

# Burn-out and mental health of minority medical students in Hungarian medical education.

Zsuzsanna Szél (✉ [szel.zsuzsanna@phd.semmelweis-univ.hu](mailto:szel.zsuzsanna@phd.semmelweis-univ.hu))

Semmelweis Egyetem Magatartástudományi Intézet <https://orcid.org/0000-0002-4849-8536>

Zsuzsa Gyórfy

Semmelweis Egyetem Magatartástudományi Intézet

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## Research article

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# Abstract

**Background** Previous researches suggested that minority students are more exposed to discrimination and mistreatment at university, therefore may have higher risk of mental and physical health problems.

**Methods** An online questionnaire was conducted among medical students of the 4 Hungarian medical universities (N=530). The survey contained questions about general demographic data, health behavior, burnout, mental and physical health issues and discrimination.

**Results** 29.6% of students self-identified as minority. High level burnout was indicated by 48.1% of respondents, while another 27.0% showed moderate level. High level burn-out was associated with minority status (84.6% vs. 71.0%;  $p < 0.001$ ), discrimination (83.0% vs. 68.5%,  $p < 0.001$ ), lower level of social support (89.0% vs 69.0%,  $p < 0.001$ ) and higher levels of perceived stress (57.1% vs. 95.4%) in the chi-squared test. Higher scores on trait ( $B = 0.123$ ;  $p < 0.001$ ) and state anxiety ( $B = 0.082$ ;  $p < 0.001$ ) subscales of STAI and lower score of resilience ( $B = -0.168$ ;  $p < 0.001$ ) were significantly associated with higher level of burnout in the univariate model. In our final analysis, perceived stress, resilience, minority identity and experienced discrimination remained significant.

**Conclusions** Belonging to a minority community might need to be considered an essential factor leading to burnout in Hungarian medical students. Our research suggests that minority medical students have poorer mental health and higher risk for burnout.

## Background

### *On Minority Medical Students*

The presence and everyday experiences of minority students and doctors, increasing the diversity of caregivers has been a crucial topic in international literature since the 1990s (1-4). These studies show that minority students and medical professionals are disadvantaged in several areas or experience discrimination starting from the admission procedure (1, 2, 5), through experiencing explicit or implicit day-by-day rejection during the training (6-9) or the questioning of medical competences (6, 10, 11) up until the lack of role models or mentors (8, 10, 12).

Beyond the above, minority medical students often have a more disadvantaged background, and they have less social support on the familial as well as the institutional levels (12-16).

Therefore thoughts about dropping out, being behind schedule or early school leaving are more frequent among them (13, 17-19).

### *Minority Doctors and Multicultural Medicine*

Based on the literature, minority doctors might be critical actors in solving inequalities in healthcare (20-22). They are more likely to care for patients belonging to minority communities (23-28), or work in disadvantaged areas (20, 29, 30). Race and gender concordance may influence efficiency of care, patient satisfaction and compliance based on the literature (20, 31-33).

Several studies highlight the significance of mentors or 'role models' in the personal development of medical students - especially in the case of minority students (8, 9, 12, 18, 21, 34, 35). Regarding cultural competences, belonging to a minority community could be an advantage for caregivers: the knowledge of habits, language and problems help them better understand and reassure their patients, and it could present an opportunity for shaping the knowledge and attitude of colleagues (9, 10, 36).

Their role in increasing intercultural sensitivity and thus in creating a more inclusive care could be important also for medical students of the majority, although it is important to note that it is both an opportunity and a burden for minority doctors and medical students (9, 18, 37-39).

Therefore, representatives of concerned minorities cannot be expected to shape a multicultural environment, the active contribution of universities (40, 41), the healthcare system as well as medical communities (e.g. medical associations) (42) are also critical in facilitating diversity and reducing inequities.

### ***On Burnout in General***

The phenomenon of student burnout was first described by Kafry and Pines (43): they considered any situation as a "burnout", in which students were characterized by a diminished interest in their studies, lack of motivation and fatigue. Both external and internal reasons have a determining role in student burnout, and also the interaction of these factors is significant (44). Looking at "external reasons", the massive amount of teaching material, time pressure, stress around exams as well as financial instability proved to be an influencing factor. Beyond all that, facing death/suffering as well as emotional burden could lead to student burnout (45-48). Moreover, the phenomenon is also linked to the fear of dropping out of university (49, 50).

Regarding internal reasons, research found that self-confidence, self-efficacy, control, anxiety, and neuroticism has a clear correlation to student burnout (51-54).

Regarding the trends in the prevalence of student burnout, research does not show a coherent image. The latest studies found that around one-third or half of the medical students is affected by the prevalence of burnout (55-59). According to the meta-analysis conducted by Erschens and colleagues, the rate of burnout varies between 7 and 72 percent depending on the country, means and method of measurement (60). In spite of differing estimates and analyses, these studies stated that the prevalence of burnout is higher among medical students than in case of any of their peers studying at any other university (61). The term "battered child syndrome" referring to the hardships of medical students could also be linked to

this assessment, it refers to the shaming and constant criticizing during training, the complete disregard for students, the suggestion of no personal worth, the threat of punishment or keeping students in perpetual fear (62, 63). According to the latest research the majority of students experienced mistreatment during medical training, and it has a significantly higher prevalence among minority students (15, 57, 64).

As reported by the consistent results of several studies, burnout is strongly related to mental and physical health (65-68).

Starting medical education means a problematic stage in life for medical students (64, 69, 70). It might be particularly demanding for minority students (9, 10, 13-15). Comprehensive knowledge-base is available about the phenomenon of burnout among medical students, however, data is incomplete and controversial when it comes to specific minority groups (for example ethnic or national minorities, sexual or gender minorities) (59, 71-73).

The present research aims to examine what factors could influence the phenomenon of burnout among medical students, placing emphasis on a student group previously not addressed in Hungary: minority medical students.

## Methods

An anonymous online self-administered survey for medical students participating in the Hungarian-language programs of Hungarian medical schools was sent out two times in a message through the student information systems in cooperation with the administration offices. 530 students filled out our questionnaire sent out by the administration offices. The response-rate was 8,86%.

The questionnaire contained questions regarding general demographic data (gender, sexual orientation, region and type of permanent residence) and studies (university, grade), as well as a standardized, Hungarian-language versions of the following psychometric scales: questionnaire about physical symptoms related to psychosomatic stress (PHQ-15), Connor-Davidson resilience scale questionnaire (CD-RISC), WHO Well-being Questionnaire (WB5), Perceived Stress Scale (PSS), survey for Zimet's multidimensional scale of perceived social support (MSPSS), Maslach Burnout Inventory-Student Survey (MBI-SS), Spielberger's State-Trait Anxiety Inventory.

Moreover, our questionnaire contained the following two questions related to minority status and experienced discrimination to be found in the Eurobarometer:

"In the past 12 months have you personally felt discriminated against or harassed on one or more of the following grounds?" (Ethnic origin, Gender (male/female), Sexual orientation (gay, lesbian or bisexual), Being under 30 years old, Religion or belief, disability, Gender identity (transgender or transsexual), For other reasons, I don't know, I did not experience discrimination).

“Where you live, do you consider yourself to be part of any of the following? Please indicate all that apply.” (An ethnic minority, A religious minority, a national minority, A sexual minority (for example, gay, lesbian, bisexual or queer), A gender minority (transgender, transsexual), A minority in terms of disability, Any other minority group (for example people suffering from obesity, longstanding health conditions or mental illness), None.)

During the data assessment procedure, students who indicated that they think they belong to any of the listed minority groups were treated as minority students, and a dichotomous variable was created for indicating experienced discrimination (“yes, experienced” - “no, not experienced”).

In the literature, minority communities are studied in general separately: alongside the protected identity-building features, researchers indicate for example ethnic minorities, sexual and gender minorities, disabled people, etc.. In the course of studying the data used in international literature, we experienced that medical students and doctors belonging to different minority communities exposed to very similar challenges - overt or disguised discrimination, glass ceiling, glass wall -, thus, during the present research, we treated those people who identified themselves as persons belonging to racial or ethnic minorities, migrants or LGBTQ people as „minority”.

### ***Features of Psychometric Scales***

MBI-SS was used for measuring student burnout. The questionnaire is a 7-point Likert scale with 15 items (0-6), whose three subscales can be grouped separately (emotional exhaustion; depersonalization; personal accomplishment). Based on the current literature three categories were formed during data procession for the level of burn out: low, moderate and high (74). Thus the cut-off points were 7-14 points for moderate Emotional Exhaustion, 5-10 points for moderate Depersonalization and 1-17 points for moderate Personal Accomplishment (74). The confidence interval of the entire MBI-SS scale (Cronbach-alpha) was 0.89 in our study, and the various subscales were characterized by the following values: emotional exhaustion: 0.84; depersonalization: 0.86; personal accomplishment: 0.83.

For measuring the level of experienced stress, the Perceived Stress Scale – PSS questionnaire was used (75, 76). The questionnaire consists of 10 items, and a 5-point Likert scale (0-4) is available for the respondent to assess how frequently a given thought or feeling was characteristic in the past month. Based on the answers - after decoding the items to be reversed -, and after calculating the total score, the amount of general stress experienced in the last period by the respondent could be deduced. During the present assessment, the value of the PSS-10 Cronbach-alpha was 0.88. During processing the results of the examination, a dichotomous variable was created based on the total scores: “below average” and “above average”.

Zimet’s Multidimensional Scale of Perceived Social Support served as an instrument for assessing the level of social support. The 7-point Likert scale of 12 items (1- Very Strongly Disagree, 7- Very Strongly

Agree) could be divided into 3 subscales: Significant Other, Family and Friends. The total score is calculated through dividing the total sum of the items by 12, while the score of each subscale is also determined by adding up the scores of the given questions and then dividing the sum by 4. The value of the Cronbach-alpha of the scale is the following: for Friends: 0.94; for Family: 0.90, for Other: 0.95; the total scale is characterized by a confidence interval of 0.90. During data processing, a dichotomous variable was created based on the results of the scale: "below mean" and "above mean".

For measuring resilience, the Connor-Davidson Resilience questionnaire was used, which consists of 10 items, and respondents choose from a 5-point Likert scale (0 - rarely; 4 - true nearly all of the time) how characteristic is the given statement for them (77). The value of the Cronbach-alpha of the questionnaire is 0.83. The scores available in the questionnaire range from 0 to 40, and higher scores mean higher resilience.

The Hungarian version of the State-Trait Inventory was applied for measuring anxiety. The part of the questionnaire measuring current anxiety contains 20 questions, and when completing them, the respondent has to answer how "they are feeling at the moment" (78). The second part of the questionnaire measures the trait anxiety level, meaning the assessment to what extent the respondent is susceptible to anxiety. This part also consists of 20 items, and the respondent answers the question "how they feel in general". In both cases, respondents have to determine on a 4-point scale how fitting a given statement is (1 – Almost Never, 4 – Almost Always). The total score of both subscales range from 20 to 80 points. Higher scores mean a higher level of anxiety on both subscales. The confidence interval was 0.95 in case of the state anxiety scale, while 0.92 in case of the trait anxiety scale.

### ***Statistical Methods***

Data were weighted by three factors (gender, medical school, and grade) before the evaluation process. SPSS 22.0 software was used for the data processing.

The present study examines which factors may influence burnout among medical students. At first, univariate analysis was made by using Chi-squared test for categorical variables and linear regression for continuous variables, then the variables of significance levels of  $p \leq 0.01$  of the univariate analysis were included in a multivariate binary logistic regression model. During the statistical analysis, demographic data were used as categorical variables, while burnout, experienced stress and social support as a dichotomous variable, and the scores of the state and trait anxiety questionnaire as well as the total sum of resilience as continuous variables.

## **Results**

### ***General Characteristics***

The average age of the respondents was 22 years (SD=2.5). 70.6 percent of the respondents indicated female, almost one-third male (29.1 percent), 2 students "other" as their gender. 89.4 percent of the

respondents determined their sexual identity as heterosexual, 56 students were self-identified non-heterosexuals (Table 1.). Students were divided into two groups based on their grade: those, who indicated grade 1st-3rd were included in one group (pre-clinical) and the students of grade 4th-6th in another (clinical). Around one-third of respondents (29.1 percent) indicated to belong to one of the following minority communities: ethnic (1.7 percent), national (3.8 percent), religious (7.0 percent), sexual (8.5 percent), other (11.3 percent).

Table 1 - Demographic data

	Categories	N (%)
Gender	Female	374 (70.6%)
	Male	154 (29.1%)
	Other	2 (0.4%)
Sexual orientation	Heterosexual	474 (89.4%)
	Other	56 (10.6%)
University	Semmelweis University	244 (46.0%)
	University of Pécs	111 (20.9%)
	University of Szeged	96 (18.1%)
	University of Debrecen	79 (14.9%)
Grade	Pre-clinical	302 (56.9%)
	Clinical	229 (43.1%)
Belonging to a minority community	Minority	157 (29.6%)
	Non-minority	374 (60.4%)

### ***Factors influencing Burnout***

Regarding burnout, students scored 39.6 points on average (SD=16.7). After forming the various subgroups, it is shown that based on the responses, almost the half of the respondents got into the high level of burnout (48.1 percent), while 27.0 percent into the moderate level.

Belonging to a minority community (84.6 percent vs. 71.0 percent;  $p < 0.001$ ), experienced discrimination (83.0 percent vs. 68.5 percent) (Table 2), lower levels of social support (89.0 percent vs 69.0 percent,  $p < 0.001$ ), higher levels of perceived stress (57.1 percent vs. 95.4 percent), as well as lower score of

resilience (B = - 0.168; p<0.001) and higher scores on the scales of trait (B = 0.123; p<0.001) and state anxiety (B = 0.082; p<0.001) (Table 3.) showed a significant association to higher level of burnout in the univariate analysis.

[Table 2. near here]

[Table 3. near here]

Belonging to a minority community, experienced discrimination, perceived stress, as well as the effect of resilience, remained significant in the multivariable model (Table 4). The results of the present research show that minority identity (0.732; p=0.028), experienced discrimination (0.793; p=0.004) and higher levels of perceived stress (2.31; p<0.001) increase the risk of burnout, while resilience appears as a protective factor (0,116; p<0.001).

Table 4 - Bivariate regression model

	p-value	(B)
<b>Resilience</b>	<b>&lt;0.001</b>	<b>-0.116</b>
STAI state	0.322	NA
STAI trait	0.326	NA
<b>Non-minority</b>	<b>0.028</b>	<b>-0.732</b>
<b>Minority (ref.)</b>		
<b>Not experienced discrimination</b>	<b>0.004</b>	<b>-0.793</b>
<b>Experienced discrimination (ref.)</b>		
<b>High level of perceived stress</b>	<b>&lt;0.001</b>	<b>2.310</b>
<b>Low level of perceived stress (ref.)</b>		
High level of social support	0.119	NA
Low level of social support (ref.)		

## Discussion

In our research, in univariate analysis, higher level of burnout showed a significant relation to minority status, to experienced discrimination, to perceived stress, to higher scores on STAI sub-scales as well as with lower levels of social support and lower scores of resilience. In the multivariate model, perceived stress, resilience, minority identity and experienced discrimination remained significant.

In our study, 71.0 percent of students were included in the group characterized by moderate or high levels of burnout, that is by the results of the latest meta-analyses (60, 79).

### ***Belonging to a Minority Community and Burnout***

Previous studies arrived at differing conclusions regarding the correlation of burnout and belonging to a minority community: while some studies found less prevalence of burnout in cases of ethnic minorities, which were explained by higher resilience to stress based on former life experiences of people belonging to ethnic minorities (71, 73), or by the protective impact of “racial identity” (80), another research showed higher prevalence of burnout among people belonging to sexual and gender minority (SGM) (14). At the same time, those students who belonging to ethnic minority and experienced discrimination or mistreatment more likely to suffer from burnout (73). In our present research, we found that minority students are more exposed to burnout. This difference could arise from the sampling procedure (online survey), from the fact that minorities were treated as one group during data processing, or from the unique historical and political climate of Hungary as it is highlighted in the study of van Iterson and Nenadović (81) which indicated that the spread of extremism and the hostility towards different groups (antisemitism, racism, xenophobia, and homophobia) in Hungary may be originated of certain political and historical events of the two world wars.

### ***Discrimination and Diversity in the University***

Previous studies shows that anxiety, depression, and stress are more frequent among SGM students (14, 82). Minority students consider the diverse educational environment as essential or as an advantage in several one-institutional surveys (22, 83). Other studies state that diversity in the university has an impact on the training in general (34, 38). Female students, as well as minority students, are more receptive towards the appearance of racial diversity and gender equality at the university (84-86). At the same time, minority students evaluate the efforts of institutions for diversity as weaker, they are less content with the inclusivity of universities (13, 14). Discrimination, abuse or mistreatment experienced by the students increases the probability of career change, it correlates to burnout among students (57, 58). Our present study also indicated that experienced discrimination and the need for diversity in the university among minority as well as female students are more frequent (86).

### ***Experienced Stress and Burnout***

In our study, the prevalence of burnout significantly correlated to high levels of perceived stress scores both in the univariate and multivariate models. Several previous studies draw attention to the intensive stress burden as well as its impact on the mental health on medical students, residents and doctors (87-92). Perceived stress could have a significant impact on the performance of students and on burnout (93-95). Some studies reported the prevalence of higher stress levels among minority students (14-16, 82). Some studies raise the issue that the performance of students, professional personality, and habits related to alcohol or drug consumption are influenced by intense stress as well (87, 89, 95). On the other

hand, some studies draw attention to the correlation of cynicism and lower levels of empathy to intense stress (87).

### ***Resilience and Burnout***

In our present research, resilience appears as a protective factor against burnout. According to the definition in the literature, resilience is “a dynamic capability which can allow people to thrive on challenges given appropriate social and personal contexts” (96). Certain studies attach great importance to resilience regarding coping with professional challenges, and thus indirectly regarding burnout (97-99). Resistance against burnout is further supported by social connections, better quality of life, less stress and a more positive university environment, maintenance of a positive worldview, as well as work-life balance, spirituality or the increase of reflection (50, 97). Social support – student groups, minority doctor-mentors or role models – furthermore, programs supporting student progress - even before the application - and updating and presenting policies against discrimination at the university or clinical environment in order for the students to have an overview where they can report discrimination experienced by them and where can they get help, could become significant protective resources (10, 13, 19, 100, 101).

### ***Proposed Solutions, Efforts***

Burnout has an impact on the performance, the mental and physical health, career change of doctors and medical students, the doctor-patient relationship, furthermore only healthy caregivers can offer quality care (55, 88, 102).

Faculty diversity programs could mean an appropriate solution for increasing diversity and thus decreasing inequalities. Most of these programs aim to recruit and keep students belonging to minority communities and to improve the cultural conditions at the university (35). Another critical element of such programs is ensuring the availability of professional mentors (12, 18, 21, 35, 101).

University training has a vital role in the support of minority students, in the improvement of attitudes and competencies related to minorities, in the recognition and mitigation of implicit biases or everyday microaggressions (85, 103-109) to prepare medical students for the care of a population being diverse in many respects.

### ***Strengths and Limitations***

The present study has several strengths and limitations.

We believe it is essential that our research is one of the first studies to deal with the appearance of burnout among medical students belonging to minority communities in Hungarian medical schools. Furthermore, another strength of the research is that students belonging to sexual minorities appeared in a ratio expected from large sample analyses, and the fact that the proportion of missing responses was minimal, only 0.466 percent referring to the entire survey.

The low response rate, which might have been intensified by the sensitive and divisive research topic, the fact that students were reached through an official, university forum and the online nature of the survey could all appear as limitations to the present study. We aimed to mitigate the potential biases due to the low response rate through three-dimensional weighting before analysis.

Minority identity was assessed through self-declaration, and students belonging to particular minorities were treated as one group during the analysis, which could also appear as limitations to the study. In order to eliminate the risk of errors due to the grouping of minorities, we examined minority groups separately, and we found that the prevalence of burnout is remained higher among the various minority groups than in the case of majority (71.0% vs. 81.5-100.0%).

## Conclusion

Based on the present analysis, it can be stated that burnout is more frequent among minority students, and related to higher levels of experienced discrimination. During the present study, perceived stress significantly correlated with students' burnout. Meanwhile resilience appeared to be important protective factor against burnout.

In this context, decreasing the stress burden of students, actions to combat discrimination or microaggression could significantly cut back on the appearance of student burnout. Prevention against burnout should start as early as possible, preferably during university years.

## Abbreviations

PHQ-15 – 15-itemed questionnaire about physical symptoms related to psychosomatic stress

CD-RISC - Connor-Davidson resilience scale questionnaire

WB5 – WHO 5 itemed Well-being Questionnaire

PSS - Perceived Stress Scale

MSPSS - Zimet's multidimensional scale of perceived social support

MBI-SS - Maslach Burnout Inventory-Student Survey

STAI - Spielberger's State-Trait Anxiety Inventory

LGBTQ – Lesbian, Gay, Bisexual, Transsexual, Queer/Questioning

# Declarations

**Ethics approval and consent to participate:** Our study was approved by the Ethics Committee of Semmelweis University Budapest. (ref. number: 214/2016). We used an online questionnaire for data collection during the research; we did not use any invasive sampling or other intervention. On the opening page of our online questionnaire, we informed all participants about the aims of our research and the usage of collected data. Informed consent was given by the participants by actively ticking a check-box on the first page of the questionnaire after reading the aims and information. Our research has been conducted in full accordance with the World Medical Association Declaration of Helsinki

**Consent for publish:** Not applicable.

**Availability of data and materials:** Because of the sensitivity of the collected data, Hungarian Privacy Act approves no authorisation for the database to be handed over to any third party.

**Competing interests:** The authors declare that no competing interests exist.

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**Authors' contributions:** ZsSz participated in data analysis and interpretation, wrote the manuscript, read, and approved the final version. ZsGy participated in data analysis and interpretation, revised, read, and approved the final version of the manuscript.

A professional proofreader reviewed the final version of the manuscript.

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