously. Although radiotherapy access in Eastern Europe is limited according to the ESTRO-HERO (European Society for Radiation and Oncology-Health Economics in Radiation Oncology) survey,³⁰ the gap in cancer drug availability has been found to be less pronounced. We hypothesized that burnout due to limited availability of radiotherapy resources hinders the ability of young oncologists to give the best possible care to patients. This could be a significant factor in burnout risk and contribute to higher DP and PA risk among radiation versus medical oncologists. According to the International Atomic Energy Agency report, Eastern and Southeastern Europe are lagging behind Western Europe in both number and the quality of radiotherapy equipment.³¹

We found significant differences in burnout risk among different divisions of eastern European regions (Appendix Fig A1, online only). In total, the risk is highest in the E-EUR region, where almost all oncologists who participated were at high risk for burnout (99.1%), whereas the risk for burnout was lowest in the SW-ASIA region (54.5%). These results displaying differences in burnout risk among regions are comparable to those reported in the ESMO survey.¹² Current results indicate that there is a trend toward a higher burnout rate among oncologists practicing in the Eastern European countries. Our data coincide with a recent study published by Seruga et al,³² which compared medical oncology workload among oncologists practicing in western and Eastern Europe. The authors found that the clinical workload of medical oncologists in Eastern Europe was substantially higher than the workload of oncologists in Western Europe. Therefore, our findings of the high burnout risk among oncologists in Eastern European countries can be a result of higher clinical workload. Unfortunately, data pertaining to clinical duties and workload were not assessed in the current study and remain to be determined in future research. E-EUR, as one of the regions most affected by burnout, is the region with many countries still going through transition, political instability, and poor management of health care resources and organization.

This study gives a broad overview of the burnout risk among oncologists in Eastern Europe because it included not only a large number of oncologists from Eastern Europe but also all oncology subspecialties. However, we acknowledge some limitations in our study. Because it was a cross-sectional study, there is the possibility of response bias because results might reflect the state of the physician oncologist only at the moment of administration of the survey. Also, there is a possibility of selection bias due to the voluntary nature of participation in this study. However, this form of limitation is often associated with survey-based studies. Moreover, the survey was conducted in English in all participating countries, and no translation to a native language was available to avoid possible legal issues with MBI. It is possible that this negatively affected the total response rate as well as the quality of the response due to potential difficulties in understanding the questions, especially among older oncologists.

In conclusion, professional burnout is a critical issue, and it is of great concern to find that rates of burnout are significantly high among health care specialists. These results call for immediate attention to develop prevention programs to ameliorate the burnout risk. The exact strategies are outside the scope of this article; however, some of the potential measures to reduce burnout are improvement in working conditions in Eastern European countries, increased investment in health care organizations in general, adequate number of oncologists, salary increase, better drug availability, adequate number of radiotherapy units, availability of sufficient vacation time, promotion of healthy lifestyle modifications, and professional help. According to a recent study, burnout should be tackled at both the individual and organizational levels, which includes timely recognition of burnout symptoms, learning resilience strategies, and cultivating positive relationships at work (individual level), and recognizing the problem, planning action to reduce the risk of burnout, improving the overall practice environment, and providing institutional resources (organizational level).³³ Unattended burnout can affect the morale and satisfaction of physicians, increase absenteeism, and accelerate permanent leave of the profession, but can also lead to poorer quality of medical care, including an increased rate of medical errors and poor communication with patients and colleagues.²² Thus, increased awareness about the presence of burnout among oncologists is an important step toward implementation of adequate measures and prevention strategies, which are essential to improve the current state among oncologists.

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST AND DATA AVAILABILITY STATEMENT

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REFERENCES

- Maslach C, Schaufeli WB, Leiter MP: Job burnout. *Annu Rev Psychol* 52:397-422, 2001
- Bianchi R, Schonfeld IS, Laurent E: Burnout-depression overlap: A review. *Clin Psychol Rev* 36:28-41, 2015
- Gronek L, Tozer R, Mazzotta P, et al: Nature and impact of grief over patient loss on oncologists' personal and professional lives. *Arch Intern Med* 172:964-966, 2012
- Shanafelt TD, Bradley KA, Wipf JE, et al: Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med* 136:358-367, 2002
- Taylor C, Graham J, Potts HW, et al: Changes in mental health of UK hospital consultants since the mid-1990s. *Lancet* 366:742-744, 2005
- Goehring C, Bouvier Gallacchi M, Kunzi B, et al: Psychosocial and professional characteristics of burnout in Swiss primary care practitioners: A cross-sectional survey. *Swiss Med Wkly* 135:101-108, 2005
- Arigoni F, Bovier PA, Mermillod B, et al: Prevalence of burnout among Swiss cancer clinicians, paediatricians and general practitioners: Who are most at risk? *Support Care Cancer* 17:75-81, 2009
- Riquelme I, Chacón JI, Gándara AV, et al: Prevalence of burnout among pain medicine physicians and its potential effect upon clinical outcomes in patients with oncologic pain or chronic pain of nononcologic origin. *Pain Med* 19:2398-2407, 2018
- Chivato Pérez T, Campos Andreu A, Negro Alvarez JM, et al: Professional burnout and work satisfaction in Spanish allergists: Analysis of working conditions in the specialty. *J Investig Allergol Clin Immunol* 21:13-21, 2011
- Dréano-Hartz S, Rhondali W, Ledoux M, et al: Burnout among physicians in palliative care: Impact of clinical settings. *Palliat Support Care* 14:402-410, 2016
- Hlubocky FJ, Rose M, Epstein RM: Mastering resilience in oncology: Learn to thrive in the face of burnout. *Am Soc Clin Oncol Educ Book* 37:771-781, 2017
- Banerjee S, Califano R, Corral J, et al: Professional burnout in European young oncologists: Results of the European Society for Medical Oncology (ESMO) Young Oncologists Committee Burnout Survey. *Ann Oncol* 28:1590-1596, 2017
- Vrdoljak E, Bodoky G, Jassem J, et al: Cancer control in central and eastern Europe: Current situation and recommendations for improvement. *Oncologist* 21:1183-1190, 2016
- Pintarić Japac V, Vučemić L, Kust D, et al: Burnout among Croatian physicians: A cross sectional national survey. *Croat Med J* 60:255-264, 2019
- Central Intelligence Agency: File: Regions of Europe based on CIA world factbook.png. https://commons.wikimedia.org/wiki/File:Regions_of_Europe_based_on_CIA_world_factbook.png
- European Commission: ECIS - European Cancer Information System. <https://ecis.jrc.ec.europa.eu>
- Ferlay J, Soerjomataram I, Ervik M, et al: GLOBOCAN 2012 v1.0, Cancer incidence and mortality worldwide: IARC CancerBase No. 11. <http://globocan.iarc.fr>
- European Union: Cancer statistics. http://ec.europa.eu/eurostat/statistics-explained/index.php/Cancer_statistics
- The World Bank: World Development Indicators database. <https://datacatalog.worldbank.org/dataset/gni-capita-ranking-atlas-method-and-ppp-based>
- Maslach C, Jackson S, Leiter M: Maslach Burnout Inventory Manual (ed 3). Palo Alto, CA, Consulting Psychologists Press, 1996

21. Murali K, Makker V, Lynch J, et al: From burnout to resilience: An update for oncologists. *Am Soc Clin Oncol Educ Book* 38:862-872, 2018
22. Kleiner S, Wallace JE: Oncologist burnout and compassion fatigue: Investigating time pressure at work as a predictor and the mediating role of work-family conflict. *BMC Health Serv Res* 17:639, 2017
23. Cubero DI, Fumis RR, de Sá TH, et al: Burnout in medical oncology fellows: A prospective multicenter cohort study in Brazilian institutions. *J Cancer Educ* 31:582-587, 2016
24. Shanafelt TD, Boone S, Tan L, et al: Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med* 172:1377-1385, 2012
25. Grunfeld E, Whelan TJ, Zitzelsberger L, et al: Cancer care workers in Ontario: Prevalence of burnout, job stress and job satisfaction. *CMAJ* 163:166-169, 2000
26. Paprotny D: Measuring central and eastern Europe's socio-economic development using time lags. *Soc Indic Res* 127:939-957, 2016
27. Kagawa-Singer M, Dadia AV, Yu MC, et al: Cancer, culture, and health disparities: Time to chart a new course? *CA Cancer J Clin* 60:12-39, 2010
28. Borovecki A, Oresković S, ten Have H: Ethics and the structures of health care in the European countries in transition: Hospital ethics committees in Croatia. *BMJ* 331:227-229, 2005
29. Esiashvili N: Radiation oncology in the developing economies of central and eastern Europe. *Semin Radiat Oncol* 27:150-157, 2017
30. Grau C, Defourny N, Malicki J, et al: Radiotherapy equipment and departments in the European countries: Final results from the ESTRO-HERO survey. *Radiother Oncol* 112:155-164, 2014
31. Rosenblatt E, Izewska J, Anacak Y, et al: Radiotherapy capacity in European countries: An analysis of the Directory of Radiotherapy Centres (DIRAC) database. *Lancet Oncol* 14:PE79-E86, 2013
32. Seruga B, Sullivan R, Fundytus A, et al: Medical oncology workload in Europe: One continent, several worlds. *Clin Oncol (R Coll Radiol)* 32:e19-e26, 2020
33. 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* 35:271-279, 2016



AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST**Oncologist Burnout Syndrome in Eastern Europe: Results of the Multinational Survey**

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APPENDIX

Oncology is usually divided into three main fields: surgical oncology, medical oncology (sometimes referred to as hematology-oncology), and radiation oncology. However, the field is collaborative, and physicians often treat patients using the team approach. In some European countries (United Kingdom, Scandinavian countries, and Croatia), there is a special category of oncologists: the clinical oncologists who are involved in both radiotherapy and the management of systemic treatment of patients with cancer. The term “young oncologist” refers to a board-certified specialist with an official license to treat patients with cancer. The term “resident” refers to a physician

going through oncology training (in one of the main oncology fields). On a daily basis, residents are in closer contact with patients, and their duties are often extensive and require longer hours of work. However, responsibility for the results of treatment, management of adverse effects, and most of the treatment plans and decision making lies in the hands of the specialists. Although young specialists do not have extensive clinical experience compared with their more experienced counterparts, job expectations often do not differ significantly between the two. Both residents and young specialists are prone to burnout, partly for different reasons, but their work also overlaps in many areas.

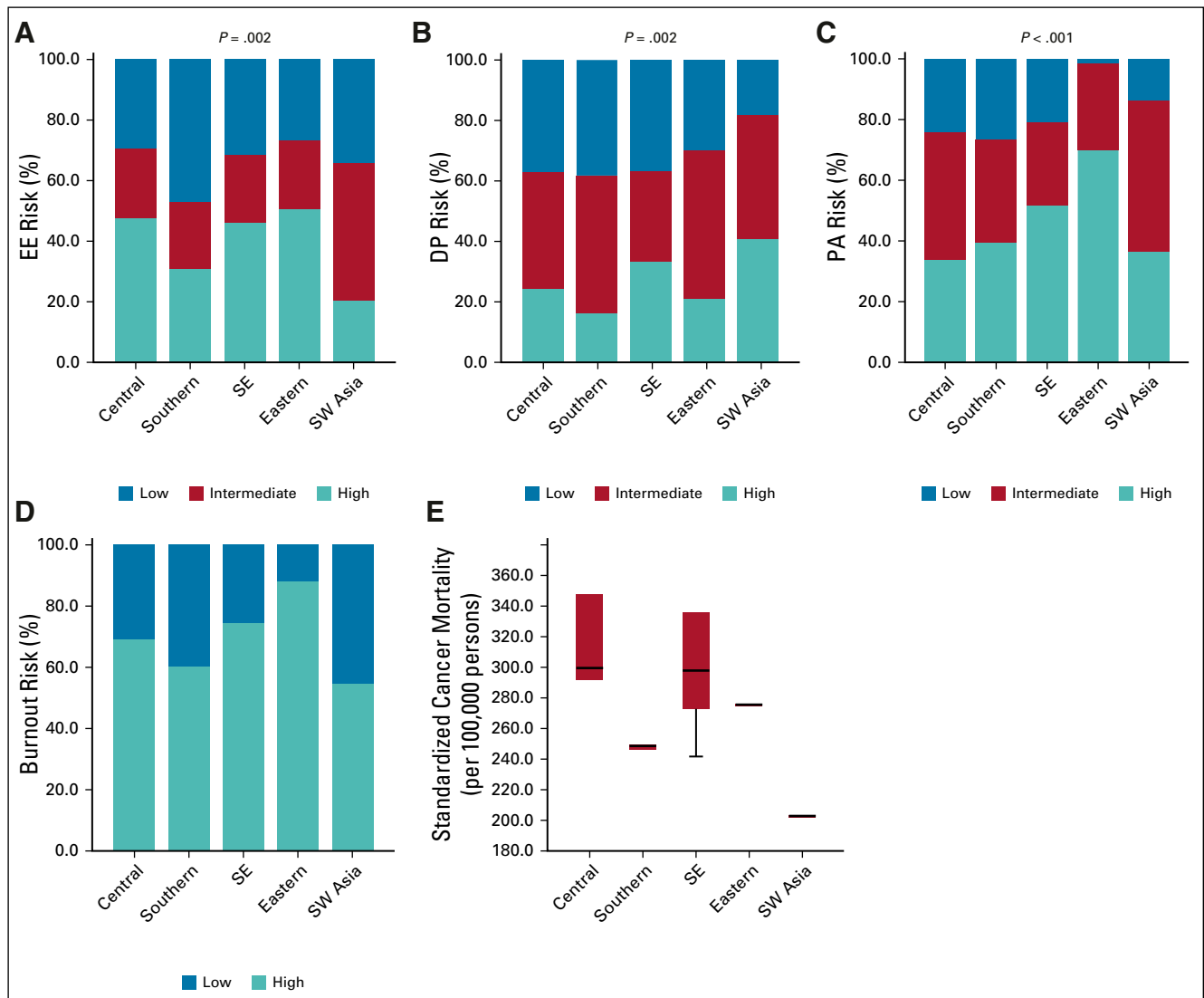


FIG A1. Differences among oncologists in European regions in the risk of (A) emotional exhaustion (EE), (B) depersonalization (DP), (C) personal accomplishment (PA), and (D) total burnout. (E) Differences among European regions in standardized cancer mortality. Narrow CIs in the box-plot, which describes the difference in standardized cancer mortality, are due to the low number of countries analyzed within specific European regions. SE, southeast; SW, southwest.