Original article

The prevalence of burnout syndrome in medical students

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Received: 3/16/2015 – **Accepted:** 3/7/2016
DOI: 10.1590/0101-60830000000072

Abstract

Background: Burnout syndrome (BS) is a set of psychological symptoms resulting from the interaction between chronic occupational stress and individual factors. These symptoms include emotional exhaustion, depersonalization and decreased professional satisfaction. BS is manifested in a variety of professions and is prevalent in contexts in which health professionals are required to interact directly with the public. **Objective:** To determine the prevalence of BS among medical students at a university in Ceará State, Brazil. **Methods:** Of the 517 students enrolled in their first to eighth semester in 2013, 376 (72.7%) were contacted. A socio-economic evaluation questionnaire and the Maslach Burnout Inventory – Human Services Survey (MBI-HSS) were administered. Statistical analysis was conducted using SPSS 20.0. Two groups – burnout/risk and non-burnout – were compared using the chi-square and likelihood ratio tests with a significance level of 5%. Variables with $p < 0.20$ were included in a multivariate analysis logistical regression model. **Results:** Burnout was detected in 14.9% of the students, and 57.7% showed a risk of developing the syndrome. Logistic regressions showed an association between burnout and "have failed examinations" and "have considered abandoning the course", $p = 0.047$ and $p < 0.0001$, respectively. **Discussion:** Psychopedagogy should be implemented to address the high prevalence of burnout in medical students.

Almeida GC et al. / Arch Clin Psychiatry. 2016;43(1):6-10

Keywords: Burnout syndrome, medical students, emotional exhaustion, depersonalization, job satisfaction.

Introduction

The mental health of medical students has long been a cause for concern. An inordinate number of tasks overload stressful schedules, and demanding responsibilities to learn about and care for human beings drain dedication and become potential triggers or concurrent causes of emotional disturbances. A rupture in doctors' and students' equilibrium may lead to significant psychological changes that are reflected in drug use, depression, suicide and professional dysfunction[1].

Stressors create psychological toxicity that affects medical students' training and activities; such conditions are also present in the courses for other health professions[2-4]. Thus, the excessive study workload; the demanding educational requirements; the lack of time for leisure, family and friends; and individual personality traits such as perfectionism and self-imposed standards become potential triggers of stress and dysfunctional behaviors[1,5-8]. In addition, at certain points during student's medical education, critical stress triggers may emerge, such as contact with patients and serious illnesses and death or the students' graduation, which is accompanied by uncertainty about the future[2,9].

Several methodologies have been proposed to evaluate the stress levels that medical students are subjected to, including the Lipp Stress Symptoms Inventory for Adults[10] and the World Health Organization's Quality of Life Questionnaire. In recent decades, additional methods for investigating levels of suffering and sensations such as mental and physical exhaustion, frustration and failure in the employment context have been developed, including Maslach and Leiter's tool for assessing burnout syndrome (BS)[11].

Burnout is an English term used to describe the cessation of something due to a complete lack of energy. In common parlance, it can also mean being consumed by excessive drug use. Figuratively, it is someone or something that has reached its limits due to lack of energy. Currently, the expression refers to suffering in the workplace context caused by exposure to excessive wear[12]. The term first appeared in the 1953 "*Miss Jones*" case study by Schwartz and Will, which described the work-related illness of a psychiatric nurse. Later, in the 1970s, BS was characterized for the first time. Its symptoms included frequently unspecified clinical manifestations such as fatigue, somnolence, eating disorders, headache and emotional instability[13].

BS is now a significant psychosocial problem with repercussions for diverse professional groups, especially those with direct contact with the public. Studies have shown a high incidence of BS in health professionals[14-16]. BS also occurs in individuals whose activities are psychologically similar to work, such as students[17]. The syndrome results from the interaction between chronic stress at work and individual factors, and its symptoms and signs are grouped into three multidimensional factors: emotional exhaustion (EE), depersonalization (DE) or skepticism and reduced professional satisfaction (PS). BS differs from depression because it is workplace-specific, whereas depression extends to other nonprofessional contexts[16].

In 1981, Maslach and Jackson created the Maslach Burnout Inventory (MBI), which is currently the most commonly used scale in the world for assessing the syndrome[18]. There have been three revisions of the MBI, the first in 1981, the second in 1986 and the most recent in 1996 by psychologist Michael Leiter. The MBI has three versions: the MBI-Human Service Survey (MBI-HSS), designed for professionals working in people-centered services, such as doctors, nurses, psychologists and students of health professions; the MBI-Educator Survey (MBI-ED) for educators (teachers, coordinators, school principals, etc.); and the MBI-General Survey (MBI-GS) for categories not clearly oriented to a specific population. The versions differ in the terminology used to designate the professional responsible for the work being evaluated[8].

The MBI evaluates the prevalence of Burnout based on the sum of the scores for each dimension. High scores for EE and DE and low scores for PS lead to a high Burnout index, whereas high PS scores and low EE and DE scores are an indication of its absence. The PS dimension has an inverse score – the higher the score, the better the individual's perception of their professional satisfaction and efficacy[11]. Several Brazilian studies have translated, adapted and validated the MBI. In 2001, Benevides-Pereira, a member of the Nucleus of Advanced Studies of Burnout in Brazil (NEPASB), worked with a variety of professionals, including doctors, nurses and nursing assistants,

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to translate and adapt the MBI-HSS to the Brazilian context[8,19]. The reference values found by the NEPASB, which are considered the standards in the literature for the Brazilian population, were used to diagnose and classify the severity of the symptoms of the students participating in this study (Figure 1). The NEPASB's results for the MBI-HSS are presented below.

EE is the subjective sensation of fatigue or stupor related to coping with work. EE results in low tolerance, a feeling of frustration and irritability. DE is a person's attempt to promote an affective distancing and indifference to work and others through the defensive use of ironic, cold and cynical attitudes[16]. Reduction in PS is a sense of dissatisfaction with common activities. Professionals with low PS feel like failures at work. They believe that they have not reached their objectives and that what they do has little or no value. This can lead to low self-esteem, a lack of motivation and decreased performance. In the most serious cases, a professional may abandon his or her career[13].

Research has observed that students' mental health deteriorates as courses progress, with increased burnout among those entering the more advanced stages of their education[20,21]. Potential consequences include poor work performance, alcohol and drug dependence/abuse, an increased risk of cardiovascular diseases, sleep disorders, neglect of personal health and risky behavior[13,22,23]. There is not enough research on therapeutic interventions to determine whether they can offer a satisfactory resolution to the problem. Approaches aimed at cognitive restructuring to achieve behavioral changes are advocated[24]. Maslach suggests that individual-level changes are the first step in reversing burnout. In addition, if institutions acknowledge the potential for work-related burnout, the probability of individuals blaming themselves for stressors that occur in the professional sphere would be reduced[25].

The present study considered the growing importance of the problem and the possibility of contributing to the early detection of BS. Moreover, it is designed to stimulate the monitoring of the changes that occur during academic training and the offering of help and support to students showing signs of change. The main objective was to determine the prevalence of burnout syndrome in medical students in their first through eighth semesters at a university in the State of Ceará, Brazil and to correlate the findings with several socio-economic and work-related variables.

	Dimensions		
Levels	EE	DE	OS
High	≥ 26	≥ 9	≥ 43
Medium	16-25	3-8	34-42
Low	≤ 15	≤ 2	≤ 33

EE: emotional exhaustion; DE: depersonalization; PS: professional satisfaction. Source: Benevides-Pereira, 2002[26].

Figure 1. MBI-HSS range of values found by NEPASB (2001).

Methods

A quantitative, cross-sectional descriptive study was conducted with a simple random sample, n = 376, corresponding to 72.7% of the 517 people considered eligible. The participants were students attending a medical school in Fortaleza, Ceará, Brazil in August, 2013. Students who had enrolled for only the last two years of the course were excluded because their education had been pursued in multiple places, including other cities, states and even countries. The sample was stratified and evenly distributed over the initial eight semesters of medical training, and the sample size was calculated using the formula for finite populations, with a significance level of 5% and a sample error of 2.6%. Participants were contacted during their routine activities and were asked to complete two data collection instruments: a questionnaire to determine their socio-economic and occupational profile and the MBI – Human Services Survey, a self-administered questionnaire with 22 questions: five depersonalization items, nine emotional exhaustion items and eight reduced professional satisfaction items. The score for each MBI-HSS item is reported using a Likert-type scale ranging from zero (never) to six (every day). The results were determined by summing the scores for each dimension. A pre-test was conducted. The statistical analysis was performed using SPSS 20.0, license number 10101131007. Two groups – the burnout/risk and the non-burnout group – were compared using the chi-square (χ^2) and likelihood ratio tests, $p < 0.05$. Variables with $p < 0.20$ were included in a bivariate analysis logistical regression. The data were organized into figures and tables. The project was approved by the Unichristus Research Ethics Committee and registered in the Plataforma Brasil database under number CAAE 16122113.2.0000.5049.

Results

The following tables (1 and 2) show the main findings of the study, which indicate a high overall prevalence of BS (14.9%). Of the remaining 85.1% of participants who did not meet the criteria for BS, 24.7% had a high risk of developing it because their scores had reached critical values for two of the three components of the syndrome. BS did not seem to worsen as students approached graduation, as has been reported in the literature[20,21].

In this study, the sample was evenly distributed across semesters and genders and was primarily composed of young people, with a predominance in the following groups: 21-25 years old (57%), female (58.9%), single (96.5%), and pursuing some extracurricular activity (51.9%). More than 99% had never failed academically. There was no significant association between BS and family income, gender, having children, extracurricular activities, marital status or living situation ($p > 0.005$). In the logistic regression, only two variables, "have considered abandoning the course" and "have failed examinations", showed an association with burnout ($p < 0.0001$ and 0.047, respectively).

Table 1. The estimated prevalence and risk of burnout syndrome in medical students in Fortaleza, Ceará, Brazil, distributed by frequency, percentage and semester of study, July 2014

Semester	Risk								Total
	Burnout		High		Low		None		
	N	%	N	%	N	%	N	%	
1st	8	18.2	19	43.2	12	27.3	5	11.3	44
2nd	8	14.0	8	14.0	18	31.6	23	40.4	57
3rd	7	24.1	6	20.7	11	37.9	5	17.3	29
4th	6	12.8	10	21.3	19	40.4	12	25.5	47
5th	6	13.6	11	25.0	15	30.1	12	27.3	44
6th	7	10.6	23	34.8	17	25.8	19	28.8	66
7th	4	12.1	4	12.1	12	36.4	13	39.4	33
8th	10	17.9	12	21.4	20	35.7	14	25.0	56
Total	56	14.9	93	24.7	124	33.0	103	27.4	376

Table 2. The prevalence and risk of burnout syndrome among medical students in Fortaleza, Ceará, Brazil, distributed by frequency, percentage and socio-economic variables, July 2014

Variable	Risk										P
	Burnout		High		Low		None		Total		
	N	%	N	%	N	%	N	%	N	%	
Age (year)											0.545
< 21	23	19.3	30	19.3	37	31.0	29	24.4	119	32.4	
21-25	27	12.9	46	22.0	81	38.8	55	26.3	209	57.0	
26 or +	6	15.4	11	28.2	8	20.5	14	35.9	39	10.3	
Gender											0.209
Male	23	15.2	42	27.8	43	28.5	43	28.5	151	41.1	
Female	33	15.3	70	32.4	66	30.6	47	21.7	216	58.9	
Marital status											0.913
Single	54	15.0	82	22.7	123	34.0	102	28.3	361	96.5	
Not single	2	13.3	4	26.7	6	40.0	3	20.0	15	3.5	
Family income (thousand reais)											0.428
< 5	7	13.2	10	18.9	17	32.0	19	35.9	53	14.5	
5-10	15	17.0	23	26.2	27	30.6	23	26.2	88	24.0	
11-20	16	16.3	26	26.5	38	38.8	18	18.4	98	26.8	
21-30	12	16.5	17	23.3	25	34.2	19	26.0	73	19.9	
31 or +	6	11.1	8	14.8	22	40.8	18	33.3	54	14.8	
Has considered abandoning the course											< 0.0001
Yes	23	37.7	24	39.3	10	16.4	4	6.6	61	16.2	
No	33	10.5	70	22.2	110	34.9	102	32.4	315	83.8	
Lives											0.909
Alone	2	8.4	6	25.0	8	33.3	8	33.3	24	6.4	
With others	54	15.3	82	23.3	123	34.9	93	26.4	352	93.6	
Has children											0.174
Yes	1	12.5	1	12.5	1	12.5	5	62.5	8	2.2	
No	55	15.3	113	31.5	114	31.8	77	21.4	359	97.8	
Extracurricular activities											0.304
Yes	26	13.5	40	20.7	73	37.8	54	28.0	193	51.9	
No	30	16.8	47	26.2	56	31.3	46	25.7	179	48.1	

Table 3. Bivariate analysis and logistical regression results showing risk factors for burnout in medical students in Fortaleza, Ceará, Brazil, July 2014

Variable	OR	$CI_{95\%}$	p
Bivariate analysis			
Male gender	1.2	0.8-1.9	0.430
Age < 20 years	1.5	0.8-3.0	0.246
Single status	1.6	0.4-5.7	0.485
Family income > 10 thousand reais	1.3	0.8-2.1	0.221
Does not live with parents	1.3	0.5-3.2	0.542
Has no children	3.3	0.9-12.7	0.061
No extracurricular activities	1.1	0.7-1.8	0.637
Failed examinations	7.9	0.8-76.9	0.050
Considered abandoning course	8.1	2.5-26.5	< 0.0001

Multivariate analysis (logistic regression)				
Variable	OR_{brut}	$OR_{adjusted}$	$CI_{95\%}$	p
Failed examinations	7.9	13.8	1.1 – 18.8	0.047
Considered abandoning the course	8.1	2.1	1.4 – 3.2	< 0.0001

Discussion

The results of previous studies on BS in medical students and professional doctors were compared to the main findings of the present study. De Oliveira Jr. *et al.*[27] studied burnout among directors of anesthesiology residency programs in the United States and found that 20% presented criteria for the syndrome and 30% were at risk of developing it. Burnout may also be associated with lower effectiveness as a caregiver and teacher. Depersonalization has been associated with an increased frequency of physicians reporting suboptimal patient care practices.

In another study[15], a survey of 93 anesthesiologist chairpersons showed that 32 of them (34%) reported high current job satisfaction, which represented a significant decline from the job satisfaction reported at one and five years before the survey. Among the 93 participants, 26 (28%) reported an extreme likelihood of stepping down as chair in 1-2 years. There was no association of age, sex or self-reported effectiveness with anticipated likelihood of stepping down. Twenty-eight percent met the criteria for high burnout, and an additional 31% met the criteria for moderately high burnout. Decreased current job satisfaction and low self-reported spousal/significant other support were independent predictors of high burnout risk. The study concluded that 51% percent of academic anesthesiology chairs exhibit a high incidence/risk of burnout.

The prevalence of burnout and depression in anesthesiology residents has not been determined, and researchers have not concluded whether anesthesiology resident burnout/depression affects patient care and safety[16]. De Oliveira *et al.* sought to fill this gap by determining the prevalence of burnout and depression in anesthesiology residents in the United States. A cross-sectional survey was sent to 2,773 anesthesiology residents in the United States, and 54% of the residents responded. High burnout risk was found in 41% (575 of 1,417) of the respondents. Two hundred and forty (17%) respondents were found to have a high risk of burnout and depression, 321 (23%) had a high risk of burnout, 58 (4%) had a high risk of depression

only, and 764 (56%) had a low risk of burnout or depression. Thirty-three percent of respondents with high burnout and depression risk reported multiple medication errors in the last year; only 0.7% of the lower-risk responders reported such errors. Burnout, depression, and suicidal ideation are prevalent in anesthesiology residents. Clearly, in addition to the effects on the health of anesthesiology trainees, burnout and depression may also affect patient care and safety.

Ishak *et al.*[28] conducted a literature review. They searched the PubMed/Medline and PsycInfo databases for articles published from 1974 to 2011 using the keywords "burnout", "stress", "well-being", "self-care", "psychiatry" and "medical students". Their study showed that burnout is prevalent during medical school, with major multi-institutional studies from the US estimating that at least half of all medical students may be affected by burnout during their medical education. Furthermore, burnout may persist beyond medical school and is, at times, associated with psychiatric disorders and suicidal ideation.

According to Santen *et al.*[29], burnout is a syndrome that originates during medical school. The authors assessed the prevalence of burnout and contributing factors in medical students and using a survey distributed to 249 medical students that contained a modified MBI-HSS. The authors found a moderate or high degree of burnout in 21% of the first-year class, 41% of the second-year class, 43% of the third-year class, and 31% of the fourth-year class ($p < 0.05$). Lower support, higher stress, and lack of control over one's life were significantly related to burnout in the multivariate analysis. The authors also agreed that burnout develops progressively over the course of medical education, whereas a high level of support and low stress decrease BS symptoms.

In 2007, Cruz *et al.*[14] evaluated the incidence of burnout among chairs of academic departments of ophthalmology in a cross-sectional study of 131 chairs of academic departments of ophthalmology in the United States and Canada. Seventy percent of the chairs reported being currently satisfied with their positions; nine chairs (9%) were considered to have burnout based on their MBI-HSS surveys; and nine (9%) had no symptoms of burnout. Fifty-six percent had scores consistent with low personal achievement, the highest risk factor for burnout. Overall, the MBI-HSS revealed moderate subscale scores for emotional exhaustion, low depersonalization scores, and low personal accomplishment score. The study showed that the overall prevalence of burnout was similar to burnout rates seen in chairs of other academic departments. Because the cost of burnout can be high, the authors recommended implementing strategies to reduce burnout among academic leaders.

In the Brazilian context, a master's thesis by Silva[30] studied BS in professionals in the Primary Care Network of Aracaju. Silva found BS in 6.7% to 10.8% of participants and found that the following factors were associated with BS: younger age groups, not being married, having an excessive workload and dissatisfaction with the profession. In 2004, Menegaz's[31] master's thesis reported the characteristics of the incidence of burnout among pediatricians in a public hospital organization in Dourado-MS. The results showed a low occurrence of the syndrome among nursing technicians in the city's public hospitals compared with the 10% found in other studies of nursing staff. The most noteworthy of the characteristics of high-risk individuals were excessive work and having worked for more than six years.

BS in medical students and professional doctors reaches significant levels in the reviewed literature. In general, studies conducted in other countries show a higher prevalence of BS than those conducted in Brazil. In the present study, 14.9% of students had BS, and another 57.7% were at risk of developing the syndrome, among whom 24.7% appeared to have a high risk of BS. The absence of burnout appeared in only 27.4% of the sample ($p < 0.05$). None of the assessed items were correlated with BS except thinking about quitting the course ($p < 0.0001$) and having failed. The authors propose that interventions be established by educational authorities to foster emotional, personal and collective resilience and that strategies be developed to address stress. Controlling the stressors in the medical students' environment, changing the context and channeling the needs and aspirations of students, in addition to collaboration with and interventions by psycho-educational support centers, may facilitate the development of social support networks, the formation of discussion groups among medical students and the opportunity for reflection among members as they use personal and environmental resources to improve their quality of life.

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