Burnout and Predictors for Burnout among physicians in Bosnia and Herzegovina- survey and study

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High rates of professional burnout syndrome have been found among health service professionals. Our objective was to study the prevalence of burnout syndrome among physicians in Bosnia and Herzegovina and to determine its relationship with environmental factors of the working ambient. A total of 700 physicians in Bosnia and Herzegovina were invited to participate (response rate was 73%, No. of respondents=511). Interviewees were given a specifically designed questionnaire, an Occupational stress questionnaire (OSQ) and the Maslach Burnout Inventory. A high level of emotional exhaustion was detected in 27%, a high level of depersonalization was found in 23%, and reduced personal accomplishment was found in 29% of physicians. There is a significant level of burnout among physicians in Bosnia and Herzegovina, although comparison with other countries is still favorable. Occupational characteristics and social- demographic variables were significant predictors of burnout. Low level of job satisfaction (OR= 2.41, 95% CI=0.29-4.53) and feeling of high level of stress (OR= 2.00, 95% CI=0.08-3.92) were associated with a high level of emotional exhaustion among physician consultants; a feeling of a high level of stress, urgency to get work and "work is mentally strenuous" are risk factors for a higher level of emotional exhaustion among university teaching consultants and general and family medicine practitioners. Personal accomplishment was not related to social demographics and personal factors among clinical specialists and university teaching consultants. Younger age (OR=3.55, 95%CI= 1.19-5.91) and marital status (single versus not single; OR= 1.93, 95% CI=1.06-2.80) are risk factors for emotional exhaustion among general and family medicine practitioners. In view of the results obtained, to reduce professional burnout, the physicians' organizational environment should be improved.

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Introduction

In occupational health research, topics on work stress have been identified as a priority (1). Indeed, the prevalence of exposure to psychological overload and the corresponding health effects have increased during the past decades and will probably increase even further in the near future (2-3). Burnout and stress- related illnesses among physicians are receiving increased attention (4-7). Burnout as a syndrome is present in many individuals under constant pressure (3).

The burnout syndrome has three dimensions: emotional exhaustion (feelings of being emotionally overextended and exhausted with one's work), depersonalization (development of negative and uncaring attitudes towards others), and negative personal accomplishment (the loss of the competence and dissatisfaction with one's achievements) (3, 8). Too often stress among physicians is left dangerously unmanaged (4).

Burnout is a persistent, negative, work-related state of mind in "normal" individuals, that is primarily characterized by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation, and development of dysfunctional attitudes and behaviors at work (5). Burnout syndrome includes following three dimensions, i.e., emotional exhaustion, depersonalization in relationships with patients or coworkers and reduced personal accomplishments (6-9). Maslach and Schaufeli used three hypotheses to explain the nature of that syndrome: burnout is associated with decreased job satisfaction, job dissatisfaction is associated with burnout and burnout and job dissatisfaction both may be related to poor working conditions (3, 8). Personal, interpersonal and organizational factors in the working ambient have been reported to relate to stress and burnout (8). Burnout has been associated with impaired job performance and poor health, including headaches, sleep disturbances, irritability, marital dysfunction, fatigue, hypertension, anxiety, depression, myocardial infarction and may contribute to alcoholism and drug addiction (10).

The risk of burnout increases in individuals who consistently experience work overload and a perceived lack of control over the extent to which the load exceeds their capacity (9). Job dissatisfaction and burnout has been documented in several diverse groups of physicians, including general and family practitioners, surgery, infectious disease specialists, anesthesiologists and university teaching consultants (11-14).

This is the first study examining burnout among Bosnia and Herzegovina physicians. We know that rapid organizational change in the health care sector in the post war period (after 1995) in our country (15) has set high adaptation requirements for physicians. Recent changes may be relevant to the growing incidence of stress and burnout among medical specialists. The aim of this study was to explore the prevalence of occupational burnout, and which personal, interpersonal and organizational factors predict burnout among physicians in Bosnia and Herzegovina.

Subjects and method

To test the hypothesis that occupational environmental factors could produce burnout in physicians, a cross-sectional survey was conducted in Bosnia and Herzegovina in 2004 and 2005.

Subjects

A mail survey was conducted among 700 public health care physicians working in Bosnia and Herzegovina, during the spring of 2004. After the first mailing and two reminders, 534 (76%) physicians returned questionnaire. There were 23 (3%) inad-

equately completed questionnaires and 166 of 700 physicians did not respond. Of 511 valid questionnaires (73% response rate), 260 were completed by hospital physicians from University Hospital Center in Tuzla, and the rest by physicians from seven health centers in the Tuzla canton (n=101; all of them general and family practitioners), Brčko district (n=36; all of them general and family practitioners), and Banja Luka region (n=114). There were positive inter-correlations between physicians from the Tuzla canton, Brčko district and Banja Luka region for marital status (P=0.004) but, there was no significant correlation for age and sex. Among the respondents, there were 183 (36%) general and family medicine practitioners, 67 (13%) university teaching consultants, and 261 (51%) specialists. The participation in the study was voluntary.

The study was conducted in accordance with the ethical standards laid down by the Helsinki Declaration (16). The ethical approval for this research was obtained from the appropriate research committee at Tuzla University School of Medicine. Informed consent was obtained from all participants in the study.

Questionnaires

Occupational Stress Questionnaire

We used the abridged form of Occupational Stress Questionnaire (OSQ), translated to the Bosnia and Herzegovina (BH) language, to assess characteristics and perceived working conditions (demands, control over the work, urgency, and distribution of work) and its effects, stress, health, and satisfaction with work and life (17). The OSQ contains four main groups of items as follows: modifying factor (MF), perceived environment (PE), stress and satisfaction with present work and life (SS). The theoretical model of OSQ is based on the psychological stress theory. Occupational stress is examined through perceived stress factors linked with work and the environment, through the individual's stress reactions; and through the organization to influence occupational stress (17). The questionnaire has 13-items, with Likert-type response format. Answers are given on a five point scale (from 1 a bit/a little to 5 very much; or 1 never to 5 always). The Cronbach´s alpha was satisfactory for local context of OSQ (alpha = 0.834), and partly for PE (alpha = 0.781) and for SS (alpha = 0.752). The reliability of the scales of OSQ was in accordance with various other studies (alpha for SS from 0.73 to 0.79; alpha for PE 0.77 to 0.81) (17).

Maslach Burnout Inventory

To measure burnout among physicians we chose the Maslach Burnout Inventory (MBI) for human service survey (18) translated to the BH language to. This questionnaire includes 22 items for a response, scored to on 6-point Likert- type response format: 1, never; 2, rarely 3, sometimes; 4, often; 5, every day, or 1, not at all to 5, very much. The items refer three dimensions: emotional exhaustion (EE), depersonalization (DP) and personal accomplishment (PA). The psychometric characteristics of the MBI have been assessed in different socio-psychological contexts with quite acceptable results (18-20) with regard to its reliability. The coefficient of Cronbach´s alpha of the internal consistency of the three scales varied between 0.82 and 0.90 for EE; 0.48-0.79 for DP; and 0.57- 0.71 for PA. Cronbach´s alpha was satisfactory for local context in this study for PA (alpha = 0.745), for EE (alpha = 0.902) and for DP (alpha = 0.758). EE scores ≤8 represent a low level of burnout; scores of 9-13 represent moderate level of burnout, and scores of ≥14 high level of burnout. DP scores of ≤2 represent low, scores of 3-8 moderate and scores of ≥10 high level of

burnout. PA scores of ≤33 represent low levels, scores of 31-36 moderate level of PA and burnout and PA scores of ≥27 indicate high level of PA and low level of burnout. These definitions of cut- off scores for PA, EE and DP were used on the basis of results of previous studies by other authors (1, 7, 18).

Statistical analyses

The socio-demographics assessed were sex, age, marital status and job title. Statistical analyses to compare the respondent's socio-demographics were done using $\chi 2$- tests and Student T-tests and One-Way ANOVA for comparisons of groups on the base of age, stress and job satisfaction. Along with the tests, associations between selected MBI variables and socio-demographics and occupational stress of working ambient Spearman correlation coefficients were calculated. To determine the contribution of personal characteristics, job characteristics and perceived working conditions to the prediction of stress and satisfaction, linear regression (LA) analyses were used for 3 domains of variables: EE, PA and DP. Other predictor variables were: high feeling of stress these days, low job satisfaction, possibility to use skilful knowledge at work, urgency to get the work done and work is mentally strenuous; with personal characteristics used as the independent variables. To determine the contribution of personal characteristics, job characteristics and perceived working conditions to the prediction of stress and satisfaction, the dependent variables EE, DP and PA were dichotomized on the base of their cut-off scores e.g. high versus moderate/ low (1 to 3 vs. 4 and 5). Logistic regression analyses were used to identify relevant predictors of EE, DP and PA on the base of predictors calculated odd ratios (OR). All statistical analyses were performed with Statistical Package for Social Sciences (SPSS) 7.5.

Results

Characteristics of survey respondents

Among the 511 physicians included in the analysis, there were 353 (69%) women. The median age of participants was 44 years (range: 28-66). Two hundred and forty-two (47%) physicians were on a full time basis (8-hour daily), 206 (40%) were working on a shift time basis, including night shifts, and 63 physicians worked additional hours (>8 hours). Of 511, 383 (75%) respondents were married or cohabitating. A high level of stress in the workplace was reported by 116 (23%) and "very job satisfied" 274 (54%) by 511 physicians. With respect to mean age, the women, single physicians and general and family practitioners were significantly younger (Table 1).

Generally, the main perceived environmental factors in the working ambient which may relate to burnout were: work is physically strenuous, low level of satisfaction with present life, low lack of control over the work, possibility to use knowledge and skills at work, health status compared with that of people of equal age and unfriendly communication (Table 2). Stress was positively related to job satisfaction ($\rho = 0.460$, $P = 0.001$; data not presented).

Table 3 presents the results of the Maslach burnout inventory scales for the sample as a whole and the sexes separately. The mean burnout scores were: emotional exhaustion 10.0±6.41 (SD), range: 0-24; depersonalization 5.10±4.65 (SD), range: 0-23; and personal accomplishment 38.14±5.60 (SD), range: 16-49; data not showed. Women significantly more often suffered from emotional exhaustion ($\chi 2 = 11.68$; P=0.030) and depersonalization ($\chi 2 = 4.74$; P=0.009) in relationships to men. Women had higher mean values for emotional exhaustion (EE men = 8.33±6.23 (SD); EE women = 10. 74±0.34 (SD) and higher mean values for the depersonalization (DP men = 4.60±4.14

Table 1. Characteristics of survey respondents (n=511):
age differences for prevalence of sex, marital state, job title, stress and job satisfaction

Personal characteristics of respondentsw	Age (years) Mean ±SD*	No of respondents (%)	P
Gender:			
Men	44.75±9.80	158 (30.92)	
Women	42.70±7.64	353 (69.08)	0.011†
Marital status:			
Single	36.48±7.95	83 (16.24)	
Married or cohabiting	44.11±7.63	383 (74.95)	
Separated or divorced	52.43±4.65	33 (6.46)	
Widowed	53.0±11.78	12 (2.35)	0.001‡
Job title:			
General and family medicine practitioners	38.76±8.16	183 (35.82)	
University physicians consultants	45.88±7.39	67 (13.11)	
Physicians- specialists	45.93±7.63	261 (51.07)	0.001‡
Stress at work:			
No stress at all	44.15±8.99	89 (17.4)	
Rarely	41.50±8.27	152 (29.7)	
Sometimes	43.15±8.89	154 (30.2)	
Stressful	45.33±6.43	69 (13.5)	
Very stressful	45.40±7.69	47 (9.2)	0.001‡
Job satisfaction:			
Very satisfied	43.98±8.06	53 (10.4)	
Satisfied	42.79±9.23	221 (43.2)	
Sometimes	43.75±7.18	171 (33.5)	
Rarely	43.49±8.32	43 (8.4)	
Not satisfied at all	44.65±9.93	23 (4.5)	0.033‡

* SD – standard deviation; † Student T- test; ‡ ANOVA – One way

Table 2. Means and standard deviation for the subscales of OSQ in Bosnia and Herzegovina physicians (n=511)

Scales/sub-scale	Mean ±SD*		
	Men (n= 158)	Women (n=353)	P†
Modified factors (MF):			
Can you influence matters concerning you at work?	2.91±0.84	3.10±0.74	0.051
Does your superior provide help and support when needed?	2.89±1.23	2.90±1.10	0.484
How do colleagues get along at your workplace?	2.67±1.16	2.29±1.15	0.001
In your close circle at the working place, is there someone you openly discuss personal matters and problems with?	1.75±0.73	1.82±0.73	0.909
Perceived environment (PE):			
Do you have to hurry to get your work done?	3.05±0.96	3.20±0.94	0.135
Does your work have phases that are too difficult?	2.69±1.09	2.82±0.91	0.105
Can you use your knowledge and skills in your work?	2.03±0.94	2.29±1.00	0.002
Is your work mentally strenuous?	3.65±1.19	3.58±1.14	0.417
Is your work physically strenuous?	2.99±1.20	2.75±1.20	0.034
Stress and satisfaction with present work and life (SS):			
Do you feel stress these days?	2.54±1.22	2.73±1.16	0.110
How satisfied are you with your present work?	2.41±0.94	2.59±0.95	0.421
How satisfied are you with your present life?	2.29±0.95	2.33±0.91	0.022
What is your health state compared with that of people of your age?	1.96±0.80	2.34±0.89	0.001

*A score (mean score) of 2.2 is considered high; †χ^2 test

(SD); DP women= 5.32±4.85 (SD) (data not presented). Our sample shows that 64% of the respondents suffered from emotional exhaustion 35% high level and 30% moderate level. Depersonalization was present among 64% of the respondents, 15% high level and 49% moderate level and 249 (48.7%) moderate level). Lack of personal accomplishment was found among 37% of the respondents; 29% moderate level and 8% low level:. Comparison of various levels of MBI subscales between male and female physicians indicated that women have a significantly higher level of emotional exhaustion and also a low level of emotional exhaustion (Table 3).

When personal accomplishment, emotional exhaustion and depersonalization are entered as dependent variables, in three multiple regression analyses in a hierarchical approach, the results provided a selection of predictors out of the selected pool of potential factors. In this way (presented in table 4), the results found in the second step that the only predictor for decrease of personal accomplishment was marital status (β2=-1.022; P= 0.01). Although, the high level of emotional exhaustion was significantly predicted with work: is mentally strenuous (first and second step), low level of support from superior (first step), high level of stress (first and second step), sex (second step), marital status (second step), significant effect being university teaching consultants compared to family and general medicine practitioners (dummy 1) and significant effect being physician specialists compared to family and general medicine practitioners (dummy 2). Predictors with the highest contribution for a high level of depersonalization were low lack of control over work, the possibility to use knowledge and skills at work and a high level of stress (all in first and second step), work is mentally strenuous (second step), age (second step), a significant effect being university teaching consultants compared to family and general medicine practitioners (dummy 1) and a significant effect being physician specialist compared to family and general medicine practitioners (dummy 2) (Table 4).

Low level of personal accomplishment was associated with age (younger versus older physicians of total sample). The main predictors of emotional exhaustion among university teaching consultants were: high feeling of stress these days, urgency to get the work done, possibility to use skillful knowledge at work and low level of job satisfaction. Depersonalization was also significantly associated with feeling that work is mentally strenuous and a high level of stress. Socio-demographics factors did not influence MBI subscales among university teaching consultants. General and family practitioners suffered emotional exhaustion when work is mentally strenuous, when they have to hurry to get the work and when they were distressed. Low level of personal accomplishment and high level of depersonalization among family and general practitioners were associated with a high level of stress and feeling that work is mentally strenuous. Physician specialists suffered emotional exhaustion when they have low level of job satisfaction and a high level of stress and a high level of depersonalization was only associated with low level of job satisfaction. General and family medicine practitioners who are single expressed most often depersonalization (Table 5).

Discussion

In this study of Bosnia and Herzegovina physicians, twenty seven percent presented a high level of emotional exhaustion, twenty two percent a high level of depersonalization and twenty nine percent a low level of personal accomplishment. Among the Bosnia and Herzegovina sample, the mean score for the personal accomplishment subscale was 38.1±5.6. The comparison of the distribu-

Table 3. Assessments of level of three dimensions of burnout between male and female physicians (n=511)

Dimension of MBI	No. of respondents (%)			
	Men (n= 158)	Women (n=353)	Total (n=511)	P*
Personal accomplishment (PA):				
High level	102 (64.6)	221 (62.6)	323 (63.2)	0.105
Moderate level	45 (28.5)	102 (28.9)	147 (28.8)	0.211
Low level	11 (6.9)	30 (8.5)	41 (8.0)	0.063
Emotional exhaustion (EE):				
High level	39 (24.7)	134 (38.0)	173 (34.8)	0.040
Moderate level	44 (27.8)	102 (28.9)	146 (29.6)	0.268
Low level	75 (47.5)	117 (33.1)	192 (35.6)	0.040
Depersonalization (DP):				
High level	16 (10.1)	62 (17.6)	78 (15.3)	0.378
Moderate level	83 (52.6)	166 (47.0)	249 (48.7)	0.231
Low level	59 (37.3)	125 (35.4)	184 (36.0)	0.272

*χ^2 test

Table 4. Predictors of subscales of Maslach Burnout Inventory among 511 physicians

	PA´		EE´		DP´	
	$\Delta R1^2$	$\Delta R2^2$	$\Delta R1^2$	$\Delta R2^2$	$\Delta R1^2$	$\Delta R2^2$
	0.031	0.052	0.138	0.205	0.087	0.118
Personal factors	β1	β2	β1	β2	β1	β2
Do you have any influence on matters at work, which concern you?	-0.59	-0.59	0.08	0.25	-0.92*	-0.90*
Is your superior providing help and support when needed?	-0.04	-0.02	-0.64*	-0.51	-0.64	-0.58
Is there anyone else who you can openly discuss personal matters and problem with?	0.93	0.89	0.34	0.56	-0.02	0.01
Do you feel stress these days?	-0.19	-0.25	-1.4**	-1.4**	-0.81*	-0.78*
Is your work mentally strenuous?	-0.69	-0.63	0.92**	1.07**	-0.58	-0.64*
How do colleagues get along at your workplace?	-0.01	-0.02	0.19*	0.26*	-0.01	-0.01
Can you use knowledge and skills in your work?	0.39	0.45	-0.42	-0.39	-1.17*	-1.20*
Do you have to hurry to get your work done?	-0.17	-0.13	-0.19	-0.44	-0.07	0.01
Does your work have phases that are too difficult?	0.66	0.53	0.17	0.39	-0.39	-0.41
Are you satisfied with your present work?	0.78	0.91	0.38	0.54	-0.64	-0.71
Socio demographics						
Age		0.40		-0.13		-0.59*
Marital status		-1.02*		0.32		-0.10
Sex		0.12		1.06**		-0.04
University teaching consultants		0.42		1.07**		0.94**
Physician specialist		-0.36		0.59**		0.47**

*P<0.05; ** P<0.001; PA: Personal accomplishment, EE: Emotional exhaustion and DP: Depersonalization; $\Delta R1^2$ and β1 refer to estimates from the first step of the regression analyses: only personal factors; $\Delta R2^2$ and β2 refer to estimates from the second step of the regression analyses: personal factors + socio- demographics only personal factors

tion of the three subscale scores of the MBI with other studies conducted among medical doctors in America and European Union countries showed that Bosnia and Herzegovina physicians suffered lower mean emotional exhaustion and depersonalization and have a higher personal accomplishment score (Table 6) (7, 18, 22, 23, 25, 26).

A study of personal factors that predict burnout among physicians examined three factors: perceived work demands, social support from superior and colleagues, and

Table 5. Factors associated with a higher risk to report burnout among 511 Bosnia and Herzegovina physicians

Predictor variables	PA´		EE´		DP´	
	OR	95%CI	OR	95%CI	OR	95%CI
Total sample						
Single versus not single	0.13	(-0.36- 0.61)	-1.87	(-5.84- 2.09)	-1.42	(-4.24- 1.38)
Younger versus older than 45 years	0.98	(0.32- 1.64)*	-0.42	(-2.63- 1.78)	0.82	(-1.64- 2.04)
University teaching consultants						
High feeling of stress these days	-0.39	(-1.07-0.27)	1.57	(0.94- 2.19)**	1.11	(0.54- 1.69)
Possibility to use knowledge at work	-0.22	(-1.08-0.64)	-0.87	(-1.68—0.07)*	0.283	(-0.45- 1.02)
Urgency to get work done	-0.38	(1.17- 0.41)	1.30	(0.56- 2.05)**	-0.37	(-1.05- 0.30)
Work is mentally strenuous	-2.5E-02	(-0.75-0.70)	0.32	(-0.36- 1.01)	0.76	(0.14- 1.39)*
Low level of job satisfaction	0.8E-03	(-0.90- 0.88)	2.21	(1.36- 3.051)**	0.35	(-0.42- 1.14)
Single versus not single	0.26	(-0.53- 1,05)	0.24	(-0.67- 1.18)	-4.9E-03	(-0.73-0.72)
Younger versus older than 45 years	0.48	(-0.92-1.88)	-0.23	(-1.91-1.45)	0.42	(-0.89- 1.72)
General and family medicine practitioners						
High feeling of stress these days	-1.31	(2.21- 0.41)**	2.15	(1.26- 3.03)**	0.78	(0.22- 1.33)**
Possibility to use knowledge at work	0.45	(-0.63- 1.54)	0.43	(-0.62- 1.50)	0.17	(-0.49- 0.84)
Urgency to get work done	-0.29	(-1.49- 0.92)	-1.54	(-2.72- -0.35)*	-0.61	(-1.36- 0.12)
Work is mentally strenuous	1.28	(0.39- 2.16)**	1.64	(0.76- 2.50)**	0.95	(0.40- 1.49)**
Low level of job satisfaction	-0.48	(-1.66- 0.71)	4.1 E-02	(-1.11- 1.20)	8.8 E-02	(-0.64- 0.82)
Single versus not single	-0.64	(-1.48- 0.20)	1.93	(1.06-2.80)**	0.96	(0.44- 1.49)**
Younger versus older than 45 years	2.30	(0.04- 4.52)*	3.55	(1.19- 5.91)**	1.29	(-0.13-2.71)
Physicians specialists						
High feeling of stress these days	-0.18	(-2.18- 1.82)	2.00	(0.08- 3.92)*	3.1E-02	(-1.63- 1.69)
Possibility to use knowledge at work	-0.94	(-3.06- 1.18)	-1.42	(-3.75- 0.62)	-1.29	(-3.04- 0.47)
Urgency to get work done	1.27	(-1.35- 3.90)	0.51	(-2.01- 3.04)	1.24	(-0.94- 3.42)
Work is mentally strenuous	-0.80	(-2.28- 0.67)	0.31	(-1.09- 1.73)	-0.139	(-1.36- 1.08)
Low level of job satisfaction	1.67	(-0.53- 3.87)*	2. 41	(0.29- 4.53)*	2.55	0.73- 4.38)**
Single versus not single	1.45	(0.56- 2.33)**	1.35	(0.35- 2.36)**	0.66	(-0.18- 1.50)
Younger versus older than 45 years	0.58	(-2.30-3.56)	-2.96	(-6.18-0.25)**	-2.80	(-5.37- 0.24)*

*P<0.05; ** P<0.001; PA: Personal accomplishment, EE: Emotional exhaustion and DP: Depersonalization

Table 6. Distribution of the three subscale scores of the Maslach Burnout Inventory among physicians in different countries

Physicaus in different countries	High level of EE (%)	High level of DP (%)	Low level of PA (%)
Bosnia and Herzegovina physicians (n= 512)	27	23	29
American general medicine residents (n= 115) (7)	53	64	31
British gastroenterologist (n=241) (22)	31	28	38
British surgeons (n=161) (22)	27	19	32
British oncologists (n=266) (22)	35	27	37
British radiologist (n=214) (22)	33	21	49
Italian general practitioners (n=182) (23)	32	27	13
Italian hospital- based practitioners (n=146) (23)	22	23	14
Swiss primary care practitioners (n= 1755) (27)	19	22	16
	Mean EE*	Mean DP†	Mean PA‡
Bosnia and Herzegovina physicians (n= 512)	10.0	5.10	38.1
Dutch medical specialists (n=2400) (26)	15. 5	7. 4	27. 3
Swiss primary care practitioners (n= 1755) (27)	17.9	6.5	39.6
American general medicine residents (n= 115) (7)	26.4	12.7	36.2
Italian general practitioners (n=182) (23)	18. 5	6.1	38.5
British general practitioners (n=245) (22)	26.1	9.8	32.7

PA: Personal accomplishment, EE: Emotional exhaustion and DP: Depersonalization; *high emotional exhaustion is defined as an emotional exhaustion subscale score ≥14, high depersonalization (high cynicism) subscale scores ≥10, and low level of personal accomplishment (low efficacy) ≤33 (1)

job satisfaction. All three predictors were related to age and specialty (17, 19). In Bosnia and Herzegovina the group of the physicians' professional characteristics and socio- demographic variables were significant predictors of burnout. A large portion of the variation of the emotional exhaustion scale was associated with qualifications to relation of amount of working activity. The risk profile obtained suggests that to have a position of high responsibility and to be female are risk factors for higher levels of emotional exhaustion, to have a position of high responsibility and to be younger are risk factors for higher levels of depersonalization, whereas to be single is only a risk factor for lower levels of personal accomplishment. Results of this study prove partially the statement that personal accomplishment is not related to personal and occupational characteristics, or with job satisfaction evaluated by others (8, 25-27, 28).

The different personal factors: high feeling of stress, interpersonal relation between colleagues and work is mentally strenuous predicted a high level of emotional exhaustion among Bosnia and Herzegovina physicians. The prevalence of burnout increased significantly together with increased perception of the importance of relations among colleagues and superior, which has already been reported (21, 29). A high feeling of stress, the urgency to get work done, the possibility to use knowledge at work and a perceived loss of control over the working ambient accounted for a significant portion of depersonalization scores. The biggest contributor to burnout is sheer workload (work is mentally strenuous, urgency to get the work done) and perceived loss of control over the working ambient (30). "Perceived control" was based on the ability to influence the work environment or the opportunity to participate in decision-making (influence on matters at work concerning oneself), the degree to which lack of autonomy contributes to feelings of stress, and satisfaction with control over schedule (30). Perceived control over the working ambient was also an important predictor of physician burnout in the present study too. Physicians with less perceived control, greater stress from uncertainty, higher job demands, and fewer social supports were at greater risk for burnout.

The findings of this study showed a minimal relation between age and level of stress and satisfaction. Female physicians were reported more likely than male to have high level of work related stress and burnout. Women more often than males manage domestic responsibility and if they have children, balance the role of mother with carrier demands (28).

Changes in medical care systems can act as stressors on the medical occupation (26). A physician's career for at least a decade needs large amounts of knowledge and experience. For this reason, high expectations and heavy work demands, levels of expectation and work demands may prove excessive, causing extreme mental and physical exhaustion and contributing to burnout (27, 16). The results of this study prove this statement only for teaching consultants and general and family practitioners. They have continued medical education in the framework of reforms of medical care over the past decade but not related to other physician consultants. The highest risk of burnout was among general and family practitioners who are single versus married and who are younger versus older than 45 years, and may well reflect the influences of: high feeling of stress, urgency to get work done and work is mentally strenuous. Burnout scores were higher for younger physicians when compared with physicians in the two middle aged categories. This result is in accordance with the results of Deckard at al., where older physicians (>48 years of age) had higher mean satisfaction than younger physicians (13).

On other hand, long-term unsatisfactory working conditions result in a negative self-

perception of one's health and work ability and in a complete loss of interest in remaining in the medical profession (29), which are characteristic for clinical specialists in this study. For instance, burnout seems to be less prevalent among older people (8).

Burnout is more common among university teaching consultants and among general-family practitioners (emotional exhaustion and depersonalization). We found that when stress related work was high, job satisfaction was inversely high among general and family medicine practitioners. A high feeling of stress, a low level of possibility to use knowledge at work and a feeling of low satisfaction were associated with emotional exhaustion among university teaching consultants.

The best prevention for burnout among physicians is to promote their personal and professional well-being on all levels - physical, emotional, psychological and spiritual. Factors internal to the organization, such as styles of leadership and management, administrative policies and procedures, and organizational culture have a powerful effect on physicians' well-being (27, 28).

An important limitation of our study was the possibility of generalization of our findings, as health systems differ between countries. The main limitation is its cross-sectional nature, which precludes evaluation of temporality and causality of the observed relationships. Another limitation is assessment based on self-reported rating scales which raises the issue of measurement error. On other hand the participation rate was excellent (73%) given that studies among physicians rarely exceed 50%.

Conclusions

The key findings of our study were that the prevalence of burnout among Bosnia and Herzegovina physicians was not as high as among US and Dutch physicians, but was in line with other Europe countries. General and family practitioners and university teaching consultants are at the highest risk for burnout. Health care organizations have a vital interest in preventing physician burnout. (30-39) Physician well- being is associated with occupational accomplishment, patient satisfaction and patient safety (30, 31) Physicians should have a hand in work design and practice management. A physicians' health committee should review corporate decisions and contracts for their impact on physicians (38, 39). Organizational efforts aimed at increasing the level of job satisfaction among physicians could help to prevent burnout. Intervention programs in health care organizations to prevent stress in the workplace and promotion of staff and patient health should be implemented.

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