



Factors associated with physician burnout syndrome: a comparative analysis

Faktori povezani sa sindromom sagorevanja kod lekara: komparativna analiza

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Abstract

Background/Aim. Burnout syndrome (BS) can occur in doctors at different levels of health care. The aim of this study was to identify the prevalence of BS and compare the differences among physicians in health institutions in Southeast Serbia (SES). **Methods.** A multicenter, questionnaire-based cross-sectional study was conducted among 373 physicians (252 female and 121 male) from primary, secondary, and tertiary care institutions in SES from 2023 to 2024. The Maslach Burnout Inventory-Human Services Survey (MBI-HSS) was applied. **Results.** A significantly higher score on the emotional exhaustion (EE) subscale was observed in physicians older than 55 years ($p < 0.001$) and those with more than 25 years of work experience and more than 14.5 years of specialist experience. Higher EE scores were also observed in doctors with specialization ($p < 0.001$), then, in those in managerial positions ($p = 0.031$), in doctors with additional engagement in private practice ($p = 0.019$), those with more than two duties per week ($p = 0.008$), and physicians who assessed that their greatest job burden was dealing with a large number of pa-

tients during the workday ($p < 0.001$). A significant increase in depersonalization (DP) subscale values was associated with age above 53.5 years, additional engagement in private practice ($p = 0.015$), shift work ($p = 0.049$), and physicians who assessed that their greatest job burden was dealing with a large number of patients during the workday ($p < 0.001$). A significant increase in personal achievement subscale values was observed among doctors in managerial positions ($p = 0.004$). The highest percentage of physicians from tertiary care institutions had high EE and low personal achievement values, while the highest percentage of physicians from primary care institutions had high DP values. **Conclusion.** Doctors in health institutions in SES have a moderate degree of BS. Additional research into BS and the factors that contribute to its occurrence is needed, as well as taking appropriate preventive and corrective measures at each of the three levels of health care.

Key words: burnout, psychological; physicians; primary health care; serbia; specialization; surveys and questionnaires; tertiary care centers.

Apstrakt

Uvod/Cilj. Sindrom sagorevanja (*burnout syndrome* – BS) se može javiti kod lekara u različitim nivoima zdravstvene zaštite. Cilj rada bio je da se utvrdi prevalencija BS i uporede razlike među lekarima u zdravstvenim ustanovama u Jugoistočnoj Srbiji (JIS). **Metode.** Multicentrična studija preseka, zasnovana na upitnicima, sprovedena je među 373 lekara (252 žene i 121 muškarca) iz ustanova primarne, sekundarne i tercijarne zaštite u JIS od 2023. do 2024. godine. Primenjena je anketa *Maslach Burnout Inventory-Human Services Survey* (MBI-HSS). **Rezultati.** Značajno veći skor na subskali emocionalne iscrpljenosti (*emotional exhaustion* – EE) zabeležen je kod lekara starijih od 55 godina ($p < 0,001$) i onih sa više od 25 godina radnog iskustva i više od 14,5 godina specijalističkog staža. Viši rezultati EE zabeleženi su i kod lekara specijalista ($p < 0,001$), zatim kod onih na rukovodećim pozicijama

($p = 0,031$), kod lekara sa dodatnim angažovanjem u privatnoj praksi ($p = 0,019$), onih sa više od dva dežurstva nedeljno ($p = 0,008$), kao i kod lekara koji su ocenili da im je najveće opterećenje na poslu veliki broj pacijenata tokom radnog dana ($p < 0,001$). Značajno povećanje u vrednostima subskale depersonalizacije (DP) bilo je povezano sa životnim dobom iznad 53,5 godina, dodatnim angažovanjem u privatnoj praksi ($p = 0,015$), radom u smenama ($p = 0,049$), kao i kod lekara koji su procenili da im je najveće opterećenje na poslu bio veliki broj pacijenata tokom radnog dana ($p < 0,001$). Značajno povećanje vrednosti subskale ličnog postignuća primećeno je među lekarima na rukovodećim pozicijama ($p = 0,004$). Najviši procenat lekara iz tercijarnih zdravstvenih ustanova imao je visoke vrednosti EE i niske vrednosti ličnog postignuća, dok je najviši procenat lekara iz primarnih zdravstvenih ustanova imao visoke vrednosti DP. **Zaključak.** Lekari u zdravstvenim ustanovama u JIS imaju srednji stepen BS.

Potrebna su dodatna istraživanja BS i faktora koji doprinose njegovom nastanku, kao i preduzimanje odgovarajućih preventivnih i korektivnih mera na svakom od tri nivoa zdravstvene zaštite.

Ključne reči:

sagorevanje na radu, sindrom; lekari; zdravstvena zaštita, primarna; srbija; specijalnosti, medicinske; ankete i upitnici; zdravstvene ustanove, tercijarne.

Introduction

Burnout syndrome (BS) is a major psychosocial problem that affects professionals from different areas, and it is particularly prevalent among physicians, where the incidence of burnout is even on the rise¹. The syndrome is defined as a state resulting from prolonged stress, marked by ongoing fatigue, negative feelings towards one's work, and reduced effectiveness in professional tasks². Among physicians, BS is associated with decreased well-being and worse quality of patient care³. It is characterized by three dimensions: a feeling of lack of energy or emotional exhaustion (EE); increased mental distance of the worker from the work he or she is engaged in or a sense of negativism and/or cynicism in relation to work, i.e., depersonalization (DP); reduced professional efficacy or lower personal achievement (PA)⁴. EE refers to the worker's impression that his or her emotional and physical resources are exhausted beyond their limits, with symptoms that often manifest as fatigue, headache, insomnia, and changes in appetite. DP refers to the appearance of distance and a cynical attitude toward the people to whom the service is provided, a negative attitude towards work, and the loss of a sense of personal identity. A reduced sense of PA refers to the negative self-assessment of competencies and achievements at work, with symptoms that are visible as a loss of work motivation, declining self-esteem, and overall productivity^{2,4}.

According to the 11th Revision of the International Classification of Diseases (ICD-11), BS is defined as a syndrome resulting from chronic workplace stress that has not been successfully managed⁵. Burnout is not defined as a mental disorder or illness. In some European countries with developed social security systems (especially in Sweden and the Netherlands), BS is recognized and established as an official medical diagnosis⁶.

In a study comparing incidences of burnout among physicians from the United States of America and a sample of workers from the general population, Shanafelt et al.⁷ reported an incidence of BS of 37.9% in physicians compared to 27.8% in the general population ($p < 0.001$). The frequency of the presence of burnout varies around the world. For instance, in Europe, there is a difference between the European Union (EU) countries (10%) and the non-EU countries (17%). In EU countries, the frequency of burnout ranges from 4.3% in Finland to 20.6% in Slovenia, and within the non-EU countries, from 13% in Albania to 25% in Turkey⁸. This study also showed that a higher level of burnout among country employees is positively related to a higher workload.

In a study from 2022, data on the presence of BS in selected countries were presented based on a survey conducted among primary care (PC) physicians. Based on the obtained data, more than half of all surveyed doctors stated they were under a lot of stress but did not feel the presence of BS. According to this research, less than 5% of the total surveyed physicians in Australia, the Netherlands, Germany, Switzerland, the United Kingdom, and the United States of America felt a higher level of BS and questioned their ability to continue quality work. In this 2022 study, only 18% of New Zealand doctors and just over 18% of Canadian physicians surveyed reported significant burnout. Percentages in other countries were significantly lower, with the lowest percentage of BS being among the Swiss doctors⁹.

According to the results of a review paper that included 182 studies published between 1991 and 2018, involving 109,628 individuals from 45 countries, significant variability was observed in the prevalence of BS among physicians, ranging from 0% to 80.5%. According to this research, physicians at the front line of patient care, such as family medicine doctors, internal medicine specialists, and those employed in the fields of emergency medical care, are at the highest risk of developing BS¹⁰.

The incidence of BS varies among physicians of different specialties, but it is important that it shows an increasing tendency. Physicians from all three institutions, primary, secondary, and tertiary care, are almost at equal risk, although the contributing factors differ. To date, no study has been conducted in Southeast Serbia (SES) that compares the risk of developing BS among doctors from different levels of healthcare institutions. Therefore, the aim of the study was to determine the prevalence of BS among physicians in state health institutions of the SES, as well as the factors that significantly influence this phenomenon.

Methods

Study design

A multicenter cross-sectional study was performed from 2023 to 2024. The study included physicians from different state health institutions of five districts in SES. The size of the representative sample was determined based on official statistical data regarding the number of physicians in SES¹¹ and the previously defined research parameters: a study power of 80%, a type I error probability (α) of 0.05 for two-tailed hypothesis testing, and the assumption that the physician population would complete at least 60% of the total number of distributed questionnaires. The final sample

consisted of 373 physicians who completed all the questionnaires.

Physicians of both sexes, employed full-time in state health institutions, who gave their written consent to participate in the research were included in the study. Criteria for exclusion from the study were as follows: interruptions in work longer than one year or multiple job changes in the last five years, emotional suffering related to problems in private life (recent death and/or illness of a close family member), and refusal to provide written consent to participate in the research.

Questionnaires

The basic sociodemographic characteristics of the respondents (sex, age, work experience, level of health care, managerial positions, shift work, and fieldwork), as well as specific characteristics of the workplace, were collected by an epidemiological questionnaire specially prepared for this study, which contained 20 questions¹². There was a question that allowed respondents to express their level of satisfaction with working conditions at the workplace and a question without predefined answers, where the respondents could freely define the greatest burden at the workplace.

The study was approved by the Ethics Committee of the Faculty of Medicine, University of Niš, Serbia (No. 12-8818-27/7, from September 23, 2020, and No. 12-4370-1/2-7, from April 19, 2024).

In our study, we used the Maslach Burnout Inventory (MBI) – Human Services Survey (HSS) – (MBI-HSS) questionnaire, an internationally accepted measuring instrument created from the original MBI questionnaire. It was specially designed to assess the presence of BS among employees in the healthcare field. In a book published in 1998, authors Schaufeli and Enzmann¹³ provide a comprehensive guide to BS research, critically analyzing the various tools and methodologies used to investigate the syndrome, including the MBI. The authors discuss that the MBI was used in around 90% of burnout research studies at the time and the MBI-HSS was particularly used in healthcare and human service fields.

The MBI-HSS questionnaire consists of 22 individual statements (or items/questions)¹⁴ about physicians' personal feelings related to work, to which respondents provide answers later calculated on three subscales that measure different dimensions of professional BS. The used subscales are as follows: (a) EE – measures the feeling of emotional exhaustion caused by the burden on the workplace; (b) DP – measures the loss of interest and impersonal attitude towards the recipients of services and/or treatment and teaching; (c) PA – measures the degree of satisfaction with PA in the workplace and success in working with health care users.

Values for the EE, DP, and PA subscales are generated from answers to a total of 9, 5, and 8 questions, respectively. Depending on the level of agreement or disagreement with the views expressed in the questions, the answers are evaluated on a 7-point Likert scale, starting from 0 (never), once a year or less (1), once a month or less (2), a few times a

month (3), once a week (4), a few times a week (5), to every day (6).

The total score for each subscale was obtained by summing the results of the answers to the precisely defined questions (22 in total from the questionnaire) according to the instructions of the authors of the MBI-HSS. After that, the subjects' scores were classified in each subscale according to the cut-off values. The cut-off values for the EE subscale are as follows: 27 points and more for the high level, 17 to 26 points for the medium level, and 16 points and less for the low level. The cut-off values for the DP subscale are 13 points and more for the high level, 7 to 12 points for the medium, and 6 and less for the low level. Finally, the values for the PA scale are as follows: 39 points and more for the high, 32 to 38 points for the medium, and 31 and less for the low level.

If the EE and DP subscale values are in the high-level category, there is a high risk of developing BS, while a high level on the PA subscale reduces such risk. The risk of developing BS is practically minimal if there is a low level on the EE and DP subscales and a high level on the PA subscale. It is stated that the PA subscale cannot independently indicate the presence and severity of BS but is only relevant if the results are confirmed by the findings of the remaining two subscales (EE and DP)¹⁵.

Statistical analysis

Data entry, ranking, grouping, and both tabular and graphical representation were carried out using the commercial software Microsoft® Excel® 16.0, LTSC MSD Version 2018, and the statistical package SPSS version 18.0.

A comparison of the prevalence of specific categories of descriptive characteristics between groups was performed using the Chi-square test. The Shapiro-Wilkins test was used to assess the normality of the distribution of the values within groups with numerical values. For comparing two data groups, the Student's *t*-test was used if the distribution of values within the groups was normal; if the distribution of values was not normal, the non-parametric Mann-Whitney *U* test (Mann-Whitney rank sum test) was used. For comparing values among three or more groups of respondents with different levels of EE, DP, and PA subscales, one-way analysis of variance (ANOVA) was performed if the distribution of values within the groups was normal; if the distribution values were not normal, the Kruskal-Wallis test was used.

Statistical significance was determined for *p*-values less than 0.05.

Results

Sociodemographic characteristics of the respondents

Of the total number of physicians contacted (402), a total of 373 (252 females and 121 males) participated in the study with completely filled-out questionnaires. Overall, 135 (36.2%) respondents were from PC institutions, 175 (46.9%) from secondary care (SC), and 373 (16.9%) from tertiary care (TC) institutions (Table 1).

Table 1**Basic sociodemographic and professional characteristics of examined physicians according to sex**

Characteristics	Male (n = 121)	Female (n = 252)	Total (n = 373)	<i>p</i>
Age (years)	46.9 ± 11.9	47.9 ± 10.5	47.6 ± 10.9	0.611**
Work experience (years)	19.2 ± 12.1	19.1 ± 11.6	19.1 ± 11.8	0.807***
Length of specialist residency (years)	16.5 ± 10.8	15.2 ± 10.0	15.6 ± 10.7	0.878***
Manager position, yes	26 (21.5)	40 (15.9)	66 (17.7)	0.183*
Shift work, yes	81 (66.9)	182 (72.2)	263 (70.5)	0.295*
Level of healthcare				
primary care institutions	30 (24.8)	105 (41.7)	135 (36.2)	0.002*
secondary care institutions	70 (57.8)	105 (41.7)	175 (46.9)	0.003*
tertiary care institutions	21 (17.4)	42 (16.6)	63 (16.9)	0.868*
Professional education				
specialization underway	16 (13.2)	30 (11.9)	46 (12.3)	0.717*
specialist	88 (72.7)	193 (76.6)	281 (75.4)	0.418*
general practitioner	17 (14.1)	29 (11.5)	46 (12.3)	0.485*
Additional work engagement				
medical faculty	9 (7.4)	11 (4.4)	20 (5.4)	0.217*
private sector	35 (28.9)	53 (21.0)	88 (23.5)	0.093*
other	8 (6.6)	11 (4.4)	19 (5.1)	0.356*
without	69 (57.1)	177 (70.2)	246 (66.0)	0.012*
Doctor on duty				
once a week	32 (26.4)	80 (31.7)	112 (30.0)	0.296*
twice a week	31 (25.6)	48 (19.0)	79 (21.2)	0.146*
more than twice a week	13 (10.7)	19 (7.5)	32 (8.6)	0.301*
without this work obligation	45 (37.3)	105 (41.8)	150 (40.2)	0.409*
The main workload at work [†]				
large number of patients	51 (42.1)	128 (50.8)	179 (48.0)	0.118*
huge administrative work	62 (51.2)	114 (45.2)	176 (47.2)	0.277*
demanding diagnostic and therapeutic procedures	12 (9.9)	13 (5.2)	25 (6.7)	0.085*
unresolved interpersonal relationships	15 (12.4)	44 (17.5)	59 (15.8)	0.210*
other burdens	11 (9.1)	17 (6.7)	28 (7.5)	0.421*
no load	7 (5.8)	15 (6.0)	22 (5.9)	0.949*

Values are presented as mean ± standard deviation and numbers (percentages).

[†]The possibility of multiple answers is offered; *Chi-square test; **Student's *t*-test; ***Mann-Whitney *U* test.

Among the studied physicians, a statistically significantly higher percentage of women worked in PC institutions compared to men (41.7% vs. 24.8%; Chi-square test: $p = 0.002$). On the other hand, a statistically significantly higher percentage of men worked in the SC institutions compared to women (57.8% vs. 41.7%; Chi-square test: $p = 0.003$).

Among the participants in this study, there were no significant differences between sexes in terms of age, length of employment, and length of specialist experience. Of the total number of physicians, 252 (67.6%) respondents were female, with an average age of 47.9 ± 10.5 years, ranging from 26 to 68, while 121 (32.4%) were male, with an average age of 46.9 ± 11.9 years, ranging from 27 to 65.

The average work experience of the female participants was 19.1 ± 11.6 years and their specialist experience was 15.2 ± 10.0 years, while for the male participants, the same parameters (average work/specialist experience) were 19.2 ± 12.1 years and 16.5 ± 10.8 years, respectively. An equal number of physicians were either in residency or without specialization (12.3% each). Among the female respondents, a significantly higher percentage had no additional engagement compared to the male respondents (70.2% vs. 57.1%; Chi-square test: $p = 0.012$). Shift work was the most

common type of work organization, reported by 70.5% of the physicians, and on-call duty is present among 59.8%.

Among the physicians with an on-call duty, 50.2% had one on-call duty a week. However, considering all respondents, this workload level affects 30.0%. Physicians with two on-call duties twice a week experienced a significantly higher workload, comprising 21.2% of participants. The greatest burden was seen in those with more than two on-call duties a week, representing 8.6%. Of the total number, 150 (40.2%) physicians did not have on-call duties as a work obligation. The two most common responses to the question about the greatest work burden were a high number of patients to see during working hours, reported by 48.0% of physicians, and a large number of administrative forms to complete during patient examinations and/or treatment, reported by 47.2% of physicians. Only 5.9% indicated that they do not experience significant work-related stress (Table 1).

Results of the burnout syndrome subscales analysis

The sociodemographic and professional characteristics of the respondents in relation to the EE subscale values (the ANOVA analysis) are shown in Table 2.

The median age of respondents with low EE subscale scores was 42 years, while for those with high EE subscale

Table 2

Sociodemographic and professional characteristics of respondents in relation to the level of emotional exhaustion subscale values

Characteristics	Low (n = 123)	Moderate (n = 100)	High (n = 150)	<i>p</i>
Age (years)	42 (35–52)	49.5 (42.7–57)	53 (44–58)	0.000**
Work experience (years)	13 (3–26)	20 (10–30.2)	25 (15–30)	0.000**
Length of specialist residency (years)	4 (0–18)	13 (3–21.2)	14.5 (4–22)	0.000**
Manager position, yes	13 (10.6)	19 (19.0)	34 (22.7)	0.031*
Shift work, yes	84 (68.3)	71 (71.0)	108 (72.0)	0.794*
Level of healthcare				
primary care institutions	52 (42.3)	37 (37.0)	46 (30.7)	0.136*
secondary care institutions	55 (44.7)	43 (43.0)	77 (51.3)	0.362*
tertiary care institutions	16 (13.0)	20 (20.0)	27 (18.0)	0.343*
Professional education				
specialization underway	18 (14.6)	10 (10.0)	18 (12.0)	0.571*
specialist	77 (62.6)	84 (84.0)	120 (80.0)	0.000*
general practitioner	28 (22.8)	6 (6.0)	12 (8.0)	0.000*
Additional work engagement				
medical faculty	5 (4.1)	6 (6.0)	9 (6.0)	0.738*
private sector	20 (16.3)	22 (22.0)	46 (30.7)	0.019*
other	9 (7.3)	4 (4.0)	6 (4.0)	0.391*
without	89 (72.3)	68 (68.0)	89 (59.3)	0.069*
Doctor on duty				
once a week	41 (33.3)	30 (30.0)	41 (27.3)	0.560*
twice a week	26 (21.1)	14 (14.0)	39 (26.0)	0.075*
more than twice a week	4 (3.3)	15 (15.0)	13 (8.7)	0.008*
without this work obligation	52 (42.3)	41 (41.0)	57 (38.0)	0.760*
The main workload at work [†]				
large number of patients	39 (31.7)	49 (49.0)	91 (60.7)	0.000*
huge administrative work	54 (43.9)	41 (41.0)	81 (54.0)	0.088*
demanding diagnostic and therapeutic procedures	3 (2.4)	8 (8.0)	14 (9.3)	0.064*
unresolved interpersonal relationships	18 (14.6)	11 (11.0)	30 (20.0)	0.146*
other burdens	8 (6.5)	9 (9.0)	11 (7.3)	0.777*
no load	16 (13.0)	5 (5.0)	1 (0.7)	0.000*

Values are presented as median (interquartile range) and numbers (percentages).

[†]The possibility of multiple answers is offered; *Chi-square test; **Analysis of variance.

scores, it was 53 years, with a statistically significant difference ($p < 0.001$). The median length of work experience for respondents with low EE subscale scores was 13 years, compared to 25 years for those with high EE subscale scores, also statistically significant ($p < 0.001$). The median length of specialist work experience for respondents with low EE subscale was 4 years, while for those with high EE subscale scores, it was 14.5 years, with a statistically significant difference ($p < 0.001$).

It was determined that significantly higher EE subscale scores were found among specialist physicians ($p < 0.001$), physicians with managerial status ($p = 0.031$), and those with additional work in private practice ($p = 0.019$). Statistically significantly higher values on the EE subscale were found among physicians burdened with more than two on-call duties a week ($p = 0.008$) and those who reported that their greatest work burden was the high number of patients they needed to see during the workday ($p < 0.001$). Conversely, significantly lower scores on the EE subscale were observed in physicians without specialization ($p < 0.001$) and those who reported no factors constituting significant work-related stress ($p < 0.001$).

The sociodemographic and professional characteristics of the respondents in relation to the DP subscale values (the ANOVA analysis) are shown in Table 3.

The median age for respondents with low DP subscale values was 47 years, while for those with high DP subscale values, it was 53.5 years, with a statistically significant difference ($p = 0.029$). A statistically significant increase in the values of the DP subscale was associated with the age of the respondents. However, there was no statistically significant increase in the DP subscale for respondents with more work experience or longer specialist training.

Statistically significantly higher values on the DP subscale were found among physicians with additional workload from private practice ($p = 0.015$), physicians working in shifts ($p = 0.049$), and those who reported that their greatest work burden was the high number of patients they needed to see during the workday ($p < 0.001$).

The sociodemographic and professional characteristics of the respondents in relation to the PA subscale values (the ANOVA analysis) are shown in Table 4.

The median age for respondents with low PA subscale values was 50 years. In contrast, for those with high PA subscale values, the median age was lower, 48 years, with no

Table 3**Sociodemographic and professional characteristics of respondents in relation to the level of depersonalization subscale values**

Characteristics	Low (n = 253)	Moderate (n = 68)	High (n = 52)	<i>P</i>
Age (years)	47 (38–57)	50 (41–57)	53.5 (43.7–58.2)	0.029**
Work experience (years)	19 (6–29)	24 (10–30)	24 (14.5–28.5)	0.102**
Length of specialist residency (years)	10 (0–20)	14 (1–21.2)	15 (3.7–21)	0.230**
Manager position, yes	40 (15.8)	17 (25.0)	9 (17.3)	0.211*
Shift work, yes	169 (66.8)	51 (75.0)	43 (82.7)	0.049*
Level of healthcare				
primary care institutions	96 (37.9)	18 (26.5)	21 (40.4)	0.172*
secondary care institutions	121 (47.8)	29 (42.6)	25 (48.1)	0.737*
tertiary care institutions	36 (14.3)	21 (30.9)	6 (11.5)	0.063*
Professional education				
specialization underway	34 (13.4)	8 (11.8)	4 (7.7)	0.511*
specialist	186 (73.6)	52 (76.4)	43 (82.7)	0.366*
general practitioners	33 (13.0)	8 (11.8)	5 (9.6)	0.781*
Additional work engagement				
medical faculty	14 (5.5)	3 (4.4)	3 (5.8)	0.927*
private sector	49 (19.4)	24 (35.3)	15 (28.8)	0.015*
other	14 (5.5)	1 (1.5)	4 (7.7)	0.263*
without	176 (69.6)	40 (58.8)	30 (57.7)	0.101*
Doctor on duty				
once a week	74 (29.2)	23 (33.8)	15 (28.8)	0.751*
twice a week	51 (20.2)	13 (19.1)	15 (28.8)	0.339*
more than twice a week	20 (7.9)	7 (10.3)	5 (9.6)	0.789*
without this work obligation	108 (42.7)	25 (36.8)	17 (32.8)	0.332*
The main workload at work [†]				
large number of patients	108 (42.7)	33 (48.5)	38 (73.1)	0.000*
huge administrative work	111 (43.9)	36 (52.9)	29 (55.8)	0.169*
demanding diagnostic and therapeutic procedures	14 (5.5)	4 (5.9)	7 (13.5)	0.109*
unresolved interpersonal relationships	33 (13.0)	15 (22.1)	11 (21.2)	0.102*
other burdens	17 (6.7)	5 (7.4)	6 (11.5)	0.485*
no load	19 (7.5)	2 (2.9)	1 (1.9)	0.154*

Values are presented as median (interquartile range) and numbers (percentages).

[†]The possibility of multiple answers is offered; *Chi-square test; **Analysis of variance.

Table 4**Sociodemographic and professional characteristics of respondents in relation to the level of personal achievement subscale values**

Characteristics	Low (n = 64)	Moderate (n = 81)	High (n = 228)	<i>P</i>
Age (years)	50 (40–56.2)	51 (40–56)	48 (39–57)	0.768**
Work experience (years)	20 (10–28.5)	23 (10–28)	20 (7–30)	0.935**
Length of specialist residency (years)	14.5 (2–20)	11 (2–21)	12 (0–21)	0.830**
Manager position, yes	2 (3.1)	17 (21.0)	47 (20.6)	0.004*
Shift work, yes	43 (67.2)	58 (71.6)	162 (71.1)	0.811*
Level of healthcare				
primary care institutions	20 (31.3)	28 (34.6)	87 (38.2)	0.562*
secondary care institutions	31 (48.4)	36 (44.4)	108 (47.3)	0.871*
tertiary care institutions	13 (20.3)	17 (21.0)	33 (14.5)	0.294*
Professional education				
specialization underway	5 (7.8)	6 (7.4)	35 (15.4)	0.084*
specialist	52 (81.3)	64 (79.0)	165 (72.3)	0.238*
general practitioners	7 (10.9)	11 (13.6)	28 (12.3)	0.890*
Additional work engagement				
medical faculty	4 (6.3)	7 (8.6)	9 (3.9)	0.257*
private sector	12 (18.7)	24 (29.6)	52 (22.8)	0.280*
other	4 (6.3)	1 (1.2)	14 (6.1)	0.203*
without	44 (68.7)	49 (60.6)	153 (67.2)	0.489*

Table 4 (continued)

Characteristics	Low (n = 64)	Moderate (n = 81)	High (n = 228)	<i>p</i>
Doctor on duty				
once a week	17 (26.6)	25 (30.9)	70 (30.7)	0.802*
twice a week	18 (28.1)	18 (22.2)	43 (18.9)	0.268*
more than twice a week	9 (14.1)	5 (6.2)	18 (7.9)	0.203*
without this work obligation	20 (31.2)	33 (40.7)	97 (42.5)	0.264*
The main workload at work [†]				
large number of patients	38 (54.9)	40 (18.4)	101 (44.3)	0.099*
huge administrative work	22 (34.4)	31 (17.6)	123 (53.9)	0.069*
demanding diagnostic and therapeutic procedures	6 (9.4)	4 (16.0)	15 (6.6)	0.566*
unresolved interpersonal relationships	9 (14.1)	16 (27.1)	34 (14.9)	0.540*
other burdens	9 (14.1)	6 (21.4)	13 (5.7)	0.081*
no load	4 (6.3)	7 (31.8)	11 (4.8)	0.452*

Values are presented as median (interquartile range) and numbers (percentages).

[†]The possibility of multiple answers is offered; *Chi-square test; **Analysis of variance).

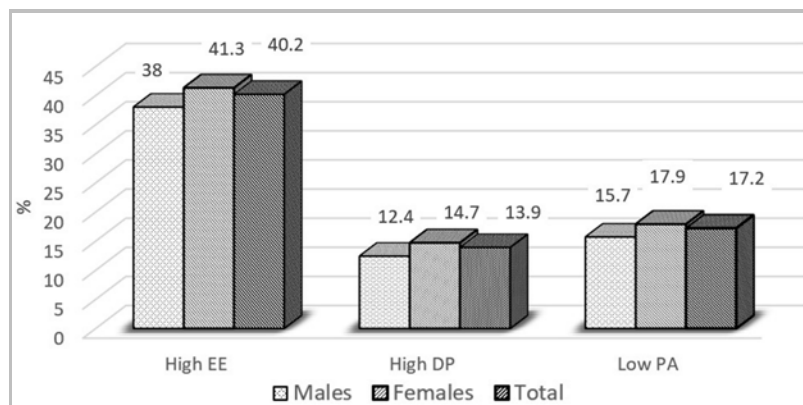


Fig. 1 – The percentage of physicians with high values on the emotional exhaustion (EE) and depersonalization (DP) subscales and low values on the personal achievement (PA) subscale.

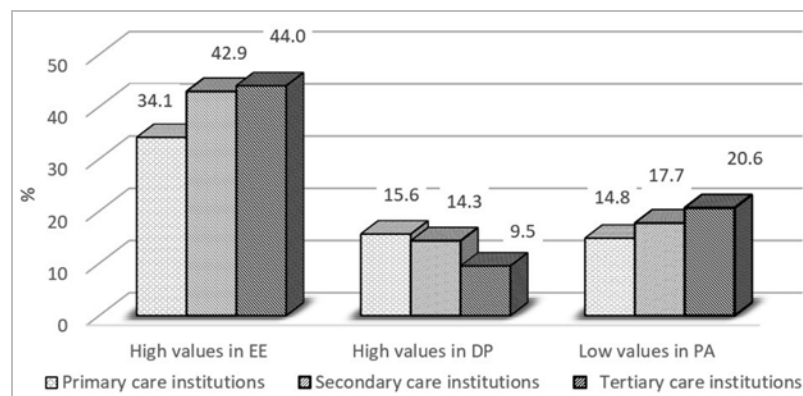


Fig. 2 – The percentage of physicians at the primary, secondary, and tertiary levels of healthcare with high values in the emotional exhaustion (EE) and depersonalization (DP) subscales and low values in the personal achievement (PA) subscale.

statistically significant difference ($p = 0.768$). Furthermore, there was no statistically significant difference among respondents with increased years of service or longer specialist experience in the DP subscale.

In relation to the level of PA subscale values, statistically higher values on the PA subscale were recorded among respondents with managerial status ($p = 0.004$).

Based on the graphical presentation in Figure 1, 40.2% of respondents had high values of the EE subscale, and therefore, were at risk for developing BS.

However, when considering high values of the DP subscale, the number of “at-risk” physicians was significantly lower (13.9%), and when considering physicians with low PA subscale values, it was 17.2%. According to the displayed percentages, women appeared to be somewhat more at risk, although this difference was not statistically significant.

As shown in Figure 2, the highest percentage of physicians in TC had high scores in the EE subscale (44.0% of TC physicians, compared to 42.9% of SC and 34.1% of PC physicians) and low values in the PA subscale (20.6% of TC

physicians, compared to 17.7% of SC and 14.8% of PC physicians). On the other hand, the highest percentage of physicians in PC had high score values in the DP subscale (15.6% of PC physicians, compared to 14.3% of SC and 9.5% of TC physicians).

Discussion

Based on the presented results and the scores of the burnout subscales obtained in our study, physicians had moderate levels of BS. The highest percentage (40.2%) of physicians had high scores on the EE subscale, while on the DP subscale, high scores were observed in 13.9% of physicians, and on the PA subscale, low scores were seen in 17.2% of physicians. The highest percentage of physicians from TC had high values on the EE subscale and low values on the PA subscale. In contrast, the highest percentage of physicians from PC had high values on the DP subscale, but the lowest percentage had low values on the PA subscale.

In our study, there was no significant difference between the sexes. Based on the percentages shown in Figure 1, women were somewhat more affected, but it was not statistically significant. Literary data on the gender role in the occurrence of this syndrome are numerous but without uniform attitudes^{16–18}.

Statistically significantly higher scores of the EE subscale were found among physicians ≥ 53 years of age, specialist physicians, those in leadership positions, those with additional workload, physicians with more than two on-call duties *per* week, long professional work and specialist experience, and those for whom the greatest burden was seeing a high volume of patients during the workday. Significantly high levels of DP subscale in physicians were observed among those above 53.5 years of age, those with additional workload from private practice, physicians working in shifts, and those who reported that their greatest burden was handling a high volume of patients during the workday. A statistically significant increase in the PA subscale was noted among doctors with managerial status.

Milenović¹⁹ found higher levels of EE subscale among anesthesiologists in TC institutions in Serbia, explaining this by the competitive atmosphere among high-ranking anesthesiologists.

Age is an important and contradictory factor associated with BS. An increase in age is related to a decrease in reported burnout²⁰. In a study conducted by Del Carmen et al.²¹, younger doctors of various specialties reported higher levels of burnout than their older peers. Findings similar to these are presented by other authors^{22, 23}. Based on our results, the EE subscale was significantly higher among physicians with more than 25 years of work experience and those with specialist work experience over 14.5 years. However, the literature shows different findings. Earlier studies have found that the level of distress decreases with increasing experience or age of physicians^{24, 25}. The organization of work at the workplace is also essential in creating conditions for the development of BS²⁶. In our study, higher scores on the EE and DP subscales were observed in physicians with an addi-

tional workload due to a large number of patients that need to be examined during working hours, and in SC and TC institutions this additional workload related to being on on-call duty more than twice a week. Factors such as a lower degree of responsibility, learning process, absence of on-call duty and consultation, and reduced autonomy also played a role²⁶.

In general, various job conditions are more strongly related to the level of the EE subscale than the other two subscales, DP and PA. BS is associated with a sense of low job satisfaction and reduced work productivity, which can lead to a lower quality of healthcare services provided by professionals – physicians affected by this syndrome. According to the results of a study on the distribution of stressors conducted with 1,755 doctors in the emergency sector in Switzerland, the most significant stressors were general overwork, stress related to health insurance, difficulties in balancing professional and private life, changes in the healthcare system, and uncertainty (reliability) of medical services. Additionally, it was found that the risk of developing the BS was higher in men than in women²⁷.

On the other hand, young physicians who are in specialization or have not yet completed their specialization had an overall lower level of job satisfaction and less autonomy in their work but were more satisfied with the total number of working hours. Lower scores of EE and DP subscales were found, indicating a reduced risk of burnout. Similar results are found in the literature. The authors point to the need for job reorganization and staff allocation according to appropriate characteristics including age to reduce stress and increase productivity at certain positions. It is possible that specialists, as well as young family doctors who could gain greater autonomy in their work (but also greater responsibility), could benefit from reducing work overload. This could reduce psychological distress in both groups, though it might increase it for some. Similar data is reported by Hoff and Lee¹⁶, Vićentić et al.²⁴, Vićentić²⁵, concerning general practitioners.

In a cohort of PC physicians on the front line of patient contact, the results show there is often an inability to meet all patient demands and frequent frustration regarding professional advancement (due to inability or at least uncertainty). The greatest stress arises from the large number of patients who cannot be examined within a single day, meaning that, according to Vićentić²⁵, physicians cannot devote enough time to each patient. Additionally, general practitioners have little autonomy in their work and face constant pressure due to expectations for continued professional development. A cohort of TC anesthesiologists found that one-third had additional responsibilities such as working at the Faculty of Medicine in Belgrade or holding leadership positions in university or hospital departments. This increased their educational, organizational, and professional responsibilities, adding an extra layer of stress²⁸.

It is well-known that long-term and exhausting investments in professional and academic careers, overtime work, involvement in teaching, continuous education of mid-level medical staff, medical students, residents, and younger

doctors, clinical work in all invasive diagnostic procedures, operating rooms, intensive care units, acute and chronic pain therapy, organization of in-hospital and out-of-hospital transport, and patient safety are all part of the daily job description of anesthesiologists. All of this is recognized as part of the psycho-physical burden faced by anesthesiologists in academic healthcare institutions^{19, 28, 29}.

The results of a study conducted by domestic authors among psychiatrists confirmed a high degree of BS – a high level of EE and DP subscales was found in 29.1% and 12.2% of doctors, respectively, while a low level of PA subscale was found in 22.4% of doctors²⁴. Similarly, in the population of anesthesiologists^{19, 28–30}, the levels of EE, as well as in previous comparisons, significantly exceed the results found in other specialties. This trend can be explained by the significant shortage of specialist anesthesiologists, predominantly team-based work, night shifts, and the predominantly female population of anesthesiologists. The study by West et al.³¹ focused on individual measures of EE and DP, which are useful for assessing and providing information about BS among medical professionals. High levels of EE or DP are essentially indicative of burnout among high-ranking medical professionals studied in this research. A low level of PA may be less significant and, therefore, often contributes less to confirming the syndrome in these types of studies³¹.

Individual measurement of EE and DP subscales is vital in assessing and displaying information about BS because high levels of EE or DP subscales essentially indicate the presence of BS among the medical professionals studied in our study. A low level of the PA subscale may be less significant. An interesting result from another study showed that public hospital physicians have higher levels of burnout and

lower job satisfaction compared to private hospital physicians^{32–34}. In our study, we also confirmed the link between high workload and burnout. The association between burnout – particularly the EE subscale – and workload is both strong and consistent. Excessive work demands on an individual deplete his or her energy reserves and affect the increase in EE³⁵. It is not just the sheer volume of work that heightens workload; perceived additional tasks, such as administrative duties, seen as extra to a physician's primary role and/or a lack of necessary skills to perform the tasks, can also exacerbate the workload.

Conclusion

Based on the presented results, Southeast Serbia physicians had moderate burnout syndrome levels. The highest number of physicians exhibited high scores of emotional exhaustion subscale. The most significant factors associated with burnout were age above 50, specialization, leadership positions, longer both work and specialist work experience, workload, shift work, more than two on-call duties *per* week, and a large number of patients during the workday. The highest percentage of physicians from tertiary care had high values on the emotional exhaustion subscale and low values on the personal achievement subscale, while the highest percentage of physicians from primary care had high values on the depersonalization subscale. It is necessary to take appropriate preventive and corrective measures at each of the three levels of health care to preserve and improve the health of doctors. Further research on burnout syndrome and the factors contributing to its development is crucial.

R E F E R E N C E S

1. *Schaufeli WB*. Burnout: a short socio-cultural history. In: *Neckel S, Schaffner AK, Wagner G*, editors. Burnout, fatigue, exhaustion: an interdisciplinary perspective on a modern affliction. London: Palgrave Macmillan; 2017. p. 105–27.
2. *Freudenberger HJ*. The staff burn-out syndrome in alternative institutions. *Psychotherapy* 1975; 12(1): 73–82.
3. *Windover AK, Martinez K, Mercer MB, Neuendorf K, Boissy A, Rothberg MB*. Correlates and outcomes of physician burnout within a large academic medical center. *JAMA Intern Med* 2018; 178(6): 856–8.
4. *Maslach C, Jackson SE, Leiter M*. Maslach Burnout Inventory. 3rd ed. Palo Alto: Consulting Psychologists Press; 1996.
5. *World Health Organization*. Burn-out an “occupational phenomenon”: International Classification of Diseases [Internet]. Geneva: WHO; 2019 [cited 2024, July 29; accessed 2024, Nov 4]. Available from: <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases>
6. *Schaufeli WB*. Burnout in Europe: Relations with national economy, governance, and culture. Research Unit Occupational & Organizational Psychology and Professional Learning (internal report) [Internet]. KU Leuven: Belgium; 2018 [cited 2024, July 31; accessed 2024, Nov 4]. Available from: <https://www.wilmarschaufeli.nl/publications/Schaufeli/50.0.pdf>
7. *Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D*, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med* 2012; 172(18): 1377–85.
8. *Lastovkova A, Carder M, Rasmussen HM, Sjoberg L, Groene GJ, Sauni R*, et al. Burnout syndrome as an occupational disease in the European Union: an exploratory study. *Ind Health* 2018; 56(2):160–5.
9. *Yang J*. Rate of burnout among physicians in selected countries 2022 [Internet]. New York: Statista Inc; 2023 [cited 2024, July 29; accessed 2024, Nov 4]. Available from: <https://www.statista.com/statistics/1383762/burnout-rate-physicians-in-selected-countries/>
10. *Rotenstein LS, Torre M, Ramos MA, Rosales RC, Guille C, Sen S*, et al. Prevalence of burnout among physicians: A systematic review. *JAMA* 2018; 320(11): 1131–50.
11. *Institute of Public Health of Serbia “Dr Milan Jovanovic Batut”*. Health statistical yearbook of Republic of Serbia 2019 [Internet]. Beograd: Elit Medika; 2020 [cited 2024, July 29; accessed 2024, Dec 2]. Available from: <https://www.batut.org.rs/download/publikacije/pub2019a.pdf>
12. *Veljković DR, Rancić NK, Mirković MR, Kulić LM, Stanković VV, Stefanović LS*, et al. Burnout Among Private Security Staff in Serbia: A Multicentric Cross-Sectional Study. *Front Public Health*. 2021; 7 (9): 622163.

13. *Schaufeli WB, Enzmann D.* The burnout companion to study and practice. A critical analysis. London: Taylor & Francis; 1998. p. 232.
14. *Maslach C, Jackson SE, Leiter MP.* Maslach Burnout Inventory Manual. 3rd ed. Palo Alto: Consulting Psychologists Press; 1997. p. 52.
15. *Maslach C, Jackson SE, Leiter MP.* Maslach Burnout Inventory: manual. 4th ed. Menlo Park, CA: Mind Garden; 2018. p. 75.
16. *Hoff T, Lee DR.* Burnout and physician gender: what do we know? *Med Care* 2021; 59(8): 711–20.
17. *Ljubarova R, Salman L, Rittenberg E.* Gender Differences in Physician Burnout: Driving Factors and Potential Solutions. *Perm J* 2023; 27(2): 130–6.
18. *Doraiswamy S, Chaabna K, Jithesh A, Mamtani R, Cheema S.* Physician burnout in the Eastern Mediterranean region: influence of gender and related factors - Systematic review and meta-analysis. *J Glob Health* 2021; 11: 04043.
19. *Milenović M.* Study of burnout syndrome in anesthesiologists working in the tertiary level medical health institutions in Belgrade [Ph.D]. Belgrade: University of Belgrade, Faculty of Medicine; 2015. (Serbian)
20. *Ozkula G, Durukan E.* Burnout syndrome among physicians: the role of socio-demographic characteristics. *Dusunen Adam J Psych Neurol Sci* 2017; 30(2): 136–44.
21. *Del Carmen MG, Herman J, Rao S, Hidrue MK, Ting D, Lehrhoff SR, et al.* Trends and factors associated with physician burnout at a multispecialty academic faculty practice organization. *JAMA Netw Open* 2019; 2(3): e190554.
22. *Te Brake H, Bloemendel E, Hoogstraten J.* Gender differences among Dutch dentists. *Community Dent Oral Epidemiol* 2003; 31(5): 321–7.
23. *Recuero HL, Segovia OA.* Work-family conflict, coping strategies and burnout: A gender and couple analysis. *J Work Organ Psychol* 2021; 37(1): 21–8.
24. *Vičentić S, Jovanović A, Dnjić B, Pavlović Z, Nenadović M, Nenadović N.* Professional stress in general practitioners and psychiatrists – the level of psychologic distress and burnout risk. *Vojnosanit Pregl* 2010; 67(9): 741–6. (Serbian)
25. *Vičentić S.* Examining professional stress among emergency medicine doctors and psychiatrists [Ph.D]. Belgrade: University of Belgrade, Faculty of Medicine; 2012. (Serbian)
26. *Khan A, Teoh KR, Islam S, Hassard J.* Psychosocial work characteristics, burnout, psychological morbidity symptoms and early retirement intentions: a cross-sectional study of NHS consultants in the UK. *BMJ open* 2018; 8(7): e018720.
27. *Goebring C, Bouvier Gallacchi M, Künzli B, Bovier P.* Psychosocial and professional characteristics of burnout in Swiss primary care practitioners: a cross-sectional survey. *Swiss Med Wkly* 2005; 135(7–8): 101–8.
28. *Milenović M, Matejić B, Vasić V, Frost E, Petrović N, Simić D.* High rate of burnout among anesthesiologists in Belgrade teaching hospitals: Results of a cross-sectional survey. *Eur J Anaesthesiol* 2016; 33(3): 187–94.
29. *Milenović M.* Living the Mission in Serbia and Other Less Affluent Worlds. In: *Roth R, Frost EA, Gevirtz C, Atcheson CL*, editors. *The Role of Anesthesiology in Global Health*. Cham: Springer International Publishing; 2015. pp. 273–9.
30. *Afonso AM, Cadwell JB, Staffa SJ, Zurakowski D, Vinson AE.* Burnout rate and risk factors among anesthesiologists in the United States. *Anesthesiology* 2021; 134(5): 683–96.
31. *West CP, Dyrbye LN, Shanafelt TD.* Physician burnout: contributors, consequences and solutions. *J Inter Med* 2018; 283(6): 516–29.
32. *Liu HC, Cheng Y.* Psychosocial work hazards, self-rated health and burnout: a comparison study of public and private sector employees. *J Occupat Environ Med* 2018; 60(4): e193–8.
33. *Haider S, Sheerani NL, Kumar R, Hafeez A, Somrongthong R.* Comparison of job satisfaction level among doctors working in public versus private health care facilities of Sindh. *Rawal Med J* 2022; 47(3): 727–31.
34. *Dinibutun SR.* Factors affecting burnout and job satisfaction of physicians at public and private hospitals: a comparative analysis. *J Healthc Leadersh* 2023; 15: 387–401.
35. *Maslach C, Schaufeli WB, Leiter MP.* Job burnout. *Annu Rev Psychol* 2001; 52: 397–422.

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