



# Burnout Syndrome and Associated Sociodemographic Factors in Medical Students: A Cross-Sectional Study <sup>†</sup>

Irena Ilic <sup>1,\*</sup> and Milena Ilic <sup>2</sup>

<sup>1</sup> Faculty of Medicine, University of Belgrade, 11000 Belgrade, Serbia

<sup>2</sup> Department of Epidemiology, Faculty of Medical Sciences, University of Kragujevac, 34000 Kragujevac, Serbia; drmilena@yaho.com

\* Correspondence: ajrini10@gmail.com; Tel.: +38-1113636300

<sup>†</sup> Presented at the 1st International Electronic Conference on Clinical Medicine, 15–30 September 2021; Available online: <https://ecm.sciforum.net/>.

**Abstract:** The study was conducted to determine the demographic factors associated with burnout among medical students at the Faculty of Medical Sciences in Kragujevac, Serbia. A cross-sectional study was conducted in 2014. Burnout syndrome was assessed using the Maslach Burnout Inventory Student Survey. Statistical evaluation was performed through chi-square and *t*-test. 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%). 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 ( $p < 0.001$ ), emotional exhaustion decreased significantly with age ( $p = 0.030$ ). The self-financing way of studying was significantly associated with greater cynicism ( $p = 0.018$ ) and academic inefficiency ( $p < 0.001$ ). Our research confirmed the association of sociodemographic characteristics and the level of burnout syndrome in medical students.

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



**Citation:** Ilic, I.; Ilic, M. Burnout Syndrome and Associated Sociodemographic Factors in Medical Students: A Cross-Sectional Study. *Biol. Life Sci. Forum* **2021**, *9*, 1. <https://doi.org/10.3390/ECCM-10869>

Academic Editor: Michele Roccella

Published: 15 September 2021

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

Burnout syndrome is a psychological term that means emotional exhaustion, depersonalization and reduced professional efficiency, which arise in response to chronic stress in jobs related to directly work with people [1]. Burnout syndrome is especially a characteristic of occupations that are linked to working with people in emotionally demanding situations [1,2].

Previous studies showed that medical students are included in the group of students with very stressful studies and, as such, may be at increased risk of developing burnout syndrome [3,4]. Burnout syndrome is firstly associated with academic tasks and refers to a feeling of exhaustion due to demands of studies, a cynical attitude towards the studies and self-perception of incompetence 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].

Some studies have found that older medical students were more likely to have burnout syndrome [6], unlike other studies that found no association between age and burnout [7]. While the results of studies in Lebanon [5], India [8] and Pakistan [9] showed that female gender is significantly associated with a high risk of burnout in medical students, studies in the United Kingdom [10] and Brazil [11] have shown significantly higher prevalence of

burnout syndrome in male than in female students. Santen and coauthors [12], as well as Galán and coauthors [13], did not find a significant association between burnout syndrome and gender. According to the results of numerous studies, the determinants of burnout syndrome in medical students were family duties [9,11].

Research on burnout syndrome in medical students in Serbia is scarce. The fast development of medical sciences in recent decades, along 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 burnout syndrome and certain sociodemographic 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, Kragujevac, Serbia). The main goal was to examine whether there is a high risk of burnout syndrome in female medical students, as well as in older students.

## 2. Materials and Methods

A cross-sectional, analytical study, using the Maslach Burnout Inventory Student Survey (MBI-SS) [3,6,14] and epidemiological questionnaire on basic sociodemographic characteristics (age, sex, place of residence, completed secondary school, marital status, children, housing, study financing), was conducted in 2014 for the purpose of this research.

Data collection was conducted in the auditorium of the Faculty of Medical Sciences. Medical students who met the criteria for inclusion in the study were asked to complete an epidemiological questionnaire and an MBI-SS questionnaire. The respondents had 15 min (with a range of  $\pm 5$  min, depending on the cooperation of the respondents) to complete the questionnaire. Respondents independently filled out questionnaires by a paper-and-pencil method, in the presence of researchers—the authors of the paper—who were available in case of difficulties in understanding to clarify any issues. All medical students (from the first to the sixth year of study) were invited to participate in this study on the first day of the lectures, when all students are present at the beginning of the semester according to their schedules and classrooms.

Students in any year of undergraduate study 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: over 18 years of age, enrolled in academic year, status of student, attendance to classes, provided voluntary written consent to participate and absence of exclusion criteria.

Exclusion criteria were: under 18 years of age, 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) [1,3]. Validity and reliability of the Serbian version of the MBI-SS questionnaire was confirmed in this research [15]. The scale MBI-SS, which is used in this research, has good psychometric characteristics, with reliability, as expressed by Cronbach's alpha coefficient, that is acceptable and very high for all domains (0.852–0.869). Cronbach's alpha coefficient for all three subscales was higher than 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  $p < 0.05$ . All statistical analyses were performed using the program SPSS 20.0 (SPSS, Chicago, IL, USA).

### 3. Results

Out of the 760 medical students who completed the questionnaire, the majority (491; 64.6%) were females, while every third student (256; 33.7%) was 25 years old or older (Table 1).

**Table 1.** Basic sociodemographic 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 ( $\bar{x} \pm SD$ ; Range)	23.7 $\pm$ 2.7; 19–36	

$\bar{x} \pm SD$  (mean  $\pm$  standard deviation).

Burnout syndrome, as a triad of symptoms (i.e., emotional exhaustion, cynicism and academic inefficacy), is shown in Table 2. In this research, the mean results on subscales were: MBI EE (12.8  $\pm$  7.2; range 0–30), MBI CY (3.6  $\pm$  4.9; range 0–24) and MBI rEF (9.1  $\pm$  8.3; range 0–36).

**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).

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 ( $p < 0.001$ ), emotional exhaustion decreased significantly with age ( $p = 0.030$ ). Students who lived in a dormitory (20.8%) were the least likely to show a high level of cynicism ( $p = 0.028$ ). Self-funding as the way of study financing was significantly associated with higher cynicism ( $p = 0.018$ ) and academic inefficacy ( $p < 0.001$ ).

**Table 3.** Distribution of medical students with high burnout score, by domains and by sociodemographic 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	<0.001	50.4	<0.001

Table 3. Cont.

Variables	High Risk					
	MBI EE		MBI CY		MBI rEF	
	%	<i>p</i> *,**	%	<i>p</i> *,**	%	<i>p</i> *,**
Average age ( $\bar{x} \pm SD$ )	23.4 $\pm$ 2.5	0.758	24.2 $\pm$ 2.7	<0.001	24.5 $\pm$ 2.7	<0.001
Place 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						
Owns 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	<0.001

MBI EE (emotional exhaustion); MBI CY (cynicism); MBI rEF (reverse academic efficacy);  $\bar{x} \pm SD$  (mean  $\pm$  standard deviation); *p* (probability, \*  $\chi^2$ -test, \*\* *t*-test).

#### 4. Discussion

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

Among all the studied demographic variables, age was the one most consistently associated with burnout syndrome. Some studies have found that older students experienced burnout syndrome more often [6], in contrast to other research which did not find an association between age and burnout [7]. In this study, a 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 in studying, so there is always the question of a secondary association with burnout syndrome. Additionally, one of the possible explanations is that the students who experience burnout syndrome at the beginning of studies will most likely leave their studies, while those with a lower risk of burnout will stay at the faculty [14]. Correspondingly, the results of this research also show that burnout syndrome can occur at the beginning of studies of medicine, which points to the justification for 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 [16,17], in contrast to our study and some other studies [7,13,18]. A large systematic review and meta-analysis which comprised 24 studies with 17,431 medical students hypothesized that the reason for not finding a significant difference in burnout prevalence between sexes could be due to the insufficient statistical power of primary studies [4].

In our study, none of the components of burnout syndrome were significantly associated with place of residence, having completed secondary school, marital status or children. Similarly, some studies [17,19,20] have found that burnout was not significantly associated with marital status. In contrast, some studies have confirmed the association between burnout syndrome and marital status [21].

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 unvalidated questionnaires, different methodologies, different response rates, differences in studied populations (regarding age, gender, socioeconomic status, etc.), studying all or just selected study years, study curriculums, length of studies, etc. All of these reasons hamper international comparisons, as noted by Erschens et al., who were therefore unable to perform a broad meta-analysis of burnout in medical students [22].

The results of this research will enable medical doctors to successfully make decisions on providing psychological support to medical students at a high risk for burnout syndrome, with the aim of timely prevention for many students, primarily females, who live in dormitories and self-fund their studies.

Our study is one of the few studies dedicated to evaluation of the association between the high risk of burnout syndrome with demographic characteristics of medical students in Serbia. Additionally, in this study, the validated Serbian version of MBI-SS was applied, with a high response rate (90.9%). However, this study has several limitations; in addition to the known shortcomings of the cross-sectional study design, the limitation of this study is in the use of the self-report questionnaire and not providing data on other circumstances that could influence the onset of burnout in medical students (such as socioeconomic status, 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 and to analyze the role of sociodemographic characteristics of burnt-out students. The results of this study show that a high risk of burnout syndrome is significantly associated with male gender, age, living with parents and the self-funding type of study financing in medical students. It is important to repeat similar studies in the future, especially with longitudinal studies, which are recommended to confirm the association found in our prevalence study. Therefore, research that enables early detection of burnout syndrome is needed in order to encourage the adoption of preventive measures that can be shared with the scientific community.

**Author Contributions:** Conceptualization, I.I. and M.I.; methodology, I.I. and M.I.; software, I.I. and M.I.; validation, I.I. and M.I.; formal analysis, I.I. and M.I.; investigation, I.I. and M.I.; resources, I.I. and M.I.; data curation, I.I. and M.I.; writing—original draft preparation, I.I.; writing—review and editing, I.I. and M.I.; visualization, I.I. and M.I.; supervision, M.I.; project administration, M.I.; funding acquisition, M.I. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of the Faculty of Medical Sciences, University of Kragujevac (Ref. No.: 01-1176, 7 February 2014).

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

**Data Availability Statement:** Data are contained within the article.

**Acknowledgments:** This study was conducted as the part of project No. 175042 supported by the Ministry of Education, Science and Technological development, Republic of Serbia, 2011–2020.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Maslach, C.; Jackson, S.E. The measurement of experienced burnout. *J. Occup. Behav.* **1981**, *2*, 99–113. [\[CrossRef\]](#)
2. Dyrbye, L.; Shanafelt, T. A narrative review on burnout experienced by medical students and residents. *Med. Educ.* **2016**, *50*, 132–149. [\[CrossRef\]](#)
3. Schaufeli, W.B.; Martinez, I.M.; Pinto, A.M.; Salanova, M.; Bakker, A.B. Burnout and engagement in university students: A cross-national study. *J. Cross-Cult. Psychol.* **2002**, *33*, 464–481. [\[CrossRef\]](#)
4. Frajerman, A.; Morvan, Y.; Krebs, M.O.; Gorwood, P.; Chaumette, B. Burnout in medical students before residency: A systematic review and meta-analysis. *Eur. Psychiatry* **2019**, *55*, 36–42. [\[CrossRef\]](#)
5. Fares, J.; Saadeddin, Z.; Al Tabosh, H.; Aridi, H.; El Mouhayyar, C.; Koleilat, M.K.; Chaaya, M.; El Asmar, K. Extracurricular activities associated with stress and burnout in preclinical medical students. *J. Epidemiol. Glob. Health* **2016**, *6*, 177–185. [\[CrossRef\]](#)
6. Chunming, W.M.; Harrison, R.; Macintyre, R.; Travaglia, J.; Balasooriya, C. Burnout in medical students: A systematic review of experiences in Chinese medical schools. *BMC Med. Educ.* **2017**, *17*, 217. [\[CrossRef\]](#)
7. Almalki, S.A.; Almojali, A.I.; Alothman, A.S.; Masuadi, E.; Alaqeel, M. Burnout and its association with extracurricular activities among medical students in Saudi Arabia. *Int. J. Med. Educ.* **2017**, *8*, 144–150. [\[CrossRef\]](#)
8. Vidhukumar, K.; Hamza, M. Prevalence and Correlates of Burnout among Undergraduate Medical Students—A Cross-sectional Survey. *Indian J. Psychol. Med.* **2020**, *42*, 122–127. [\[CrossRef\]](#)
9. Muzafar, Y.; Khan, H.H.; Ashraf, H.; Hussain, W.; Sajid, H.; Tahir, M. Burnout and its associated factors in medical students of Lahore, Pakistan. *Cureus* **2015**, *7*, e390. [\[CrossRef\]](#)
10. Cecil, J.; McHale, C.; Hart, J.; Laidlaw, A. Behaviour and burnout in medical students. *Med. Educ. Online* **2014**, *19*, 25209. [\[CrossRef\]](#)
11. Costa, E.F.D.O.; Santos, S.A.; Santos, A.T.R.D.A.; Melo, E.V.D.; Andrade, T.M.D. Burnout Syndrome and associated factors among medical students: A cross-sectional study. *Clinics* **2012**, *67*, 573–580. [\[CrossRef\]](#)
12. Santen, S.A.; Holt, D.B.; Kemp, J.D.; Hemphill, R.R. Burnout in medical students: Examining the prevalence and associated factors. *South Med. J.* **2010**, *103*, 758–763. [\[CrossRef\]](#)
13. Galán, F.; Sanmartín, A.; Polo, J.; Giner, L. Burnout risk in medical students in Spain using the Maslach Burnout Inventory-Student Survey. *Int. Arch. Occup. Environ. Health* **2011**, *84*, 453–459. [\[CrossRef\]](#)
14. Maslach, C.; Jackson, S.E.; Leiter, M. *Maslach Burnout Inventory*, 3rd ed.; Consulting Psychologists Press: Palo Alto, CA, USA, 1996.
15. Ilic, M.; Todorovic, Z.; Jovanovic, M.; Ilic, I. Burnout Syndrome Among Medical Students at One University in Serbia: Validity and Reliability of the Maslach Burnout Inventory-Student Survey. *Behav. Med.* **2017**, *43*, 323–328. [\[CrossRef\]](#)
16. Dyrbye, L.N.; Thomas, M.R.; Shanafelt, T.D. Systematic review of depression, anxiety, and other indicators of psychological distress among US and Canadian medical students. *Acad. Med.* **2006**, *81*, 354–373. [\[CrossRef\]](#)
17. Alqahtani, N.H.; Abdulaziz, A.; Hendi, O.M.; Mahfouz, M.E.M. Prevalence of burnout syndrome among students of health care colleges and its correlation to musculoskeletal disorders in Saudi Arabia. *Int. J. Prev. Med.* **2020**, *11*, 38. [\[CrossRef\]](#)
18. El-Masry, R.; Ghreiz, S.M.; Helal, R.M.; Audeh, A.M. Perceived stress and burnout among medical students during the clinical period of their education. *Ibnosina J. Med. Biomed. Sci.* **2013**, *5*, 179.
19. Dahlin, M.; Joneborg, N.; Runeson, B. Performance-based self-esteem and burnout in a cross-sectional study of medical students. *Med. Teach.* **2007**, *29*, 43–48. [\[CrossRef\]](#) [\[PubMed\]](#)
20. GBD 2016 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: A systematic analysis for the global burden of disease study 2016. *Lancet* **2017**, *390*, 1211–1259. [\[CrossRef\]](#)
21. Njim, T.; Makebe, H.; Toukam, L.; Kika, B.; Fonkou, S.; Fondungallah, J.; Fondong, A. Burnout Syndrome amongst Medical Students in Cameroon: A Cross-Sectional Analysis of the Determinants in Preclinical and Clinical Students. *Psychiatry J.* **2019**, *2019*, 4157574. [\[CrossRef\]](#) [\[PubMed\]](#)
22. Erschens, R.; Keifenheim, K.E.; Herrmann-Werner, A.; Loda, T.; Schwille-Kiuntke, J.; Bugaj, T.J.; Nikendei, C.; Huhn, D.; Zipfel, S.; Junne, F. Professional burnout among medical students: Systematic literature review and meta-analysis. *Med. Teach.* **2019**, *41*, 172–183. [\[CrossRef\]](#) [\[PubMed\]](#)