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## STRESS, DEPRESSION AND BURNOUT AMONG HOSPITAL PHYSICIANS IN RIJEKA, CROATIA

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### SUMMARY

**Background:** Six years of recent ongoing economic and structural crisis in Croatia have brought to a significant decrease of socioeconomic standard in our country, and had an important impact on the health care system. In this background we examined the prevalence of depression and burnout and their association with work stressors.

**Subjects and methods:** Cross sectional survey was conducted with self reported questionnaires in 459 hospital physicians in Rijeka, Croatia. Physicians were divided into three groups: surgical, nonsurgical and diagnostic group. Socio-demographic and work-related characteristics questionnaire, Occupational Stress Assessment Questionnaire (OSAQ), Maslach Burnout Inventory-Human Services Survey (MBI-HSS) and Beck Depression Inventory II (BDI-II) were used. Spearman correlation and logistic regression were calculated to rank association between stressors at work with depression and burnout syndrome.

**Results:** Response rate was 62.3%, (286/459). Every fifth doctor experienced all examined stressors in the workplace as stressful. The prevalence of moderate and severe depression was 12.2%. High levels of emotional exhaustion were 43.6%, depersonalization 33.5%, and lack of personal accomplishment 49.1%. There was no statistical difference in surgical, nonsurgical and diagnostic groups in depression and all domains of MBI-HSS. Almost all stressors were correlated with depression and burnout syndrome. Most of the perceived stressors were significant predictors of burnout syndrome and depression.

**Conclusions:** High levels of burnout domain compared to overall results from similar studies from other countries, placed the results in our sample on the higher end of the range, while results for depression after adjustment with lower cutoff point would be similar to those usually found in research literature. Our study showed that burnout is highly prevalent among Croatian physicians. Target interventions at the workplace should be considered as one of the strategies to reduce negative impact of work stress on physicians' mental health.

**Key words:** burnout – depression – physicians – hospital - stress

\* \* \* \* \*

### INTRODUCTION

The prevalence of some mental diseases and mental health problems in physicians are higher than in general population (Wall et al. 1997, Tyssen 2007), although, given their overall socioeconomic status and educational level, otherwise should be expected.

The most frequent disorders among physicians are alcohol use disorders, prescription drug use (minor opiates and benzodiazepine tranquilizers) (Hughes et al. 1992) and depression (Unrath et al. 2012) with the significantly higher suicide rate (Schernhammer & Colditz 2004). Even if physicians recognize symptoms of mental disorder, they often do not seek professional help and continue with their professional activity. They usually deny existence of problems (Stanton & Randal 2011) because asking for help could be interpreted by their colleagues and patients as a professional weakness and working disability.

Medical profession is generally perceived as a very stressful occupation. Although some stressors in health care settings are inevitable and invariable, such as dealing with incurable patients and their dying, there are some variable workplace stressors that represent a risk for medical professionals: work organization, financial

issues, administration, interference with family and social life, relationships with colleagues and patients, and work demand (long working hours, workload, and pressure) (Firth-Cozens 1998, Knezevic 2010, Michie & Williams 2003, Rout et al. 1989). Some of the work-stress factors are associated with burnout syndrome (Selmanovic et al. 2011), depression symptoms (Tomioaka et al. 2011) and a poorer quality of mental health generally (Michie & Williams 2003).

Occupational stress has a negative impact on physician's work performance as well, reducing the quality of patient care (Firth-Cozens 2001), and influencing sickness absence (Michie & Williams 2003) and decision to leave a profession (Chonh et al. 2004). The above mentioned groups of variable factors seem to be especially meaningful to investigate, because they have an important effect on work related health and mental health specifically. Once closely defined, these variable factors could be possibly modified and their impact on the mental health of medical professionals reduced.

Depression as well as burnout syndrome represents some of the mental health problems in physicians and a potential risk for the lower work performance (Fahrenkopf et al. 2008, Shanafelt et al. 2010).

Burnout syndrome is a work related state dominantly characterized by dysphoric symptoms, with emotional exhaustion as its core feature (Schaufeli & Buuk 2003). It is considered to be a prolonged response to chronic emotional and interpersonal job related stressors. The concept of burnout syndrome consists of three domains: emotional exhaustion (EE), depersonalization (DE) and lack of personal accomplishment (PA) (Maslach et al. 2001). Although research results are not consistent, burnout syndrome is more common in physicians than general working population (Shanafelt et al. 2012). The incidence of burnout and depression in physicians, as well as their relation to physicians' perception of exposure to various forms of work stress were assessed in numerous studies (Chonh et al 2004, Selmanovic et al. 2011, Shanafelt et al. 2012, Tomioka et al. 2011). Health care system in Croatia is financed through social medical insurance paid by citizens and budget revenues. During the last 25 years Croatia underwent the process of political transition, with profound social and economic changes, including 4-year war. Six years of recent ongoing economic and structural crisis has brought to a significant decrease of socioeconomic standard in our country, and had an important impact on the health care system. On the other hand, new technologies and population aging that happened simultaneously with global changes in the workfield present further challenges that Croatian physicians have to cope with. Besides this, physicians in Croatia are facing numerous everyday problems: staff shortage resulting in excessive workload, shortage of material supplies, inadequately designed working spaces, and inappropriate and aged equipment.

Several studies conducted in Croatia and neighboring countries measured the prevalence of burnout and work stress in physicians working in different clinical contexts (Cubrilo-Turek et al. 2006, Gregov et al. 2011, Pejuskovic et al. 2011) but to our knowledge there was no research on association between different work stressors with depression and burnout syndrome in hospital physicians. Also, numerous studies from culturally and socio-economically more or less different countries were published, measuring the work stress and prevalence of burnout and depression in physicians in different medical specialties, and evaluating the inter-correlations of these phenomena (Gallery et al. 1992, de Oliveira et al. 2013, Visser et al. 2003). Having above mentioned contextual differences in mind, we were interested in conducting such research in transitional country, such as Croatia certainly is.

The aim of this study was to determine the prevalence of burnout and depression. Given the considerably different working and socioeconomic context, we expected that burnout and depression in Croatian hospital physicians would be more prevalent than in their western counterparts with higher prevalence of burnout in the surgical group. There are also differences in perception of the work related stressor. We expected that organization of work and financial issues were work related stressors that are perceived as the most

stressful. According to the literature, stressors at work are a significant predictor of depression and burnout syndrome.

## SUBJECTS AND METHODS

### Participants and study design

This cross sectional study was carried out during 2013. The target populations were all physicians working at Clinical Hospital Center Rijeka placed at three locations (site Rijeka, site Kantrida, site Sušak). The response rate was 286/459 (62.3%). Among 286 participants there were 218 specialists, 64 residents and there was no data for four participants.

Physicians were divided into three groups based on the type of the work and potentially similar stressors: 1. surgical group - physicians who work in operating rooms, emergency rooms or departments with surgical activity (surgery, gynecology, anesthesiology, otorhinolaryngology, ophthalmology, and emergency medicine), 2. nonsurgical group - physicians who work in the nonsurgical departments (pediatrics, oncology, internal medicine, neurology, physical medicine and rehabilitation, infectology, psychiatry, dermatology and transfusionology), 3. diagnostic groups - physicians who work in the diagnostic departments (radiology, microbiology, pathology and cytology).

The examinees were approached in person at their workplace or via the head of department. Ethical approves for this research were gained from the Ethical Committee of Medical Faculty Rijeka and Ethical Committee of Clinical Hospital Center Rijeka.

### Questionnaires

Four self-administrated questionnaires were used in this survey: Socio-demographic and work-related characteristics questionnaire, Occupational Stress Assessment Questionnaire (OSAQ), Beck Depression Inventory II (BDI-II) and Maslach Burnout Inventory-Human Services Survey (MBI-HSS).

Socio-demographic (gender, age, and marital status items) and work-related characteristics questionnaire (group of specialization, length of service, consideration about leaving the job, work private life interference items) were designed for this survey. Stress at work was measured using Occupational Stress Assessment Questionnaire (OSAQ) especially designed for health care workers. A questionnaire was developed (piloted and validated) by the Department for Environmental Health Andrija Stampar School of Public Health, Zagreb, Croatia (Milosevic 2009).

The questionnaire consists of six domains: F1 domain - Organization of work and financial issues (10 items: inadequate income, inadequate assets for work, inadequate working space, little opportunity for professional progress, scarce communication with superiors, insufficient number of employees, poor organization of work,

everyday unpredictable situation, administrative work, overload); F2 domain - Public criticism (7 items: threat of lawsuits, inadequate expectations by patients and families, inappropriate public criticism, misinformed patients by the media and other sources, conflicts with the patient and family members, inability to separate professional and private life, 24 hours responsibility); F3 - Hazards at the workplace (6 items: fear of exposure to ionizing radiation, fear of exposure to inhaled anesthetics, fear of exposure to cytostatic, fear of infections, fear of injury with a sharp object, dealing with incurable patients); F4 - Interpersonal conflicts at the workplace (4 items: conflicts with colleagues, conflicts with superiors, conflicts with other co-workers, scarce communication with colleagues); F5 - Shift work (4 items: 24-hours shifts, night work, overtime, shift work); F6 - Professional and intellectual demands (6 items- introduction of the new technology, adoption of new information from the profession, lack of appropriate continuing education, lack of literature, time deadlines for the tasks, limited time for patients). Each item is ranked as a self-perceived work related stress from 1 (not stressful at all) to 5 (extremely stressful). Each domain, as well as total stress, has a score in range from 0-100. The domain is perceived as stressful if the score is above 60. Depression was measured using Beck Depression Inventory II (BDI-II). It consists of 21 items, each item describing one of the symptoms of self-reported depression. The items are scored from 0-3 depending on the severity of depression. The total score ranges from 0-63. For classification of the severity of depression the standardization made on Croatian population was used: 0-11 minimal, 12-19 mild, 20-27 moderate and 28-63 severe depression (Beck 2011). Burnout syndrome was measured using Maslach Burnout Inventory – Human Services Survey (MBI-HSS). MBI-HSS consists of three domains: emotional exhaustion (EE) (9 items), depersonalization (DE) (5 items) and personal accomplishment (PA) (8 items). Each item is ranked on a seven point Likert scale from 0 (never) to 6 (each day). The scores of each domain are summed and divided in three levels: low, average and high level of burnout. The categorization of the levels was defined based on recommendations made for Croatian medical professionals: EE (low  $\leq 18$ , average 19-26, high  $\geq 27$ ), DE (low  $\leq 5$ , average 6-9, high  $\geq 10$ ) OP (low  $\geq 40$ , average 34-39, high  $\leq 33$ ) (Maslach 2012).

## Statistics

Descriptive analyses were used for calculation means, standard deviation and proportion for continuous and categorical variables. For group comparison we used Kruskal-Wallis, Chi square tests and one way ANOVA. The correlation was calculated using Spearman rho correlation coefficient. Logistic regression was used to identify predictors of burnout and depression. The level of statistical significance was set as  $\alpha=0.05$ . All results were processed by STATISTICA version 10 (Stat soft, Tulsa, USA).

## RESULTS

### Participants socio demographic and job characteristics

Of the 459 participants, 286 returned questionnaires (response rate 62.3%). Socio-demographic characteristics of the sample were; gender: female 164 (58.4%) and male 117 (41.6%), age:  $45.9 \pm 10.6$  (mean $\pm$ SD), marital status: single 52 (18.4%), married 191 (68%), cohabiting 12 (4.3%), divorced 23 (8.2%) and widowed 3 (1.1%). Work-related characteristics were; average work experience:  $18.9 \pm 10.9$  years (mean $\pm$ SD), consideration about leaving the workplace: never 73 (26.1%), sometimes 126 (45%), often 57 (20.4%), constantly 13 (4.6%) and already taking actions to change actual workplace 11 (3.9%). Work-private life interference, examinees stated that their job has negative effect on their private life: never 12 (4.5%), sometimes 88 (33.2%), often 111 (41.9%) and all the time 54 (20.4%).

### Association of socio-demographic characteristics, stressors at work with depression and burnout syndrome

Socio-demographic characteristics of examinees, stressors at work, depression and burnout scores according to the specialization group are shown in Table 1.

We found gender distribution in those three groups significantly different ( $\chi^2=25.86$ ,  $df=2$ ,  $P<0.001$ ), with the highest percent of women in diagnostic group (85.2%), then in non-surgical group (66.7%) and the lowest in the surgical group (40.9%). There was no significant difference in age between these three groups.

The most stressful factor at work in all three groups were F1 - Organization of work and financial issues (44.0%) followed by F5 - Shift work (43.3%). One third to almost one half of the respondents in each specialization group perceived those domains as stressful. F3 - Hazards at the workplace domain differs surgical group significantly from the other two groups ( $\chi^2=17.72$ ,  $df=2$ ,  $P<0.001$ ) and there was no significant difference between groups in other stressors' domains.

The prevalence of moderate and severe depression was 9.9% in the surgical group, 11.1% in diagnostic group and 14.2% in non-surgical group, total was 12.2%. We have not found a significant difference between groups.

Results of MBI-HSS showed that EE is the most frequent in high level range in all three specialization groups (surgical group 40.4%, nonsurgical group 46.9%, and diagnostic group 38.5%). The total prevalence of high level range of EE was (43.6%).

The surgical group has very similar results in high and low level range (40.4% towards 41.3%). The highest rate of DE is in the low level range in all three specialization group (surgical group 47.7%, nonsurgical group 49.3%, and diagnostic group 69.2%). The total

**Table 1.** Socio-demographic characteristics, stressors at work, depression and burnout scores according to the specialization groups

	Surgical group n/N (%)	Nonsurgical group n/N (%)	Diagnostic group n/N (%)	Total n/N (%)	P
Gender					
female	45/110(40.9)	96/144(66.7)	23/27(85.2)	164/281(58.4)	<0.001
male	65/110(59.1)	48/144(33.3)	4/27(14.8)	117/281(41.6)	
Age (mean + SD)	47±11.5	47±10.07	43±9.7	45.9±10.6	0.433
F1 Organization of work and financial issues/ perceived as stressful	48/106(45.3)	65/144(45.1)	9/27(33.3)	122/277(44.0)	0.526
F2 Public criticism/ perceived as stressful	42/108(38.9)	61/146(41.8)	5/26(19.2)	108/280(38.6)	0.091
F3 Hazards at the workplace/ perceived as stressful	10 /94(10.6)	0/135 (0.0)	0/25(0.0)	10/254(3.9)	<0.001
F4 Interpersonal conflicts at the workplace/ perceived as stressful	19/93(20.4)	27/139(19.4)	3/27(11.1)	49/259(18.9)	0.562
F5 Shift work/ perceived as stressful	37/84(44.0)	57/126(45.2)	7/23(30.4)	101/233(43.3)	0.429
F6 Professional and intellectual demands/ perceived as stressful	9/92(9.8)	8/133(6.0)	0/25(0.0)	17/250(6.8)	0.203
F total/ perceived as stressful	17/81(21.0)	24/119(20.2)	2/22(9.1)	43/222(19.4)	0.461
BDI-II					
minimal or mild	100/111 (90.1)	127/148 (85.8)	24/27(88.9)	251/286(87.8)	0.600
moderate or severe	11/111(9.9)	21/148(14.2)	3/27(11.1)	35/286(12.2)	
EE					
low*	45/109(41.3)	38/147(25.9)	9/26(34.6)	92/282(32.6)	0.110
average*	20/109(18.3)	40/147(27.2)	7/26(26.9)	67/282(23.8)	
high*	44/109(40.4)	69/147(46.9)	10/26(38.5)	123/282(43.6)	
DE					
low*	52/109(47.7)	72/146(49.3)	18/26(69.2)	142/281(50.5)	0.256
average*	16/109(14.7)	25/146(17.1)	4/26(15.4)	45/281(16.0)	
high*	41/109(37.6)	49/146(33.6)	4/26(15.4)	94/281(33.5)	
PA					
low*	27/109(24.8)	28/146(19.2)	4/26(15.4)	59//281(21.0)	0.259
average*	36/109(33.0)	43/146(29.5)	5/26(19.2)	84/281(29.9)	
high*	46/109(42.2)	75/146(51.3)	17/26(65.4)	138/281(49.1)	

\*low, average and high refers to the level of burnout in particular dimension, not to the score on the scale

prevalence of DE was the most frequent in low range (50.5%). PA is the most frequent in the highest level range in all three specialization group (surgical group 42.2%, nonsurgical group 51.3%, and diagnostic group 65.4%). The total prevalence of PA was the most frequent in high range (49.1%). We have not found a significant difference in any of domains of MBI-HSS between these three groups.

Correlations between stressors at work and depression as well as stressors at work and burnout syndrome are shown in Table 2. Beside F3 - Hazards at workplace and PA domain, all correlations were statistically significant. Depression has the strongest correlation with F6 - Professional and intellectual demands (0.37). Domain of EE has the strongest correlation with F1 Organization of work and financial issues (0.51), DE with F5 - Shift work (0.36) and PA with F1 - Organization of work and financial issues (-0.22) (lower score on PA scale indicate the severity of the problem). Regarding total

stress score, the strongest association was found with EE domain (0.58).

Results of logistic regression for assessing predictors of depression and burnout are shown in Table 3. Professional and intellectual demands had the strongest effect on depression (OR 1.06). All of the examined stressors were predictors of depression except F3 - Hazards at the workplace. EI domain has the strongest association with all stressors at work, value of OR is the highest compared to other domains. Organization of work and financial issue was the strongest predictor of EI domain.

Depersonalization was predicted almost similarly with all stressors except except F3 - Hazards at the workplace, it showed similar results as for depression. Organization of work and financial issue and shift work were significant predictors of a personal accomplishment domain. Age can be interpreted as a protective factor for personal accomplishment (OR 0.96).

**Table 2.** Correlations between stressors at work, depression and burnout syndrome

Stressors at work	BDI-II	EE	MBI-HSS	PA
	Spearman rho (p value)	Spearman rho (p value)	DE Spearman rho (p value)	Spearman rho (p value)
F1 Organization of work and financial issues	0.33 (<0.001)	0.51 (<0.001)	0.30 (<0.001)	-0.22 (<0.001)
F2 Public criticism	0.32 (<0.001)	0.38 (<0.001)	0.31 (<0.001)	-0.14 (0.024)
F3 Hazards at the workplace	0.19 (0.002)	0.28 (<0.001)	0.17 (0.006)	-0.02 (0.792)
F4 Interpersonal conflicts at the workplace	0.36 (<0.001)	0.40 (<0.001)	0.33 (<0.001)	-0.17 (0.006)
F5 Shift work	0.31 (<0.001)	0.38 (<0.001)	0.36 (<0.001)	-0.19 (0.005)
F6 Professional and intellectual demands	0.37 (<0.001)	0.45 (<0.001)	0.32 (<0.001)	-0.18 (0.004)
Total F1-F6	0.43 (<0.001)	0.58 (<0.001)	0.42 (<0.001)	-0.23 (<0.001)

**Table 3.** Predictors of depression and burnout - logistic regression results

Predictor	BDI-II		MBI-HSS					
	Moderate or severe depression		EE		DE		PA	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Age	1.02	0.98-1.05	1.00	0.98-1.01	0.98	0.96-1.01	0.96	0.94-0.99
Gender	0.67	0.31-1.44	0.83	0.51-1.35	1.10	0.67-1.83	0.66	0.41-1.07
F1 Org. of work and financial issues score	1.04	1.02-1.06	1.06	1.04-1.07	1.03	1.02-1.05	1.02	1.01-1.04
F2 Public criticism score	1.03	1.01-1.05	1.03	1.02-1.05	1.03	1.01-1.04	1.01	0.99-1.02
F3 Hazards at the workplace score	1.00	0.99-1.03	1.03	1.01-1.04	1.01	0.99-1.03	1.00	0.99-1.02
F4 Interpersonal conflicts at the work score	1.03	1.01-1.05	1.02	1.02-1.04	1.02	1.01-1.03	1.00	0.99-1.02
F5 Shift work score	1.02	1.01-1.03	1.02	1.01-1.03	1.02	1.01-1.03	1.01	1.01-1.02
F6 Professional and intellectual demands score	1.06	1.03-1.09	1.05	1.03-1.07	1.03	1.01-1.05	1.02	0.99-1.03
Total F1-F6	1.06	1.03-1.09	1.08	1.06-1.11	1.05	1.03-1.07	1.03	1.01-1.04

## DISCUSSION

### Summary of main findings

In the study performed on a sample of Croatian hospital, there were no significant differences in the perceived work stress and frequency of burnout and depression among surgical, non-surgical and diagnostic group. Every fifth doctor experienced all examined stressors in the workplace as stress with large differences within each group of stressors. The most common stressors were the organization of work, financial issues and shift work. The prevalence of moderate and severe depression was 12.2%. High level of EE was 43.6%, DE 33.5%, and lack of PA 49.1%. Almost all stressors are correlated with depression and burnout syndrome. Most of the perceived stressors were significant predictors of burnout syndrome and depression.

### Comparison of results

In the existing literature there are considerable differences regarding the conceptualization of the compo-

nents/dimensions of the work stress and the methodology of its measurement. Although these differences make comparison between our data and previous research somewhat difficult, nevertheless we made some qualitative comparison.

As we previously mentioned, we conveniently divided our sample in three clusters, taking into account different working conditions and therefore work stressors in the three categories. We analyzed potential differences between these groups. Such division into three clusters was made partly considering common working conditions, and partly considering the relatively small sample size in most medical specialties, which made comparisons between specialties impossible.

F1 - Organization of work and financial issues and F5 - Shift work were the work stressors perceived as most important by the participants of our study.

Working context of doctors in Croatia appears to be different with relatively low wages and far lower socio-economic standard, with substantial physician shortage in addition. We felt it was reasonable to expect some differences in the perceived importance of various stressors.

In the research literature on work stress in health workers, shift work (24 hours duty, night shifts, overtime work) seems to be the source of stress that is regularly punctuated. Shift works stressors appear to be irrespective of socioeconomic context, and it could be regarded as the typical stressor for medical profession (O'Sullivan et al. 2005, Turk et al. 2014). Although, generally, various work stresses in physicians are investigated, we made a selection of work stresses commonly perceived as most prominent in health workers in our country. Contrary to our expectation there were no significant differences between three specialty groups (with exception of F3 - Hazards at workplace domain in surgical group).

In the research conducted on hospital physicians in Zagreb, (Croatia) (Knezevic 2010) and Tuzla (Bosnia and Herzegovina) (Selmanovic et al. 2011) work organization and finances were identified as the most important work stressors. In the studies from developed countries finances represent considerably less punctuated source of work stress, with doctor-patient relationship, impact of work on private life, control over practice environment, job demands and social support being the most prominent identified stressors (Campolieti et al. 2007, Freeborn 2001, Visser et al. 2003).

The prevalence of moderate and severe depression in our sample was 12.2%, with similar results in all three specialty groups (9.9-14.2%). Compared to the range of prevalence of depression in hospital physicians from different studies measured with self-reported questionnaires (19-29%) (Embriaco et al. 2012, Erdur et al. 2006, Gallery et al. 1992, Ruitenburt et al. 2012), the prevalence of depression in our sample is relatively lower, although it should be noted that in most studies depression is defined with total score of 17 (Erdur et al. 2006) as a cut off point for BDI-II, and in our study we used total score of 20 as a cut off point for severe and moderate depression.

The BDI specificity was higher in our research, so this should be interpreted as an evident source of lower prevalence of depression in our sample, although examples of studies with similar results regarding the prevalence of depression could be found (prevalence of 11.3% for moderate and severe depression in physicians in Michigan) (Schwenk et al. 2008). If our results would be adjusted to include definition of depression with lower cut off point, they would be similar to those usually found in research literature.

In our study we have evaluated the prevalence of burnout syndrome in a sample of hospital physicians using the MBI-HSS. As we previously discussed, given the observable differences in the socioeconomic and working context between Croatian hospital physicians compared with doctors working in western developed countries, we expected that the prevalence of burnout in our sample would be at least moderately higher compared to samples from developed countries. Extensive

research of literature on the subject, shows that the prevalence of high scores on each domain of MBI-HSS among hospital physicians in developed countries varies between 13-53% for EE, 13-61% for DE, and 4-50% for PA, with a remarkable tendency toward moderate or lower end of the mentioned ranges (Campbell et al. 2001, Graham et al. 1996, Grunfeld et al. 2000, Lloyd et al. 1994, Selmanovic et al. 2011, Shanafelt et al. 2009). Results from our study indicate that 34-49% of the participants had one high result on at least one MBI-HSS subscale domain which, compared to overall results from similar studies from other countries, placed the results in our sample on the higher end of the mentioned range.

According to the results, although the large share of the participants in our study describe themselves as emotionally exhausted, with a pronounced feeling of lack of personal accomplishment, they still manage not be cynical towards their patients, as could be expected from the overall results.

We found one study eligible for comparison, simply on the ground of assumption that we share similar socioeconomic and cultural context. A study was conducted in Tuzla, Bosnia and Herzegovina few years ago, where in hospital doctors high level of EE in 37.4%, a high level of DE in 45.6%, and a low level in perceptions of PA in 50.3% were established, which makes the overall prevalence of burnout in this study comparable to our data (Selmanovic et al. 2011).

Research conducted on a sample of primary care physicians in Croatia (2012), compared to our sample of hospital physicians, showed a considerable difference in the proportion of high levels in the domains of DE and lack of PA (16% and 15.2%, respectively), with almost similar results in the domain of EE (42.2%) (Ozvacic et al. 2013). These data possibly indicate higher prevalence of burnout among hospital physicians in Croatia which could be interpreted as an indication of considerably poorer working conditions, although further research is needed to allow such conclusion.

Contrary to our expectations based on their different working contexts, in our sample there were no statistically significant differences in the prevalence of self-perceived burnout between surgical, non-surgical and diagnostic specialty groups. Two other comparative studies also didn't show any significant difference in burnout prevalence across different specializations (Aldrees et al. 2013, Martini et al. 2004).

Relatively high prevalence of burnout in our sample, combined with specific socioeconomic and working context, could offer explanations for the relatively high proportion of physicians in our research (28,2%) who were frequently considering to leave the current working position. Also negative effect of work on private life were perceived often and all the time in 62.3% of participants.

It is noteworthy but regularly omitted from discussions in scientific papers on depression in physicians, that given the primary selection, higher socioeconomic status and higher education, the considerably lower prevalence of depressive disorders in physician population should be expected. Also, because of generally higher brain and cognitive reserve in physician population, one could hypothesize that work stress would lead to burnout and clinical depression with considerable delay and with less severe functional consequences.

As previously mentioned the relationship between work stressors, depression and burnout is complex. Our study indicates the association between stressors at work with depression and burnout syndrome. The correlation between most of the work stressors measured in our study with depression (0.31-0.37), and with certain burnout domains DE (0.30-0.33) were in a similar range, with weak and negative correlation with PA (-0.14-0.22) (except F3 Hazards at workplace). EE is the domain which showed the strongest correlation with stressors at work in our study. EE is generally regarded as the basic individual stress component of the syndrome (Maslach et al. 2001). For example, longitudinal research of McManus et al. confirmed that emotional exhaustion makes doctors more stressed and reversely, stress makes doctors emotionally exhausted (McManus et al. 2002). In line with these finding Biaggi et al. found correlation between stressors at work with emotional exhaustion and aversion to client (Biaggi et al. 2003). Other studies also showed a correlation between stressors at work and burnout (Eckleberry-Hunt et al. 2009, McManus 2004 et al.).

Our study implicated that exposure to professional stress was a predictor of depression and burnout, especially for EE and DE domains. Odds ratio had similar value in range OR 1.01-1.08 for all statistically significant stressor. In other studies are found similar stressors that predict burnout and depression. One of the strongest predictors of burnout was found to be control over schedule and work hours while physician gender, age, and specialty were not strong independent predictors (Keeton et al. 2007). According to another study, job characteristic, especially overload were significant predictors of burnout (Ramirez et al. 1995). A study conducted in physicians from different health care institution found that working shifts were also a significant predictor of all burnout dimensions (Ozyurt et al. 2006). Numerous of studies found that depression is predicted by work stressors like working hours, conflict with a colleague and other physicians (de Oliveira 2013, Embriaco et al. 2012).

The major limitations of this study were cross sectional designs of the study, self reported questionnaires, small response rate (62.3%), and local character of research (only one hospital was included in this research).

## CONCLUSION

Depression and burnout are one of major mental health problem among physicians today. Our findings are consistent with other research that emphasizes the importance of stressors at the workplace as a relevant source of specific outcomes that can have a negative impact on health and work quality. Our study showed that burnout is highly prevalent among Croatian physicians. Target interventions at the workplace should be considered one of the strategies to reduce negative impact of work stress on physicians' mental health.

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