

## Burnout, neurotic symptoms and coping strategies in medical students

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### Summary

**Aims:** Symptoms of burnout are found not only after years of practice in the medical profession but also in the early stages of a medical career – as early as in medical college. Medical studies are considered one of the most stressful majors, leading to early burnout and other related symptoms such as neurotic symptoms. Our aim was to examine this topic by assessing burnout and neurotic symptoms as well as strategies of coping with stress experienced during each year of studies.

**Method:** We used a web-based questionnaire, consisting of the Maslach Burnout Inventory-Student Survey (MBI-SS), Coping Inventory for Stressful Situations (CISS) and Symptom Checklist S-III, and invited medical students at various stages of a 6-year medical course to fill it in online. Questionnaire was filled by 781 students in total.

**Results:** Statistical analysis revealed an interesting pattern of symptoms severity in students, with highest scores at the beginning and at the end of the medical course and the lowest score during the 3rd year of studies. This pattern was clearly visible for MBI-SS Exhaustion, and somewhat less pronounced for MBI-SS Cynicism and S-III scores, where only the decrease of symptoms was significant. Coping strategies seemed to be similar for all medical students with a higher score for the Distraction scale among the 3rd – year students compared with the 2nd-year students.

**Discussion:** These results, however unexpected, seem to be consistent with available literature, emphasizing higher levels of stress experienced during great changes regarding expectations in students at the beginning of their course and in soon-to-be doctors.

**Conclusions:** The results prompt to reflect on ways of countering emerging symptoms of burnout not only in experienced students, but also among those starting medical college.

burnout/stress/neurotic symptoms/students/medical course.

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### INTRODUCTION

The medical profession is one of the occupations that meet almost all the criteria for the emergence of occupational stress. Requirements for physicians often exceed their capabilities and resources offered to them in the workplace are

insufficient. Furthermore, it is a profession of public trust that involves huge professional liability. All these factors are present in addition to an obligation to meet the very high expectations of society and the huge consequences in case of failure. Hence, stress is a fact of doctors' lives. Nonetheless one cannot disagree with the statement that occupational stress relates to many professions where time plays a crucial role, resources are scarce, competition is huge and demands are high. The number of studies showing large levels of work-related stress in many other occupations continues to grow [1-3].

However, despite the fact that doctors are not alone when it comes to experiencing occupational stress, medicine is one of the few areas where equally high requirements are set for people who are just preparing to practise, i.e. medical students. Medical studies are considered one of the most stressful majors as students are expected to learn a large amount of facts in a short amount of time which results in social as well as personal sacrifices [4-6].

The occurrence of stress involves developing strategies to cope with it. Coping with stress can take many forms – we can master it, which is the most promising approach, minimize it or tolerate it [7]. The strategy chosen will depend on many factors – both situational and personal – and the effect will also depend on the type and severity of stress.

Research shows that control-oriented coping strategies act as the best work stress buffers, and those who are relying exclusively on avoidance coping strategies report higher general levels of negative consequences [8]. However, occupational stress can be very diverse, especially when it concerns health sector workers such as physicians and even more so when professional work is combined with academic work. Research is limited in this area. However, according to available literature, the strategies predominantly used are stress prevention, managing anticipated stress or handling stress. The majority of identified strategies can be assigned to several specific categories: problem-focused, where behavioural strategies are placed; cognitive problem-focused; and emotion-focused [9]. On the other hand, coping strategies commonly used by students are positive reframing, planning, acceptance, active coping, self-distraction and

emotional support [10]. Despite differences in naming, most of these strategies find their place in the division made by Endler & Parker [11], who created the theoretically based Coping Inventory for Stressful Situations (CISS).

Prolonged stress may occur where available coping strategies are insufficient and it can be one of the factors contributing to the development of burnout. Some studies indicate the presence of symptoms of burnout already in the early stages of a career, or even before starting a career, i.e. during studies preparing for the profession. Medical studies may be such a case where stress can affect mental health, causing its deterioration, and bring about burnout early in work life [12].

Burnout is a construct developed only a few decades ago, created to name the syndrome of long-term exhaustion and diminished interest. It occurs as a result of exhaustion of an employee's ability to maintain intense involvement in their work and has a significant impact on the quality of work [13]. This concept was introduced to the scientific literature in the 1970s, and tools for measuring burnout symptoms were not constructed until the 1980s and 1990s [14-17]. Such a large discrepancy between concept emergence and tool creation was due to a lack of agreement on a standard, widely accepted definition of burnout.

The main elements of the dispute were the characteristics and dimensions of burnout. Some authors reduced them to the mere dimension of exhaustion, which met with the greatest consensus [18]. Currently the most controversial and widely discussed is the dimension of professional efficacy, as a dimension with the worst performance introducing a dissonance [19-20]. Presently, a three-dimensional concept is the most widely known construct [13].

Stress experienced at work or in the environment related to future work – as it is for students – results not only in the symptoms of burnout, but also signs of dysfunctional behaviours as a response to stress which a person cannot cope with. People exposed to high levels of stress have an increased risk of neurotic disorders [21], and these subsequently can lead to occupational diseases [22].

As the amount of data regarding the risk of burnout among Polish medical students is still

scarce, our aim was to assess the prevalence and severity of burnout symptoms and neurotic symptoms among medical students in each year of the medical course and to assess the characteristics of coping strategies they used, depending on the stage of the medical course they were at. We hypothesized that individuals at the beginning of medical studies would experience more neurotic symptoms than in the 2<sup>nd</sup> year of studies due to a huge difference in the amount of knowledge they were required to assimilate during a medical course compared with high school. In subsequent years, we thought the severity of these symptoms would reduce due to adaptation to the new environment until the 6<sup>th</sup> year, where the prevalence of symptoms may rise, that is when students have to cope with the largest exams and they are just about to start their professional career.

We also hypothesized that burnout symptoms would increase together with the stage of the medical course as chronic stress may cause insufficiency in coping strategies. As there are no data on changes in the coping strategies depending on the year of studies and their stronger association with personality traits [23], we anticipated no change in selected strategies over the course of study.

## METHOD

### Subjects

Overall, 781 medical students participated in the study, including 615 women and 164 men; 2 persons did not reveal their gender. Students of all Polish medical colleges and of all years of study were invited to participate in an online survey via researchers' acquaintances, social media, medical students' forums and mailing lists. Eventually, the questionnaire was filled out by 138 first-year students, 157 second-year students, 183 third-year students, 156 fourth-year students, 104 fifth-year students and 43 sixth-year students. 595 of enrolled participants applied only once before getting into college, 140 had to apply twice and 24 applied three times. 22 students did not declare the way they enrolled to the medical course. 25 students declared studying a second major.

### Materials

To assess the symptoms of burnout we used a translated version of the Maslach Burnout Inventory-Student Survey (MBI-SS). The questionnaire was translated by the team researcher and a back translation was prepared by a native speaker who was not part of this research.

In order to estimate the occurrence of neurotic symptoms, the Symptom Checklist S-III, developed by Aleksandrowicz & Sobański [24], was used.

As stress emergence and related issues are strictly associated with developing coping strategies, the Coping Inventory for Stressful Situations (CISS) created by Endler & Parker [11] was used to assess the type of such strategies used among students. We used a newer factorial structure [25] that divided factors into groups and subgroups. The first two are Task-Oriented Coping and Non-Task-Oriented Coping, which includes Emotion-Oriented and Avoidance-Oriented Coping. The latter is then divided into two strategies – Distraction and Social Diversion.

### Procedure

All three inventories were assembled into one web-based questionnaire using a Google Form document, which was then published online. At the beginning of the online survey informed consent was obtained – before filling in the questionnaire, participants had to read the study description and its aims and by proceeding to the next page they declared voluntary participation in the study.

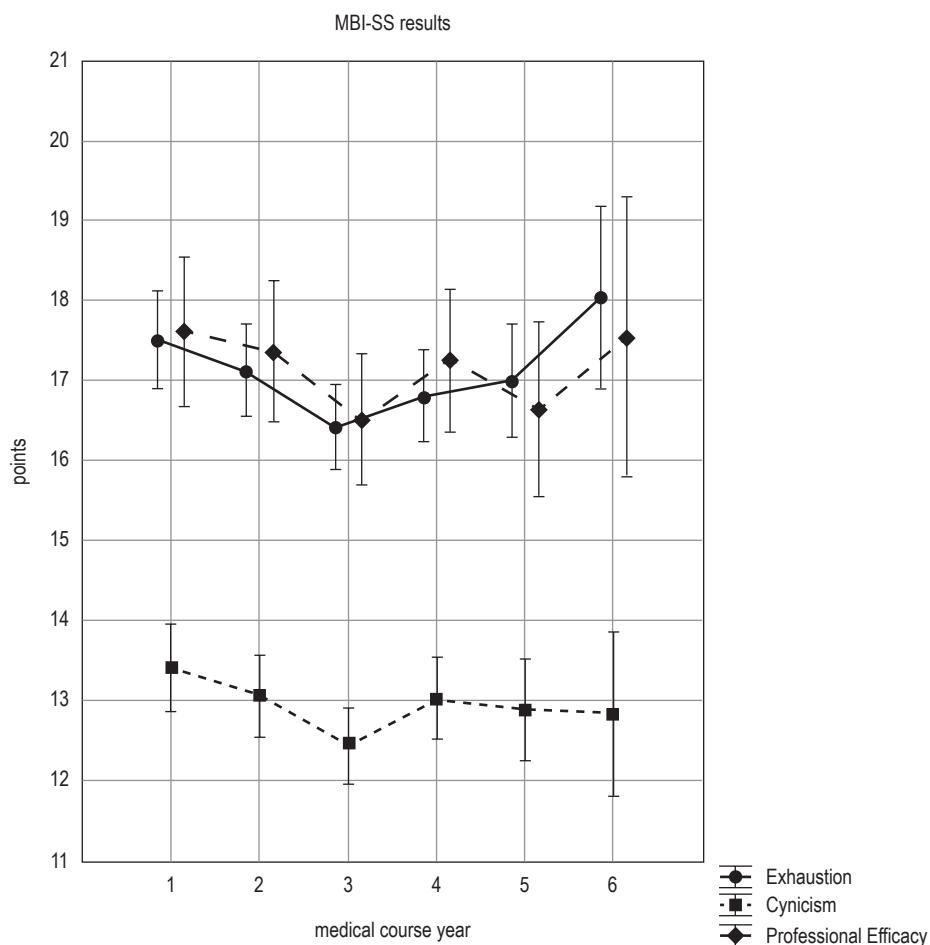
### Statistics

Statistical analysis was performed using Statistica, 12<sup>th</sup> edition, developed by StatSoft. The results are presented in the form of line graphs as mean +/- SD. They were compared between all years of studies using the Mann-Whitney *U*-test. The level of statistical significance was determined at *p*<0.05.

## RESULTS

A line graph depicting the results of the MBI-SS revealed interesting changes over the course of studies (Fig. 1). Although not all changes were statistically significant, there are some characteristic changes visible in the graph. The results for 1<sup>st</sup>-year students seem to be high and go downward over the course of study, resulting in the lowest score in each subscale during the 3<sup>rd</sup> year of the course. Thereafter, the results show an in-

creasing trend with some fluctuations around the 5<sup>th</sup> year of study, reaching the highest score during the final year of the course. All mean values are listed in Table 1. A significant difference has been shown between the 1<sup>st</sup> and 3<sup>rd</sup> year of studies for two subscales – Exhaustion and Cynicism ( $U(308)=9501.00$ ,  $Z=2.90$ ,  $p<0.01$  and  $U(308)=9635.50$ ,  $Z=2.73$ ,  $p<0.01$  respectively). In case of the Exhaustion subscale a significant difference between the 3<sup>rd</sup> and 6<sup>th</sup> year was also reported ( $U(213)=2546.00$ ,  $Z=-2.35$ ,  $p<0.05$ ).



**Table 1**

Scale/subscale	1st year	2nd year	3rd year	4th year	5th year	6 year
MBI-SS						
Exhaustion	$17.52 \pm 3.74$	$17.14 \pm 3.51$	$16.42 \pm 3.39$	$16.85 \pm 3.79$	$17.00 \pm 3.43$	$17.92 \pm 3.74$
Cynicism	$13.41 \pm 3.28$	$13.06 \pm 3.37$	$12.44 \pm 3.00$	$13.08 \pm 3.38$	$12.89 \pm 3.07$	$12.64 \pm 3.09$
Professional Efficacy	$17.62 \pm 6.03$	$17.37 \pm 5.27$	$16.52 \pm 5.26$	$17.28 \pm 5.96$	$16.65 \pm 5.14$	$17.51 \pm 4.98$
S-III	$81.50 \pm 56.35$	$71.29 \pm 45.85$	$61.28 \pm 42.1$	$67.40 \pm 49.02$	$62.50 \pm 41.64$	$79.88 \pm 53.28$

CISS						
Task-oriented	56.55 ± 9.32	56.17 ± 8.97	55.33 ± 10.59	56.96 ± 10.29	54.37 ± 10.31	57.38 ± 9.62
Emotion-oriented	47.20 ± 14.57	47.76 ± 13.06	45.96 ± 14.62	46.29 ± 14.36	48.44 ± 14.64	48.25 ± 15.00
Distraction	17.33 ± 5.39	16.93 ± 5.77	18.35 ± 6.11	18.08 ± 6.09	18.26 ± 6.75	18.19 ± 7.01
Social Diversion	14.82 ± 4.46	15.21 ± 4.66	15.47 ± 4.91	15.13 ± 5.04	15.07 ± 4.02	15.34 ± 3.99

An almost identical pattern of results among students of all years was revealed when analyzing the Symptom Checklist S-III results (see: Fig. 2). In this scale the difference was significant only between the 1<sup>st</sup> and 3<sup>rd</sup> year of studies ( $U(248)=6189.00$ ,  $Z=2.55$ ,  $p<0.05$ ).

As for the CISS questionnaire, there was only one significant difference, between the 2<sup>nd</sup> and 3<sup>rd</sup> year of the medical course in the Distraction subscale ( $U(291)=9170.50$ ,  $Z=-2.07$ ,  $p<0.05$ ). Although score changes on other subscales were much more visible over the course of studies, because of the high dispersion of results and, consequently, high standard deviations, these differences did not reach statistical significance (Fig. 3).

## Discussion

The results of the MBI-SS and Symptom Checklist displayed an unexpected pattern, not found in previous research. Contrary to our hypothesis, they have shown scores fluctuations with higher points at the beginning as well as the end of studies. The most prevalent of the symptoms of burnout were exhaustion and cynicism among 1<sup>st</sup>-year medical students. These results coincide with scores obtained from high school students who exhibited higher scores in the same two subscales during the last years of high school [26]. Neurotic symptoms also showed higher severity in 1<sup>st</sup>-year students compared with those in subsequent years of studies. The severity of symptoms decreased with next years, reaching the lowest scores for 3<sup>rd</sup>-year students. Such a pattern can be associated with changes which students experience at the start of medical studies. These changes are associated not only with greater demands, but also with entering into adulthood, which in turn is associated with greater responsibility and self-reliance. Such stressors, in conjunction with small available resources to cope with stress, can result in

rapid emotional exhaustion and depersonalization. Some studies suggest that adjusting may be more difficult not for all students but for those emotionally vulnerable, who find the first year at a university particularly stressful [27].

The decrease in MBI-SS and S-III scores that was observed among 3<sup>rd</sup>-year medical students may be the effect of adaptation to new conditions. The subsequent increase of burnout symptoms, although very slight in this study, is supported by previous studies [28]. Such high results are usually noted mainly for the emotional exhaustion subscale of the MBI-SS (29). Symptom aggravation in the last years of studies may be associated with a prolonged contact with the patient, to which students may not have been previously prepared. Thus, their psychological resources may not be sufficient to face the patients' suffering and their own lack of competence as still learning. Anticipating the upcoming changes and the need to start professional work can also contribute to an aggravation of symptoms of stress and neurosis, though results do not indicate such a strong exacerbation.

With regard to coping strategies, we found hardly any changes in the selected strategies across the medical course. The only difference found in this research does not have any reference in available literature.

## Conclusions

The study revealed an interesting pattern of burnout and neurotic symptoms, with their greatest severity at the beginning and end of medical studies. When we look at the significant changes taking place both at the beginning of a student's career path and at the end, where they are preparing to perform the functions of a responsible physician, these findings are understandable. However, they also point to the need to optimize the learning process in order to avoid the problem of individuals entering their

career already burned out. By detecting students with an increased risk of burnout at the beginning of their studies, we can largely prevent the negative consequences of stress that specific individuals cannot cope with.

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