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Burnout Syndrome and Associated Socio-Demographic Factors in Medical Students; A Cross-Sectional Study †

Irena Ilic [1,*] and Milena Ilic [2]

[1] Faculty of Medicine, University of Belgrade, Belgrade, Serbia
[2] Department of Epidemiology, Faculty of Medical Sciences, University of Kragujevac, Kragujevac, Serbia; drmilenailic@yahoo.com
* Correspondence: ajrini10@gmail.com; Tel.: +38-1113636300
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Abstract: The study was conducted to determine the demographic factors associated with burnout among medical students at the Faculty of Medical Sciences of Kragujevac Serbia. A cross-sectional study was conducted in 2014. Female sex was significantly associated with less cynicism compared to men ($p = 0.007$). Age was significantly associated with all dimensions of burnout: while cynicism and academic inefficiency increased with age ($p = 0.000$), emotional exhaustion decreased significantly with age ($p = 0.000$). The self-financing way of studying was significantly associated with greater cynicism and academic inefficiency ($p < 0.05$). Our research confirmed the association of socio-demographic characteristics and the level of burnout syndrome in medical students.

Keywords: burnout syndrome; medical students; cross-sectional study

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1. Introduction

Research shows that studying can influence the health of students, and, sometimes, it can have negative consequences on their psychological, physical and social wellbeing [1,2].

The burnout syndrome is firstly associated with academic tasks and refers to feeling of exhaustion due to demands of studies, cynical attitude towards the studies and perception of incompetence of self as a student. Burnout syndrome among medical students comprises the following three dimensions: (1) emotional exhaustion (due to studying/educational demands), (2) cynicism (indifference/apathic attitude towards academic activities) and (3) low academic efficacy (perception of incompetence as a student) [3].

Systematic literature reviews have shown that about 50% of medical students have burnout syndrome [2,4]. Emotional exhaustion, depersonalization and overall burnout were significantly more common in medical students compared to other students [5].

The research on burnout syndrome in medical students in Serbia is scarce. The fast development of medical sciences in the last decades, with the fact that burnout syndrome is insufficiently investigated in our environment, points to the need to estimate the prevalence of burnout syndrome in medical students and research the possible association between the burnout syndrome and certain socio-demographic characteristics.

The study was conducted to determine the demographic factors associated with burnout syndrome among medical students at the Faculty of Medical Sciences of Kragujevac (University of Kragujevac, Serbia).

2. Materials and Methods

A cross-sectional, analytical study conducted in 2014, using the Maslach Burnout Inventory Student Survey and epidemiological questionnaire on basic socio-demographic

characteristics (age, sex, completed secondary school, marital status, housing, study financing, etc.).

Students of all six years of undergraduate studies of medicine at the Faculty of Medical Sciences, University of Kragujevac, who gave their voluntary consent and signed an informed consent form were included in the study.

Criteria to include participants in the study were: age over 18, enrolled into academic year, status of student, attendance to classes, provided voluntary written consent to participate and absence of exclusion criteria.

Exclusion criteria were: age under 18, absence from classes or presence of any other objective reason which did not allow or hindered participation in the study.

The study included 760 of the 836 medical students from the first to the sixth year who met the criteria for participation (response rate was 90.9%).

Burnout syndrome is defined as a triad of symptoms: emotional exhaustion (EE), cynicism (CY), and academic inefficiency (rAE). Validity and reliability of the MBI-SS questionnaire was confirmed in this research [6]. The scale MBI-SS which is used in this research has good psychometric characteristics, with reliability expressed with Cronbach's alpha coefficient being acceptable and very high for all domains (0.852–0.869). Cronbach's alpha coefficient for all three subscales was higher 0.7 (i.e., it was 0.869 for MBI EE, for MBI CY it was 0.856 and for MBI EF it was 0.852).

Statistical evaluation was performed through Chi-square and t-test. For all factors the level of statistical significance was considered at $p < 0.05$. All statistical analyses were performed using the program SPSS 20.0 (SPSS, Chicago, IL, USA).

3. Results

Sociodemographic characteristics of participants are shown in Table 1. Out of the 760 medical students who completed the questionnaire, there were 269 (35.4%) males and 491 (64.6%) females. Most of the students were aged 224 to 24 years 6 (327; 43.0%), 25 or more years 256 (33.7%) students, while 177 (23.3%) students had 21 or less years. The average age of participants was 23.7 ± 2.7 years.

Table 1. Basic socio-demographic characteristics of study participants.

Variables		Number (n = 760)	%
Gender			
	Male	269	35.4
	Female	491	64.6
Age (years)			
	≤ 21	177	23.3
	22–24	327	43.0
	≥ 25	256	33.7
Average age ($\overline{x}$ ± SD; Range)		23.7 ± 2.7; 19–36	

$\overline{x}$ ± SD (mean ± standard deviation)

Burnout syndrome, as a triad of symptoms (i.e., Emotional Exhaustion, Cynicism and Academic Inefficacy), is shown on Table 2. In this research, mean results on subscales were: MBI EE (12.8 ± 7.2; range 0–30), MBI CY (3.6 ± 4.9; range 0–24) и MBI rEF (9.1 ± 8.3; range 0–36).

Gender was significantly less often associated with lower cynicism, with fewer women showing high levels of cynicism compared to men (31.6% versus 41.3%; $p = 0.007$) (Table 3). Age was significantly associated with all dimensions of burnout: while cynicism and academic inefficacy increased with increasing age ($p = 0.000$), emotional exhaustion decreased significantly with age ($p = 0.000$). Self-funding as the way of study financing was significantly associated with higher cynicism and academic inefficacy ($p < 0.05$).

Table 2. Mean results of MBI-SS subscales in medical students.

Subscales *MBI-SS*	$\bar{x}$	SD	Min	Max
- MBI EE	12.8	7.2	0	30
- MBI CY	3.6	4.9	0	24
- MBI rEF	9.1	8.3	0	36

MBI-SS (Maslach Burnout Inventory—Student Survey); MBI EE (Emotional Exhaustion); MBI CY (Cynicism); MBI rEF (reverse Academic Efficacy); $\bar{x}$ (mean); SD (standard deviation).

Table 3. Distribution of medical students with high burnout score, by domains and by socio-demographic characteristics.

Variables	High Risk					
	MBI EE		*MBI CY*		*MBI rEF*	
	%	$p^{*,**}$	%	$p^{*,**}$	%	$p^{*,**}$
Gender						
Males	37.9		41.3		42.4	
Females	42.0	0.781	31.6	0.007	35.2	0.052
Age (years)						
≤21	39.5		18.6		18.6	
22–24	45.6		38.2		38.2	
≥25	34.9	0.030	42.2	0.000	50.4	0.000
Average age ($\bar{x}$ ± SD)	23.4 ± 2.5	0.758	24.2 ± 2.7	0.000	24.5 ± 2.7	0.000
Please of residence						
Urban	40.3		35.0		37.6	
Rural	42.9	0.694	34.9	0.989	39.7	0.743
Completed secondary school						
Grammar school	40.1		36.6		35.5	
Secondary medical school	40.8	0.855	34.1	0.491	39.0	0.350
Marital status						
With partner	42.2		35.4		38.2	
Without partner	39.3	0.410	34.7	0.841	37.4	0.832
Children						
No	40.7		34.4		37.4	
Yes	36.4	0.687	54.5	0.051	50.0	0.230
Accommodation						
Own apartment	34.3		35.7		40.0	
With parents	42.7		39.3		34.8	
Subtenant	40.8		34.7		39.3	
Student dormitory	37.7	0.589	20.8	0.028	39.0	0.677
Study financing						
State-sponsored	41.9		32.8		33.0	
Self-funded	35.5	0.139	42.8	0.018	54.8	0.000

MBI EE (Emotional Exhaustion); MBI CY (Cynicism); MBI rEF (reverse Academic Efficacy); $\bar{x}$ ± SD (mean ± standard deviation); *p* (probability, *χ2-test, ** t-test).

4. Discussion

In our study, high risk for emotional exhaustion was most often seen in medical students aged 22–24 years. High risk for cynicism was most common in male students, those aged 25 and more years, living with parents and self-funding their studies. High risk for academic inefficacy was most common in students aged 25 or more years and those self-funding their studies.

Among all the studied demographic variables, the age was the one most consistently associated with the burnout syndrome. Some studies have found that older students

experienced burnout syndrome more often [7], in contrast to other research which did not find an association between the age and burnout [8]. In this study, the high risk for burnout syndrome was significantly more often found in medical students aged 22–24 years, compared to younger and older students. These findings must be interpreted with caution. Firstly, older age is interconnected with experience of studying, so there is always the question of secondary association with the burnout syndrome. Also, one of the possible explanations is that the students who experience burnout syndrome at the beginning of studies will most likely leave studies, while those with the lower risk of burnout will stay at the Faculty [9]. Correspondingly, results of this research also show that burnout syndrome can occur at the beginning of studies of medicine, which points to the justification of screening and prevention of burnout syndrome in the youngest students.

Some studies did not find a statistically significant association between the prevalence of burnout syndrome (i.e., high risk for cynicism) and gender [10,11], in contrast to our study and some other studies [8,12,13].

In our study none of the components of burnout syndrome was significantly associated with place of residence, completed secondary school, marital status, children. Similarly, some studies [11,14,15] have found that burnout was not significantly associated with the marital status. In contrast, some studies have confirmed the association between the burnout syndrome and marital status [16].

It is difficult to compare the results of this study with similar studies in the world, due to numerous reasons: different research designs, use of different questionnaires, use of not validated questionnaires, different methodologies, different response rates, differences in studied populations (regarding age, gender, socioeconomic status etc.), studying of all or just selected study years, study curriculums, length of studies etc.

5. Conclusions

This study is one of the first attempts to assess the level of risk for burnout syndrome in medical students in Serbia, as well as to analyze the role of sociodemographic characteristics of students in burnout. The results of this study show that high risk of burnout syndrome was significantly associated with male gender, age, living with parents and self-funding type of study financing in medical students.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data is contained within the article.

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