BURNOUT IN MEDICAL STUDENTS IN SERBIA- PRECLINICAL AND CLINICAL DIFFERENCES

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Summary

Introduction/objective: The burnout syndrome is insufficiently investigated within the population of students. The aim of this study was to determine the level of burnout in medical students of medicine in Belgrade with the emphasis on preclinical/clinical differences, as well as differences according to gender and average grade.

Methods: The Maslach Burnout Inventory Student Survey (MBI SS) was used to conduct the research among the students of medicine, consisting of emotional exhaustion subscale (MBI-EE), cynicism subscale (MBI CY) and academic efficiency subscale (MBI EF).

Results: High level of burnout according to the MBI EE of the entire sample was confirmed in 84.4 % of students; medium level of burnout according to the MBI CY in 40.7 % and high in 31.7 %. According to the MBI EF, 61.2 % of the students had a medium and 16.9 % high level of burnout. The MBI EE and MBI EF scores were significantly higher in first year students, while the MBI CY score was higher with fifth year students ($p < 0.01$). No gender difference was detected ($p > 0.05$) nor was the difference between the students with higher and lower average grade ($p > 0.05$) detected.

Conclusion: The high burnout level in this study indicates the need for research on a larger sample, aiming at preserving the health of the future medical practitioners. It also causes concern about high scores especially in the preclinical, as well as in the clinical academic years.

Key words: syndrome, burnout, medical students, undergraduate, studies

INTRODUCTION

The burnout syndrome studies around the world and in our country, conducted within the past twenty and something years, indicate that the individuals employed in health and social services, the so called 'helping services' have a higher inclination to develop a such syndrome, especially if they are confronted with violence, emotional abuse and deaths [1, 2]. Emotional (and physical) exhaustion, depersonalization (altered treatment of patients with negative and cynical attitude, lack of care, attaching stereotypes to patients and emotional distancing from them), altered perception of their ability to work and its subsequent loss (lack of professional competence and success, reduced efficiency at work) are given as the most significant components of this syndrome among health care professionals [3].

The burnout syndrome is described in the professional literature of the students of medicine, but the number of publications is negligible in comparison with the ones referring to the employed [4-7]. Analogous to the aforementioned, the main components of the syndrome in the student population are a sense of emotional exhaustion due to their studies (fatigue at the end of their day at the faculty and general tiredness), cynicism (diminished interest in and enthusiasm for their studies, suspicion in the benefits and significance of their studies) and diminished academic efficacy (diminished efficiency in problem solving during the studies and in dealing with the material required for the studies) [8]. The burnout research of the students of medicine was mostly focused on the students of the final years [7], while one smaller part compared the

differences in the level of the burnout during the preclinical and clinical years of the studies [9-13]. In further studies dealing with this difference, the MBI-HSS version of the questionnaire intended for the employed or its partial modifications will be used [7, 12-14].

While observing the connection between the demographic factors and the burnout syndrome within the students, the analysis according to the sex showed extremely heterogeneous results [13, 14].

According to our findings, the information in the world literature on connections between students' average grade and the level of burnout are very scarce.

The primary aim of this study was to determine the burnout risk level with the students of the Faculty of Medicine in Belgrade. The secondary aims were to investigate the differences in the level of burnout with the students of the first year (preclinical level) and the fifth year (clinical level), as well as the difference between male and female students, and between the students with higher and lower average grade.

MATERIAL AND METHODS

Study design and participants

The research was devised as a cross-section study and it was conducted at the beginning of 2012 at the School of Medicine of University of Belgrade. A total of 280 questionnaires were handed out, 237 students took part in it, 123 students of the first year and 114 students of the fifth year of studies, which represents a high response rate of 85 %. There were 45 male and 78 female respondents in the first year and 40 male and 74 female respondents in the fifth year of studies. Re-

garding the age, both groups were homogeneous ($p > 0.05$). Since the first year students did not have the representative number of exams, only the fifth year students responded to the questions about their average grade (only three withheld such information). Regarding the arithmetic mean, they were categorized as students with higher and lower average grade.

Data collection

The questionnaire was handed out to the first year students at the beginning of the second semester, while it was handed out to the fifth year students also at the beginning of the second semester of the current year which is during their tenth semester. Following the explanations for this type of research, all the participants gave their informed consent and were able to reply anonymously.

The research was permitted by the ethical committee of the School of Medicine of the University of Belgrade.

Instruments

The most common instrument to measure the burnout syndrome, also used in this study, is the Maslach Burnout Inventory – MBI [2]. The MBI-GS version (General Survey) measures the burnout risk in professions not directly oriented to people and has 3 subscales: emotional exhaustion, cynicism and professional efficiency [9]. The MBI-GS was modified for the purpose of determining the burnout level in students (for example, ‘I feel exhausted with my job’ was replaced by ‘I feel exhausted with my studies’ [10]) and measured the level of emotional exhaustion, cynicism and professional success in students [11]. The MBI-SS (Student Survey)

[8] is comprised of 15 claims divided into 7 categories ranging from 0 to 6 (0 - never, 1 - a couple of times a year or less frequently, 2 - twice a month or less frequently, 3 - a couple of times a month, 4 - once a week, 5 - a couple of times a week, 6 - every day).

The Emotional exhaustion subscale (MBI-EE) is consisted of 5 items; the cynicism subscale (MBI-CY) of 4 and the academic efficacy subscale (MBI-EF) of 6 items. Each subscale results are presented within 3 categories of the burnout risk – as low, medium and high burnout risk.

Statistical analysis

The description of the numeric features was conducted by the means of the classical methods of descriptive statistics, which are the arithmetic mean and median. For the comparison of the mean values of the parametric features, i.e. the burnout scores of first and fifth year students, and the difference between the male and female students, we used the Student’s t-test. The Non-parametric Mann-Whitney test was used to determine the difference between the burnout levels in students with higher and lower average grade, and the Pearson’s correlation was used to show the connectivity of average grade and Burnout subscales’ scores. The SPSS program V.15, was used to conduct the statistical data analysis.

RESULTS

The analysis of the reliability of the subscales showed satisfactory results. Cronbach’s alpha coefficient for all three subscales was higher than 0.7 that is 0.83 for MBI EE, 0.79 for MBI CY and 0.81 for MBI EF.

According to the distribution of the burnout risk categories, the overall sample showed that a high risk of emotional exhaustion was present among 84.4 % of students and that as many as 94.3 % of the first year students and 73.7 % of the fifth year students had a high burnout risk. Furthermore, the subscale of cyni-

cism (MBI CY) on the overall sample showed a medium level of the burnout risk of 40.7 % and a high of 31.7 % and that the fifth year students have a higher occurrence of the burnout risk (41.2 %) than the first year students (22.8 %). Similarly, the MBI EF showed that 61.2 % of all respondents were in the category of

Table 1. Burnout risk level in medical students of the first and fifth year and in the total sample

Subscales		Year					
		First		Fifth		Total	
		N	%	N	%	N	%
MBI EE	low burnout risk	-	-	2	1.8	2	0.8
	medium burnout risk	7	5.7	28	24.6	35	14.8
	high burnout risk	116	94.3	84	73.7	200	84.4
	Total	123	100 %	114	100 %	237	100 %
MBI CY	low burnout risk	44	35.8	21	18.4	65	27.4
	medium burnout risk	51	41.5	46	40.4	97	40.9
	high burnout risk	28	22.8	47	41.2	75	31.7
	Total	123	100 %	114	100 %	237	100 %
MBI EF	low burnout risk	33	26.8	19	16.7	52	21.9
	medium burnout risk	78	63.4	67	58.8	145	61.2
	high burnout risk	12	9.8	28	24.6	40	16.9
	Total	123	100 %	114	100 %	237	100 %

Table 2. Total burnout score according to the year of training (t-test)

	Year of training	N	Mean	SD	t	p
MBI EE	1st	123	20.63	4.59	3.064	0.002
	5th	114	18.46	6.25		
MBI CY	1st	123	4.93	4.51	-5.007	0.000
	5th	114	8.55	6.50		
MBI EF	1st	123	27.41	4.62	3.232	0.001
	5th	114	25.02	6.68		

medium burnout risk and 16.9 % in the category of high burnout (Table 1).

Table 2 shows a statistically higher significant differences ($p < 0.01$) between the values for all three subscales for the first and fifth year students. The MBI EE

and MBI EF were higher with the first year students, while the MBI CY was higher with the fifth year students.

Although the high and medium burnout risk was dominant with both sexes, there were no statistically significant differences

Table 3. Total Burnout score according to students' gender (t-test)						
	Gender	N	Mean	SD	t	p
MBI EE	male	85	18.95	5.71	-1.309	0.192
	female	152	19.93	5.44		
MBI CY	male	85	6.45	6.13	-0.449	0.654
	female	152	6.80	5.68		
MBI EF	male	85	25.65	5.92	-1.217	0.225
	female	152	26.61	5.75		

Table 4. Burnout score vs. lower/higher grade in the fifth year students (Mann-Whitney test)						
	Average grade	N	Mean Rank	Sum of Ranks	Z	p
MBI EE	lower	68	58.45	3974.50	-1.010	0.313
	higher	43	52.13	2241.50		
MBI CY	lower	68	56.82	3863.50	-4.502	0.000
	higher	43	54.71	2352.50		
MBI EF	lower	68	53.25	3621.00	-1.134	0.257
	higher	43	60.35	2595.00		

Table 5. Correlation of the average grade and the Burnout subscales' scores					
MBI EE MBI CY					MBI EF
Average grade	Pearson Correlation		-0.082	-0.085	0.196*
	Sig. (2-tailed)		0.395	0.378	0.040
	N		111	111	111

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

ces ($p > 0.05$) in the analysis according to the gender of the students (Table 3).

The arithmetic mean of the average grade for the 111 fifth year students was 8.29. Forty-three students had the average grade higher than 8.29 and 68 students lower than that. By observing the connection between the burnout risk and the average grade, we confirmed no significant difference ($p > 0.05$) in the MBI EE and MBI EF subscales. Only in the MBI CY subscale, the students with a lower average grade had significantly higher values ($p < 0.01$) (Table 4).

Further, the Pearson correlation of average grade and subscales' scores showed significance ($p < 0.05$) only in the MBI EF subscale (Table 5).

DISCUSSION

The aim of this study was to determine the prevalence of the burnout risk in the students of the Faculty of Medicine and to investigate the possible differences in terms of preclinical and clinical years of studies, gender and average grade.

The burnout risk analysis (Table 1) showed that according to the MBI EE subscale, which is highly representative [2], as many as 84.4 % of students, 94.3 % of the first year students and 73.7 % the fifth year students had a high burnout risk. The MBI CY subscale showed a prevalence of a medium (moderate) risk with 40.9 % and a high with 31.7 %, where 72.6 % of the overall sample was exposed to a medium and high level of risk. According to the MBI EF subscale of academic efficiency, 61.2 % and 16.9 % of the students had a medium and high burnout risk respectively. All these figures are higher than in currently available studies worldwide. According to the eminent work of the Uni-

versity of Manchester, the burnout risk rate was considerably lower and ranged between 5.2 % for the MBI EF up to 7.1 % for the MBI CY (that is DP-depersonalization since the MBI-HSS version was used) and up to 16.1 % for the MBI EF (that is PA) [13]. Even though they used another, also verified instrument to measure the burnout (Oldenburg Burnout Inventory), Dalin and Runesson (1997) reported a high prevalence of the burnout from 21.7 % to 54.3 % [15]. Similarly, data from an investigation in Nashville in the USA confirmed a moderate and high burnout ranging from 21 to 43 % [14], while results published in Australia ranged from 14 % for the MBI EE to 27 % for the MBI CY (that is DP) [7]. Generally speaking, a high level of burnout in students was caused by both the organization of lectures at faculty and the quality of their lifestyle [15-20]. Hypothetically, the difference in the curriculum would be only one of the reasons for such a significant discrepancy between the results we obtained and the results found in the world literature. However, such a high burnout rate raises and imposes the need for a thorough investigation of the problem among students, and subsequently for a certain international study.

There is a significant difference in the results between preclinical (first, second, third) and clinical (fourth, fifth and sixth) years of medical studies, especially regarding the organization of the lectures [10]. In the clinical years of the studies, the students mostly have practical lectures in hospitals and are in direct contact with the patients while in the preclinical years of the studies, the students mostly have theoretical lectures with minimum contact with patients [10]. Our study confirmed significantly higher statistical results ($p < 0.01$) on the MBI EE and MBI EF sca-

les in the first year students and on the MBI CY subscale in the fifth year students (Table 2). It might be possible to explain the difference with the fact that the first year students encounter the faculty for the first time, which, as opposed to high-school, has a different organization of the lectures and practice resulting in a certain level of fear of the new education system where they have to familiarize with the new curriculum and meet each other. In addition, moving to Belgrade (the capital city) and separation from family can also be factors that cause stress [21, 22]. The difference in the burnout level could be explained by the curriculum difference in the first (preclinical) and the fifth (clinical) years of studies. The fifth year students are 'at the end' of their studies, which might imply they are more satisfied and disburdened as they are about to finish their studies. If we look at one of the definitions of the cynicism subscale (MBI CY), as 'diminished interest in and enthusiasm about studying', then the higher values with clinical of the fifth year students would be expected. There are different findings in the international literature, however. Research conducted among the students of medicine in Spain showed a high burnout risk among 14.8 % of the third year students and 37.5 % of the sixth year students, which is inverted in comparison with our results where the preclinical students had a significantly higher scores [10]. However, this study takes into account the third year of studies as preclinical, which differs from the first year (preclinical year in our study) since we expect that the students have adapted and acquired certain experience during the first two years and as a result have a lower adaptation stress. The aforementioned research of the University of Manchester showed that the fifth year stu-

dents had higher burnout risk than the first year students, but that this difference was statistically insignificant [13]. The differences in the organization and content of lectures, at least in certain segments, contribute to the heterogeneous results of the students in Belgrade when compared with their counterparts in other countries. In spite of the obvious significance of the analysis of the above mentioned results, it currently exceeds the framework of this research. In the light of the extremely high burnout rate in the first year of studies, it might be concluded that future research of chronologically following the level of burnout at the beginning, middle and end of the first year could produce more solutions to the problem.

Research of the problem of burnout with male and female students also gave different results. Some show that there is a significant difference, and that the males are exposed to the higher burnout risk [7] while other show no difference at all [14, 23, 24]. Others show that the females have a higher burnout risk [25, 26]. Our research showed that a slightly higher number of women had a borderline scores of high burnout risk. However, this difference according to the gender was not statistically significant (Table 3). This result could be substantiated by a bigger participation of women in the overall student sample.

The analysis of the burnout risk levels between students with higher and lower average grade (Table 4) showed that the students with a somewhat lower average grade had subsequently a higher burnout risk, but that, apart from the MBI CY subscale, this difference was statistically insignificant. According to our literature, research analyzing the connection between the burnout level and the average grade are very rare. Some of the results showed no

statistically significant connections [27] while others showed a small and statistically negative connection between the burnout level and the average grade during one's studies [28], which is in compliance with our findings on the MBI CY subscale. The correlation of the average grade in total of the fifth year sample and subscales' scores showed significance ($p < 0.05$) only in the MBI EF subscale (Table 5), which is also consistent with the above mentioned results.

However, this study has its limitations. Firstly, the sample, although marked as a larger sample, should be additionally enlarged with other Universities in the country as, according to our knowledge, there are certain differences in curriculums. Secondly, the design of the study could be taken as another disadvantage as the cross-section study does not allow establishing of a causative link between the variables where prospective design would probably give much more information. Furthermore, it would be advisable to enlarge the range of the socio-demographic variables i.e. questions on the quality on one's life, in future research.

It would be also interesting to include the question about the idea of dropping out of (or changing) medical studies since certain studies support such an approach [17, 29]. However, it would be important to investigate the psychological profile of the students as an obvious factor that affects the level of the burnout risk [30, 31], unfortunately it wasn't a primary goal of this study.

One of the advantages of our study is the fact that, according to our knowledge, the research into burnout risk had never been conducted among preclinical students of medicine in our country and is seen as necessary in the light of the delicate and stressful nature of the profession

these students are studying for [12]. It is also important to investigate the burnout risk in all the years of studies as the burnout risk level is reversible among the students and there is also a possibility of recovery within one year (around 26 %) [13]. Generally speaking, only a small number of published researches compare the clinical and preclinical differences in the level of the burnout risk with the students of medicine. It is also important to emphasize that the most refined and highly verified burnout evaluation instrument, the MBISS version [8], was used in our study, as opposed to most research worldwide where the MBI version for the employed [2, 9] or its modification was applied.

CONCLUSIONS

The burnout syndrome among students is an area that needs to be explored in our country, not only among the students of medicine, especially in the light of the fact that there is insufficient research done on this subject.

The extremely high burnout risk rate ranging from 31.7 % to as high as 94.3 %, according to the different MBI subscales among the first year and the fifth year students of the School of Medicine in Belgrade is alarming and worrying. These burnout findings imply serious need for further and more thorough evaluation of such a complex problem, especially for the purpose of protecting mental health of the future medical practitioners as well as for the purpose of more precise definition of the factors that affect the quality of studying. It would be also important to implement some educational programs that would assist the students in developing necessary strategies and skills of defense in contact with patients as well as in everyday lectures at their faculties.

SINDROM SAGOREVANJA KOD STUDENATA MEDICINE U SRBIJI – PREDKLINIČKE I KLINIČKE RAZLIKE

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Kratak sadržaj

Uvod/cilj: Sindrom sagorevanja je nedovoljno istražen u studentskoj populaciji. Cilj rada bio je utvrđivanje nivoa “sagorevanja” kod studenata medicine u Beogradu, sa akcentom na razlike između grupe studenata koja pohađa nastavu iz predkliničkih i grupe studenta koja pohađa nastavu iz kliničkih predmeta, kao i razlike prema polu i prosečnoj oceni.

Metode: Korišćen je Masleč Inventara Izgaranja za ispitivanje studenata (MBI-SS), koji se sastoji iz subskale emocionalne iscrpljenosti (MBI EE), subskale cinizma (MBI CY) i akademske efikasnosti (MBI EF).

Rezultati: Visok rizik za “sagorevanje” na MBI EE u ukupnom uzorku imalo je 84,4 % studenata, na MBI CY se beleži srednji nivo “sagorevanja” od 40,7 % i visok od 31,7 %, a na MBI EF 61,2 % ima srednje “sagorevanje”, i 16,9 % visok. Skorovi na MBI EE i MBI EF viši su značajno kod studenata prve, dok su na MBI CY viši kod studenata pete godine ($p < 0,01$). Razlika prema polu nije nađena ($p > 0,05$), kao ni razlika kod studenata sa nižim i višim prosekom ($p > 0,05$).

Zaključak: Visok nivo “sagorevanja” u ovoj studiji implicira potrebu za istraživanjem na većem uzorku radi očuvanja zdravlja budućih lekara. Takođe, zabrinjava što su visoki skorovi dobijeni i na prekliničkim i kliničkim godinama studija.

Ključne reči: sindrom, sagorevanje, studenti medicine, osnovne studije

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