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Academic burnout, self-esteem, coping with stress and gratitude among Polish medical students – a cross sectional study

Wypalenie akademickie, samoocena, radzenie sobie ze stresem oraz wdzięczność wśród polskich studentów kierunku lekarskiego – badanie przekrojowe

Sylwiusz Niedobylski[1] ABCDEF, https://orcid.org/0000-0001-7266-623X
Kacper Michta[1] ABCDEF, https://orcid.org/0000-0003-3303-4859
Konrad Wachoł[1] ABEF, https://orcid.org/0000-0001-9467-680X
Karolina Niedziałek[1] ABEF, https://orcid.org/0000-0001-7336-353X
Urszula Łopuszańska[1] CDE, https://orcid.org/0000-0001-6517-7577
Marzena Samardakiewicz[1] ABCDE, https://orcid.org/0000-0002-2793-0756
Michał Próchnicki[2] DEF, https://orcid.org/0000-0001-8993-9767

[1]Chair and Department of Psychology, Medical University of Lublin, Poland
[2]I Department of Psychiatry, Psychotherapy and Early Intervention, Medical University of Lublin, Poland

Abstract

Introduction: Academic burnout is emerging as an essential obstacle in education process. Students of the most challenging fields of study with high degrees of stress are thought to be at the highest risk. Medical studies are considered one of them. The aim of the study was to measure the levels of academic burnout, stress and gratitude among Polish medical students of Medical University of Lublin, and determine their styles of coping with stress.

Materials and methods: A cross-sectional study was conducted using a questionnaire comprised of the following: Maslach Burnout Inventory – Student Survey (MBI-SS), Rosenberg Self-Esteem Scale (SES), a Coping Inventory for Stressful Situations (CISS) and a Gratitude Questionnaire Six-Item form (GQ-6). The data was obtained from 773 medical students.

Results: Total number of 169 students (21.86%) met criteria for academic burnout. When it comes to 354 participants, they displayed signs of low self-esteem (45.8%). The number of 18 students showed low level of gratitude, while gratitude level of the majority of them – 496 (64.17%) was high. The most common style of coping with stress was emotions-oriented style – 354 students (48.29%), followed by task-oriented style – 345 students (47.07%). Burnout subscales turned out to be associated with age, year of study, self-esteem, gratitude and different styles of coping with stress to the various extent.

Conclusions: The prevalence of academic burnout among Polish medical students is high compared with general population across various occupations. Utilisation of protective characteristics of high self-esteem, gratitude and healthy coping methods can result in development of efficient anti-burnout prevention strategies and intervention tools.

Keywords: burnout, self-esteem, stress, gratitude, students

Streszczenie

Wstęp: Wypalenie akademickie staje się istotną przeszkodą w procesie kształcenia. Uważa się, że najbardziej zagrożeni są studenci najtrudniejszych kierunków studiów o wysokim poziomie stresu. Jednym z nich są studia medyczne. Celem badania był pomiar poziomu wypalenia akademickiego, stresu i wdzięczności wśród polskich studentów medycyny UM w Lublinie oraz określenie ich stylów radzenia sobie ze stresem.

Materiał i metoda: Przeprowadzono badanie przekrojowe za pomocą kwestionariusza składającego się z następujących elementów: Inwentarz Wypalenia Maslach – Modyfikacja dla Studentów (MBI-SS), Skala Samooceny Rosenberga (SES), Inwentarz Radzenia Sobie w Sytuacjach Stresowych (CISS) oraz sześciopunktowy formularz kwestionariusza wdzięczności

(GQ-6). Dane uzyskano od 773 studentów kierunku lekarskiego.

Wyniki: 169 studentów (21,86%) spełniło kryteria wypalenia akademickiego. 354 uczestników wykazywało oznaki niskiej samooceny (45,8%). 18 uczniów wykazało niski poziom wdzięczności, natomiast wdzięczność większości z nich – 496 (64,17%) była wysoka. Najczęstszym stylem radzenia sobie ze stresem był styl emocjo- nalny – 354 uczniów (48,29%), następnie zadaniowy – 345 uczniów (47,07%). Podskale wypalenia zawodowego okazały się w różnym stopniu związane z wiekiem, rokiem studiów, samooceną, wdzięcznością i różnymi stylami radzenia sobie ze stresem.

Wnioski: Rozpowszechnienie wypalenia akademickiego wśród polskich studentów kierunku lekarskiego jest wysokie w porównaniu z populacją ogólną. Wykorzystanie protekcyjnego wpływu wysokiej samooceny, wdzięczności i zdrowych metod radzenia sobie ze stresem może zaowocować opracowaniem skutecznych strategii zapobiegania wypaleniu i narzędzi interwencyjnych.

Słowa kluczowe: wypalenie, samoocena, stres, wdzięczność, studenci

Introduction

Academic burnout is a state of physical and mental fatigue associated with university studies. The multi-dimensional model of burnout developed by Maslach [1] is based on three dimensions - emotional exhaustion, depersonalization and decreased satisfaction with professional performance, which can be translated into academic conditions. The scale of academic burnout is difficult to assess, not only because of the relatively small amount of research conducted regarding this topic, but also due to the strong cultural influence and taboo. Academic burnout in various populations affects from several [2] to several dozen [3] percent of the respondents. In medical fields, academic burnout has a negative impact on professionalism, ethics, empathy and contact with the patient, while increasing the willingness to quit studies, the risk of developing depression or the appearance of suicidal tendencies. Among the population of medical students, the prevalence of depression symptoms was estimated at 27.2%, and the occurrence of suicidal thoughts at 11.1%, which is higher than in the general population of peers [4], which may correlate with the occurrence of academic burnout.

The causes can be categorised into five groups [5], in which the following are distinguished: material overload, external influences, lack of motivation, mental and physical health problems, as well as the behaviour and attitude of teachers. The medical studies pose a considerable challenge for students since the very beginning, due to a number of causes, among which there are the enormous amount of knowledge to be acquired, or the contact with the human corpse during anatomy classes, which can be a huge emotional burden as well.

The growing awareness of the importance of professional and academic burnout has caused an increasing interest of researchers in this phenomenon, which has resulted in a growing amount of research regarding the scale of the problem, potential factors correlating with burnout, and ways to prevent it in recent years. Due to the significance and frequency of this phenomenon and its consequences, we decided to conduct research aimed at determining the frequency of the academic burnout and the relationships between various factors in the population of medical students at the Medical University of Lublin.

Materials and methods

Design and population

A descriptive, cross-sectional study was conducted to assess the academic burnout levels in Polish medical students in relation to their self-esteem, strategies for coping with stress and gratitude. Students on six-year Polish-division MD program from Medical University of Lublin, Poland were surveyed from 8th of May 2020 to 18th of June 2020, using a set of questionnaires and a demographic and general information form. A total of 773 (mean age: 22 years old) students got voluntarily included in the study. The study got approved by Bioethics Committee of the Medical University of Lublin, decision no. KE-0254/119/2020.

Design and population

Data were obtained with the use of self-administrated, closed-format survey consisting of the following questionnaires: general information form, a Maslach Burnout Inventory (MBI), The Rosenberg Self-Esteem Scale (SES), The Coping Inventory for Stressful Situations (CISS) and The Gratitude Questionnaire Six-Item form (GQ-6).

The General Information Form was divided into two parts. The first one regarded demographic data – sex, year of birth, grade, residence, the distance between the university and family house and employment information. The other one included academic-related data, in particular items about the time elapsed between passing Matura school-leaving exams and starting MD studies, number of past or present studied fields, changes of university and reasons for choosing to study medicine.

CISS

The Coping Inventory for Stressful Situations (CISS) is used to diagnose the style of coping with stress. The original tool, created in English [6] was adapted for Polish population and validated by Szczepaniak, Strelau and Wrześniewski in 1996 [7]. The examined person is to determine the frequency with which he or she undertakes the action described in each of 48 items on a five-point scale, where 1 is "never" and 5 is "very often". The results are presented on three scales - SSZ (task-focused style), SSE (emotion-focused style), SSU (avoidance-focused style), which is subdivided into the ACZ (engaging in replacement activities) and PKT (seeking social contacts) subscales. The Polish adaptation is recommended as reliable (high internal consistency of the scales – Cronbach's alpha coefficients within 0.78-0.90, satisfactory stability in the re-examination after 2 weeks - correlation coefficients within 0.73–0.80) and accurate in measuring styles of coping with stress [7].

SES

The Rosenberg Self-Esteem Scale is a questionnaire used to measure the general level of self-esteem [8]. The Polish adaptation of the method was carried out by Dzwonkowska, Lachowicz-Tabaczek and Łaguna in 2008 [9]. The questionnaire is one-dimensional and allows to assess the level of general self-esteem understood as a conscious attitude towards the self. The tool consists of 10 items, and the respondent's task is to respond to each of them on a four-point scale (1- "I strongly agree", 4- "I strongly disagree") accordingly to what extent he/she agrees with a given statement. The Polish adaptation is characterized by high internal consistency (Cronbach's alpha coefficients in different age groups are within 0.81-0.83, the tool stability index measured by the test-retest method was 0.83 when measured one week apart and 0.50 when measured one year apart). Validation studies confirmed the accuracy of the Polish adaptation of the SES. The cut-off values were described on a sten scale broken down by gender and age (three age groups 14-18, 19-24, 25-75) [9].

MBI

The Maslach Burnout Inventory General Survey for Students is a tool designed to measure the level of burnout in students. The original version of the questionnaire was developed by Maslach et al. in 1981 [1]. The questionnaire adapted to the academic conditions [10] consists of 16 items, and the respondent determines the frequency of the described conditions on a 7-point Likert scale, where 1 means never, and 7 every day. The grades are scored from 0 to 6. The results are presented in three scales corresponding to three dimensions, on the basis of which the level of burnout can be estimated, i.e. emotional exhaustion – EX (items 1, 2, 3, 4, 6, cynicism - CY (items 8, 9, 13, 14, 15 and personal efficacy – PE (items 5, 7, 1, 11, 12, 16). Due to the lack of the predefined norm values in Polish students population, the abnormality thresholds were determined based on the results of validation study across different occupational groups in Poland [10]. The 75th percentile for the scales of emotional exhaustion and cynicism was adopted as the normal cut-off points, and 25 for the scale of personal efficacy.

GQ6

The Gratitude Questionnaire – six-item form by McCyllough, Emmons and Tsang from 2002 [11] is a 6-item tool measuring the level of gratitude as a disposition. The respondents, having a 7-point Likert scale at their disposal, where 1 means "I strongly disagree" and 7- "I strongly agree", respond to each of the statements. The analyzes conducted on the original questionnaire confirmed a specific and separate measure of the theoretical construct tested with the GQ6. The Polish adaptation [12] gives the values of the Cronbach's alpha coefficient of 0.71 - lower than the original tool, but satisfactory. Items 3 and 6 are reversed when calculating the result.

Data collection

The research was conducted during the COVID-19 pandemic, at the beginning of a lockdown in Poland. Due to that fact, the students were surveyed with the on-line form uploaded on the Medical University of Lublin online educational platform. The students were informed that the participation is anonymous and voluntary. After the completion of the questionnaire, the data were sent automatically to the researchers' database.

Data analysis

The statistical analysis was performed with the use of Statistica version 13. The normality of the distribution was checked with the Shapiro-Wilk test and the variance homogeneity was assessed with the Levene test. When the criteria of variance homogeneity and normal distribution were met, the significance of differences between two variables was tested using the Student's t-test. When those criteria were not met, the Mann-Whitney U test was used. When difference significance was assessed in more than two groups, in which criteria of variance homogeneity and normal distribution were met, calculations were performed using ANOVA variance analysis with the NIR test. When the criteria were not met, the Kruskal-Wallis test was used, and the post-hoc analyses were performed with the Dunn test. Pearson's r correlation test was used to assess the strength of the relationship between the studied variables. The power of the correlation was

assessed based on the r absolute value: >0.7 strong correlation, 0.7>r>0.3 moderate correlation, >0.3 weak correlation. In the case of qualitative features, the Chi^2 test was used to detect the existence of a relationship between the analysed variables. The results were considered significant at p≤0.05.

Results

General information and demographic data

Total number of 733 students took part in the study. Their age ranged from 19 to 32, mean 22.16 (SD 1.81), most of the respondents were female – 540 (69.86%) vs. 233 males (30.14%). Majority of respondents were during their 1st (38.3%) and 3rd (29.9 %) year of study. Detailed data is described in Table 1.

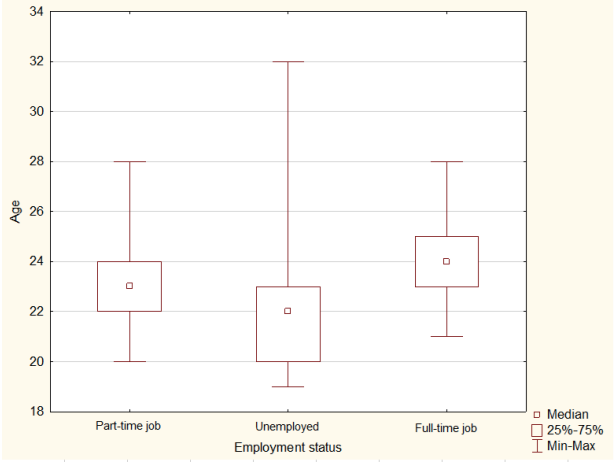
Table 1. The distribution of students for particular years of study

Year of study	*N*	*Percent*
First	296	38.29237
Second	53	6.8564
Third	231	29.88357
Fourth	80	10.34929
Fifth	112	14.489
Sixth	1	0.12937

The most frequent reason for choosing to study medicine was willingness to help others (42.2%), followed by easy access to a job after graduation (18.11%) and ambitiousness of this field of study (9.83%).

The median age of participants varied between groups of different employment status (p=0.001). Students with full-time or part-time jobs were generally older than unemployed ones. The divergence between students with full-time and part-time jobs was not statistically significant. The differences are depicted on Figure 1.

Figure 1. Employment status. Box-plot.



Burnout

In emotional exhaustion and personal efficacy subscales, the majority of the students exceeded the threshold for high burnout (N=368 and N=472, respectively). In the cynicism subscale, most of the subjects displayed moderate burnout (N=384). The three-factor criteria for high burnout were met by 169 students (21.86%). The detailed quantitative data is displayed in Table 2.

Table 2. The results of Maslach Burnout Inventory subscales.

	Low burnout (N)	*Low burnout (%)*	*Moderate burnout (N)*	*Moderate burnout (%)*	*High burnout (N)*	*High burnout (%)*	*Mean score*
EX	103	13.32	302	39.07	368	47.61	3.34
CY	67	8.67	384	49.68	322	41.66	2.46
PE	53	6.86	248	32.08	472	61.06	3.35

The emotional exhaustion and cynicism, but not personal efficacy, were weakly correlated with the age of students. The statistically significant association between emotional exhaustion and age was r= -0.19 (p= 0.001), and between cynicism and age it was r=0.12 (p= 0.001). This indicates that with the rising age, the level of cynicism rose, but the emotional exhaustion decreased. The level of personal efficacy was not linked with age. Predictably, similar statistically significant associations were found in regard to the year of study. The grade was associated negatively with emotional exhaustion (r= -0.19, p= 0.001) and positively with cynicism (r=0.19, p= 0.001), but not with personal efficacy. No statistically significant correlations were found between burnout and sex, the residence, the distance between the university and family house, employment status and the reason for choosing to study medicine.

All three measures of burnout turned out to be moderately associated with the self-esteem of the participants. The statistically significant correlation between emotional exhaustion and self-esteem was r= -0.39 (p= 0.001), between cynicism and self-esteem was r= -0.38 (p= 0.001) and between self-esteem and personal efficacy was r= 0.55 (p= 0.001). Higher self-esteem levels protected against burnout expressed through emotional exhaustion, cynicism and the personal efficacy decrease.

The associations between burnout and different styles of coping with stress were found to be statistically significant as well. The task-oriented style weakly correlated negatively with the emotional exhaustion (r=

-0.27, p= 0.001), with the cynicism (r= -0.25, p= 0.001) and moderately correlated positively with the personal efficacy (r= 0.42, p= 0.001). This indicates that the task-oriented style of coping with stress was associated with lower levels of burnout. The emotion-oriented style moderately correlated positively with the emotional exhaustion (r= 0.43, p= 0.001), with the cynicism (r= 0.38, p= 0.001), and was moderately associated negatively with professional exhaustion (r= -0.41, p= 0.001), which proves this style of coping with stress to be a risk factor of the burnout. The avoidance-oriented style was associated very weakly with the emotional exhaustion (r= 0.08, p= 0.018) and did not correlate with other subscales, although its derivatives – engaging in replacement activities and seeking social contacts - did. Engaging in replacement activities was weakly associated positively with emotional exhaustion (r= 0.14, p= 0.001) and cynicism (r= 0.14, p= 0.001), and was weakly correlated negatively with the personal efficacy (r= -0.10, p= 0.001). Those results display the higher risk of burnout in people that tend to engage in replacement activities. Seeking social contacts did not significantly correlate with the emotional exhaustion, but it weakly correlated negatively with cynicism (r= -0.18, p= 0.001) and weakly correlated positively with personal efficacy (r= 0.24, p= 0.001), which shows that seeking social contacts does not increase or decrease the chance of emotional exhaustion, but it decreases the risk of burnout in measures of cynicism and decreased personal efficacy.

The correlation between burnout measures and gratitude was statistically significant to varying degrees for the different subscales. The gratitude was weakly associated negatively with the emotional exhaustion (r= -0.22, p= 0.001), moderately associated negatively with cynicism (r= -0.35, p= 0.001), and moderately correlated positively with personal efficacy (r= 0.41, p= 0.001). Those results show that high gratitude decreases the risk of developing burnout.

The particular subscales of burnout were correlated with each other as well. The emotional exhaustion was moderately correlated positively with cynicism (r= 0.53, p= 0.001) and weakly correlated negatively with personal efficacy (r= -0.28, p= 0.001). The cynicism was moderately associated negatively with personal efficacy (r= -0.37, p= 0.001).

The statistically significant values of burnout correlations got listed in Table 6.

Self-esteem

The results of the SES questionnaire showed low levels of self-esteem in 354 samples (45.80%), among which 148 (19.15%) were very low. The descriptive statistics got displayed in Table 3.

Table 3. The results of Rosenberg Self Esteem Scale.

Sten	*N*	*Percent*
1+2	148	19.15
3+4	206	26.65
5+6	212	27.43
7+8	160	20.70
9+10	47	6.08

No statistically significant correlations were found between self-esteem and age, sex, the distance between the university and family house, the year of study, employment status and the reason for choosing to study medicine. The statistically significant difference (p = 0.042) was found in Kruskal-Wallis test between the groups of different residence. The post-hoc analysis showed a difference between group of students living in the countryside, and the ones living in the city of 250 – 500 thousand residents (z= 2.84).

Aside from being associated with burnout (Table 6), the self-esteem was proven to be correlated with other factors tested in current research. The statistically significant correlations were found between self-esteem and particular styles of coping with stress: a moderate positive association with task-oriented style (r= 0.45, p= 0.001), a moderate negative relationship with emotion-oriented style (r= -0.53, p= 0.001), a weak negative correlation with engaging in replacement activities (r= -0.14, p= 0.001), and a weak positive correlation with seeking social contacts (r= 0.22, p= 0.001). No statistically significant association with avoidance-oriented style of coping was found. It shows, that the task-oriented style of coping and seeking social contacts are associated with higher self-esteem. On the contrary, the emotion-oriented style of coping and engaging in replacement activities increases the risk of lower self-esteem.

The self-esteem turned out to be in statistically significant, moderate, positive correlation with the gratitude levels as well (r= 0.45, p= 0.001), which means that more grateful students tend to have a better self-esteem.

The statistically significant values of self-esteem correlations got listed in Table 6.

Coping with stress

The descriptive statistics are shown in Table 4.

Two styles of coping with stress were very weakly, positively correlated with the age of respondents – the task-oriented style (r= 0.09, p= 0.001), and engaging in replacement activities (r= 0.07, p= 0.001). Older respondents were more eager to use those styles of coping than younger ones. Only one style though was associated with the year of study. Very weak, positive correlation was found between grade and engaging in replacement activities (r= 0.07, p= 0.001). A use of a portion of the

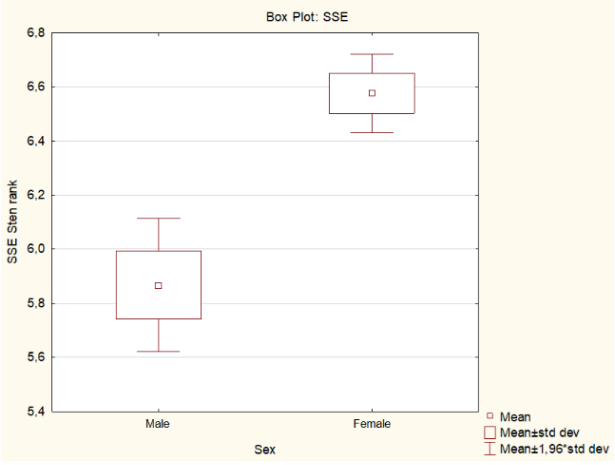
Table 4. The numbers of samples classified in Sten 7 or higher.

Styles	*N*	*Percent*
SSZ	345	47.07
SSE	354	48.29
SSU	43	5.87
ACZ	6	0.82
PKT	120	16.37

SSZ – task-oriented style; SSE – emotions-oriented style; SSU – avoidance-oriented style; ACZ – engaging in replacement activities; PKT – seeking social contacts

styles of coping differed in female group and male group. According to the results of Student's t test, there was a higher level of use of the following styles in the female group: emotion-oriented style (t= -5.08, p= 0.001), avoidance-oriented style (t= -4.46, p= 0.001), engaging in replacement activities (t= -2.30, p= 0.022), seeking social contacts (t= -6.01, p= 0.001). The differences got depicted on Figures 2-5. Some statistically significant correlations were found between the styles of coping with stress and the residence, although they got considered irrelevant. No statistically significant relationship was found between the styles of coping and the distance between the university and family house, employment status and the reason for choosing to study medicine.

Figure 2. The differences of emotion-oriented styles of coping rank between sexes. Box Plot.



Apart from being in relationship with burnout and self-esteem (Table 6), the statistically significant correlations were found between certain styles of coping with stress and a level of gratitude. The correlations involved a weak negative association with emotion-oriented style (r= -0.22 , p= 0.001), a weak positive correlation with avoidance-oriented style (r= 0.14 , p= 0.001), and a moderate positive associations with task-oriented style (r= 0.34 , p= 0.001) and seeking social contacts (r= 0.34 , p= 0.001). More grateful students use task-oriented and avoidance-oriented styles of coping and seek social contacts more frequently, at the same tame the emotion-oriented style is used less frequently by them.

Figure 3. The differences of avoidance-oriented styles of coping rank between sexes. Box Plot.

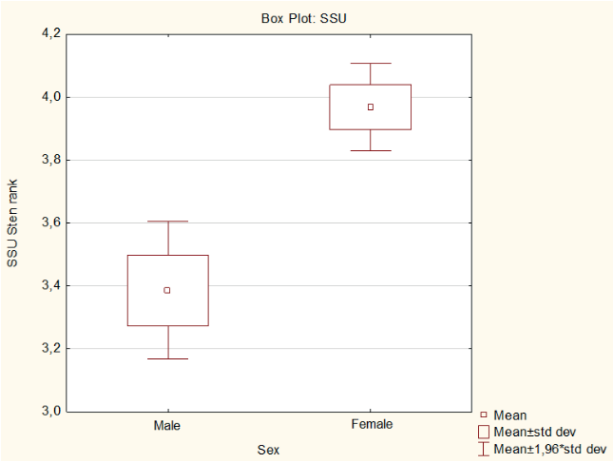


Figure 4. The differences of engaging in replacement activities rank between sexes. Box Plot.

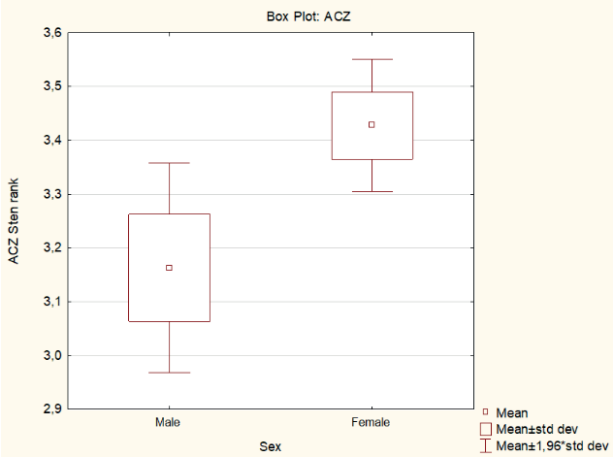
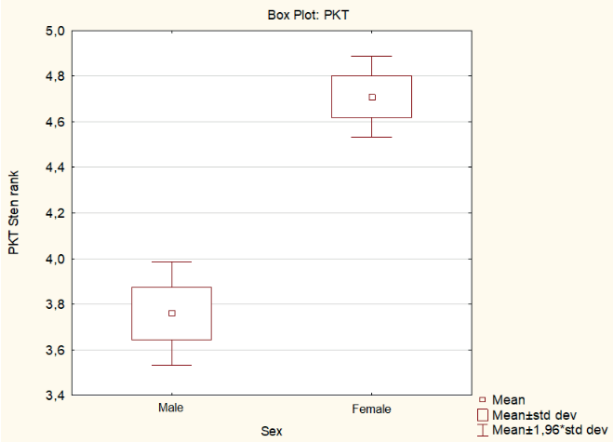


Figure 5. The differences of seeking social contacts rank between sexes. Box Plot.



The statistically significant values of styles of coping with stress correlations got listed in Table 6.

Gratitude

The mean score in GQ-6 questionnaire was 5.38±0.95. Only 18 (2.33%) subjects displayed low level of gratitude, while majority (496, 64.17%) showed high gratitude. The descriptive statistics are shown in Table 5.

Table 5. The mean results of The Gratitude Questionnaire – Six Item Form.

Mean score	*N*	*Percent*
1-2	2	0.26
2-3	16	2.07
3-4	57	7.37
4-5	202	26.13
5-6	299	38.68
6-7	197	25.49

Figure 6. The differences of gratitude level between sexes. Box Plot.

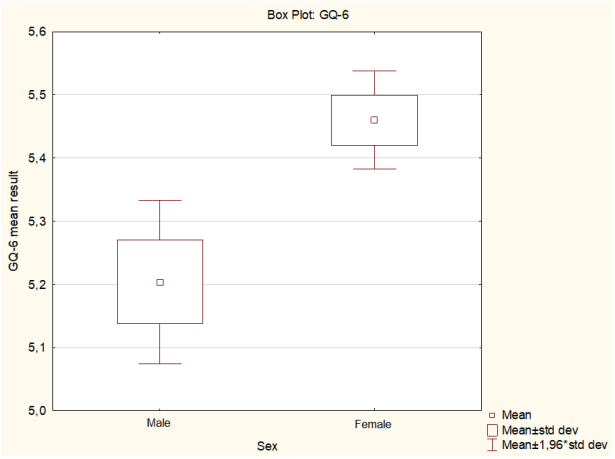


Table 6. The summary of the statistically significant correlation r values. Results which did not reach statistical significance were not included.

Variable	SES	SSZ (CISS)	SSE (CISS)	SSU (CISS)	ACZ (CISS)	PKT (CISS)	EX (MBI)	CY (MBI)	PE (MBI)	GQ-6	Age	Year of study
SES		0.45	-0.53		-0.14	0.22	-0.39	-0.38	0.55	0.45		
		p=0.001	p=0.001		p=0.001	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001		
SSZ (CISS)	0.45		-0.40		-0.18	0.22	-0.27	-0.25	0.42	0.34	0.09	
	p=0.001		p=0.001		p=0.001	p=0.001	p=0.001	p=0.001	p=0.001	p=0.001	p=0.01765	
SSE (CISS)	-0.53	-0.40		0.25	0.31		0.43	0.38	-0.41	-0.22		
	p=0.001	p=0.001		p=0.001	p=0.001		p=0.001	p=0.001	p=0.001	p=0.001		
SSU (CISS)			0.25		0.74	0.69	0.08			0.14		
			p=0.001		p=0.001	p=0.001	p=0.018			p=0.001		
ACZ (CISS)	-0.14	-0.18	0.31	0.74		0.17	0.14	0.14	-0.10		0.07	0.07
	p=0.001	p=0.001	p=0.001	p=0.001		p=0.001	p=0.001	p=0.001	p=0.004		p=0.042329	p=0.048
PKT (CISS)	0.22	0.22		0.69	0.17			-0.18	0.24	0.34		
	p=.000	p=0.001		p=0.001	p=0.001			p=0.001	p=0.001	p=0.001		
EX (MBI)	-0.39	-0.27	0.43	0.08	0.14			0.54	-0.28	-0.22	0.07	-0.19
	p=0.001	p=0.001	p=0.001	p=0.018	p=0.001			p=0.001	p=0.001	p=0.001	p=0.042329	p=0.001
CY (MBI)	-0.38	-0.25	0.38		0.14	-0.18	0.54		-0.37	-0.35	0.12	0.19
	p=0.001	p=0.001	p=0.001		p=0.001	p=0.001	p=0.001		p=0.001	p=0.001	p=0.001582	p=0.001
PE (MBI)	0.55	0.42	-0.41		-0.10	0.24	-0.28	-0.37		0.41		
	p=0.001	p=0.001	p=0.001		p=0.004	p=0.001	p=0.001	p=0.001		p=0.001		
GQ-6	0.45	0.34	-0.22	0.14		0.34	-0.22	-0.35	0.41			
	p=0.001	p=0.001	p=0.001	p=0.001		p=0.001	p=0.001	p=0.001	p=0.001			
Age		0.09			0.07		-0.19	0.12				
		p=0.017645			p=0.042329		p=0.001	p=0.001582				
Year of study					0.07		-0.19	0.19				
					p=0.048		p=0.001	p=0.001				

The Student's t test showed statistically significant difference of gratitude levels between male and female groups (t= -3.45 , p= 0.001). Female students were on average more grateful then males, which is depicted in Figure 6. No statistically significant correlations were found between burnout and age, the residence, the distance between the university and family house, employment status and the reason for choosing to study medicine.

The correlations of gratitude with burnout, self-

esteem and styles of coping with stress are described above and summarised in Table 6.

DISCUSSION

Burnout

Despite administering the burnout thresholds stricter than ones recommended by the Christina Maslach et al. in original MBI Manual [13] (66 percentile for EX, CY and 33 percentile for PE recommended vs. 75 percentile for EX, CY and 25 percentile for PE in our study) the prevalence of academic burnout in medical students of Medical University of Lublin turned out to be significantly higher than anticipated. It becomes apparent especially when compared with the general population from Polish cross-occupational validation study mean subscale results [10] – EX 2.66 vs. 3.34, CY 1.69 vs. 2.46, PE 4.35 vs. 3.35. The burnout syndrome was found in 21.86% of participating students. Similar tendency regarding burnout in medical students was observed in other universities all over the world – from 7.1% up to 37.5% was reported in studies using MBI-SS questionnaire, which is still quite difficult to compare due to individual country cut off values and different approach to the burnout syndrome diagnosis criteria [14–17]. Comparing the mean values of particular subscales though showed the Lublin results being amongst the highest [14,18–20]. Testing medical students with other MBI versions showed comparable results – from 10% up to 47.8% [21–25]. Other medical fields of study are characterised with similarly high burnout rates as well, including dentistry [26–30], nursing [31–33], and others. Sex of the participants was not correlated with burnout in current study, although the data on that matter tends to vary in different studies – some of them show females to be in greater risk of burnout [34], some display bigger risk in males [35] and others suggest different risks according to the particular subscale considered [20,36]. The level of burnout amongst Lublin students was weakly correlated positively with the age of the participants in EX and CY subscales, and with the year of study in CY subscale, surprisingly though the EX subscale turned out to be correlated inversely with the year of the study. Most of the data from other studies suggests higher risk of burnout in students that are older and further into their education [14,17,18,30,32,34,37–40], although some of them point at the earlier years of study to be a risk factor [20,35], or even show a non-linear correlation, with the peak of burned-out students on the 3rd year [22,31]. Other risk factors for academic burnout identified in some studies include, among others, a period of study (higher in clinical vs. preclinical) [16,17], personality traits [41,42], treatment of a medical condition [31], difficult access to healthcare [43], living arrangement [37], tobacco and alcohol usage [17,37], educational environment [24,30] and dissatisfaction with the field of study [30,31]. The consequences of academic burnout go way beyond worse academic performance or dropping out [31,44]. The results of MBI subscales turned out to be associated with particular residency specialty choices, and prioritising income and prestige factors over the patient care-related motivation. The burnout can extend to the period after the studies and affect some individuals in their work as professionals as well [45]. More serious repercussions of burnout can include some psychosomatic conditions (e.g. gastrointestinal disorders [37]) and psychiatric conditions (e.g. eating disorders [46], sleep disorders [47] depression symptoms [38,43], or even suicidal tendencies [48]). The consequences of burnout can be alleviated or prevented – besides eliminating as many risk factors as possible - through identification and utilisation of protective personal factors, self-help techniques and systemic help strategies. Walsh et al. [49] gathered in their systematic review data concerning possible systemic intervention strategies, most of which resulted in a decrease of academic burnout. The intervention included debriefing sessions, coaching programs, wellness curricula, incentivized exercise programs, or workshops of self-administration of psychotherapeutic tools, e.g. on stress management, mindfulness and others. Mindfulness as a measure to counteract academic burnout was a topic of another systematic review by itself [50], with promising results – one of the reviewed study showed reduction on a single subscale of burnout, others displayed improvements in stress and depression levels. There are other studies that are supporting this tool as successful against burnout as well [51], but not all of them do [52]. Other possibly effective interventions include those associated with general social support [15], active relaxing exercises and physical activity [15,37,53], empathy and emotional intelligence trainings [54–56] or extracurricular activities, especially associated with music [57]. An impact of e-learning will not be discussed due to the fact that the study was conducted in the first months of lockdown, so its impact was considered negligible.

Self-esteem

Self-esteem is strongly correlated with the academic effectiveness of students [58–60]. It has been shown that a higher level of self-esteem protects against burnout in measures of emotional exhaustion, cynicism and a decline in personal efficacy. Among the surveyed students of the Medical University of Lublin, a large percentage are respondents with low (45.80%) and very low (19.15%) self-esteem, which accounts for over half of the surveyed students. In a study [61] conducted in 2019, data showed that as many as 21% of first-year medical students have low self-esteem, which makes them susceptible to stressful

factors. Despite that, the authors argue that this does not have to affect further education and success, which was also noted in the Khan study in 2021 [62]. As confirmed by numerous studies [63], people with high self-esteem have better coping skills and lower general anxiety, which reduce the risk of burnout. Corresponding results were achieved in the group of nursing students during their 3 years undergraduate studies, when it was noticed that with increasing stress, the self-esteem of respondents decreased over time [64]. In a 2018 study [65], the authors noted a correlation between burnout and empathy as well as self-esteem. Low self-esteem and high levels of stress and anxiety may lead to quitting the profession [66], which is probably related to burnout. This is confirmed by the study by Freire [67], who found the correlation of the occurrence of burnout among anesthesiologists with low self-esteem and depressive disorders related to work-related stress. That is why it is so important to choose the right technique of coping with stress at the academic level. Our study showed a significant correlation between the degree of self-esteem of the respondents and the stress coping technique they declare. The results show that people using the task-focused style have a higher self-esteem. It was also found that the style focused on emotions and engaging in replacement activities can lower self-esteem. Moreover, our study found that self-esteem is further related to the level of gratitude. Among our respondents, more grateful people enjoy higher self-esteem. This is confirmed by the Congo's research [68] on the relationship between gratitude, self-esteem, social support and life satisfaction among students. The authors showed that grateful people tend to perceive received social support from others, which may raise their self-esteem. On this basis, it can be concluded that it is gratitude that has a key impact on the level of burnout, and self-esteem is a mediator in this correlation.

Coping with stress

As for the strategy of coping with stress, our study showed that the use of the task-focused style by students (SSZ, 47.07% of the respondents) translates to a reduced risk of academic burnout, and the style focused on emotions (SSE, 48.29% of respondents) increases the risk of burnout, which is confirmed by numerous studies, both among students and medical professionals [69–72]. Together, these two dominant strategies, accounting for 95%, can be used as a reference for developing effective methods of coping with burnout, where those using SSE see educational elements as problems and SSZ as challenges. Marcysiak et al. noticed that, as in our study, a higher frequency of avoidance-focused style was observed among the female part of the respondents [69]. Banasiewicz et al. obtained results indicating the correlation in a group of midwives not participating in pregnancy termination: with the SSZ strategy in emotional exhaustion (r = -0.27 v -0.24), and with the SSE strategy (r = 0.43 v 0.181), while in the case of the avoidance-focused style (SSU) the results differed (r = 0.08 v -0.203) [72]. However, there are no satisfactory studies on the student population using the CISS form, so one has to be careful when drawing direct conclusions from studies on other populations to avoid an extrapolation bias. Therefore, from the very beginning of studies at university, one should strive to develop methods of coping with stress that will allow one to control it effectively. Currently, confirmation of this phenomenon has been found, but further work is required on methods of intervention in style, in order to increase the overall satisfaction with studying and improve the quality of education [73].

Gratitude

Gratitude as the quality of being thankful and appreciative of the people, events and situations in life is suggested as an emerging prevention target of burnout as well. In medical students of Medical University of Lublin the gratitude significantly correlated with all three measures of burnout – EX (r=-0.22), CY (r=-0.35), PE (r=0.41) – gratitude turned out to be protective factor against academic burnout. It was associated with other measured traits as well – more grateful students tended to have higher self-esteem, use healthy coping strategies more frequently, and less healthy ones less often (with an exception of the avoidance-oriented coping). The strength of the effect could not be compared with other populations due to the fact, that the current study is the first one to assess the relationship of gratitude and academic burnout. It was associated though with some factors linked with the burnout, such as subjective well-being of students [74], their learning engagement and results [75–77], lower substance abuse and lower rate of depression symptoms and suicidal tendencies [78]. Gratitude and burnout relationship is quite well-explored in sport psychology – high gratitude is associated with lower burnout in young athletes [79–81]. Positive impact of gratitude is well-documented regarding the occupational burnout as well – grateful healthcare professionals were on average less burned out, depressed, had higher quality of life, physical health, better lifestyle behaviours and were even better rated by their patients [82–87]. The same applies for different professions [88,89]. Gratitude can be a basis of an intervention strategy – keeping a journal with frequent records of things to be grateful for was proven to raise the level of general gratitude, lower the risk of burnout and cause all other positive consequences listed above [77,79,84,87].

Conclusion

The prevalence of burnout among medical students of Medical University of Lublin is unexpectedly high. Academic burnout as a cause and a risk factor of not only low learning efficacy and fewer achievements, but also psychosomatic (e.g. gastrointestinal disorders) and psychiatric conditions (e.g. eating disorders, sleep disorders, depression symptoms, or suicidal tendencies). Utilisation of protective characteristics of high self-esteem, gratitude and healthy coping methods as well as self-help techniques and systemic help strategies can result in development of efficient anti-burnout prevention strategies and intervention tools. Lowering academic burnout levels is important for entirety of academic society.

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Conflict of interest

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Corresponding author

Sylwiusz Niedobylski
e-mail: sniedobylski@gmail.com
Chair and Department of Psychology, Medical University of Lublin, Poland

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