

Perfectionism, Burnout and Extracurricular Activities Among Medical Students from the University of Coimbra

Perfeccionismo, *Burnout* e as Atividades Extracurriculares nos Estudantes de Medicina da Universidade de Coimbra



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ABSTRACT

Introduction: The participation in extracurricular activities reduces the attributed importance to some causes of perfectionism, which influences the prevalence of burnout in medical students. This study aimed to investigate how this relationship occurs and which factors it is dependent on, in order to create strategies directed at these potential targets.

Material and Methods: We developed a questionnaire that assesses the participation in extracurricular activities, including a survey regarding the reasons for perfectionism and part of the Copenhagen Burnout Inventory adapted for students. The questionnaire's application to medical students of the Masters Degree in Medicine of the Faculty of Medicine, University of Coimbra was followed by statistical analysis.

Results: In a sample of 360 students, 40% ranked highly in personal burnout, and 28.1% in study-related burnout, while 22.2% showed high levels of burnout in both components. Students who participated in extracurricular activities were less frequently associated with simultaneous personal-related and study-related high levels of burnout ($p = 0.013$). The kind of chosen extracurricular activity was not associated with the prevalence of burnout.

Discussion: Only 53.9% of students participate in extracurricular activities. Such participation is associated with a lower prevalence of burnout if it is practiced several times per week. The choice of one kind of activity over another does not seem to influence the prevalence of this syndrome, all of which are associated with benefits in different domains.

Conclusion: We observed a lower prevalence of burnout among students that engaged in extracurricular activities. Further studies that can infer causality in this relationship are needed, in order to establish effective solutions specific to the medical course context.

Keywords: Burnout, Professional; Leisure Activities; Perfectionism; Portugal; Students, Medical; Stress, Psychological; Surveys and Questionnaires

RESUMO

Introdução: A participação em atividades extracurriculares reduz a importância atribuída a alguns motivos para o perfeccionismo que influenciam a prevalência de *burnout* nos estudantes de medicina. Este estudo visou investigar de que forma esta relação se processa e de que fatores depende, de forma a pensar estratégias direcionadas a estes potenciais alvos de atuação.

Material e Métodos: Elaborou-se um questionário capaz de avaliar a prática de atividades extracurriculares que incluiu um inquérito dos motivos para o perfeccionismo e parte do *Copenhagen Burnout Inventory adapted for students*. À sua aplicação, via *online*, aos estudantes do Mestrado Integrado em Medicina da Faculdade de Medicina da Universidade de Coimbra, seguiu-se a análise estatística e inferencial dos dados obtidos.

Resultados: Numa amostra de 360 alunos, 40% pontuaram elevados níveis de *burnout* pessoal e 28,1% de *burnout* relacionado com os estudos, tendo 22,2% obtido elevados níveis nas duas componentes. Alunos que praticavam atividades extracurriculares estiveram menos frequentemente associados a altos valores de *burnout* pessoal e relacionado com os estudos, simultaneamente ($p = 0,013$). O tipo de atividade extracurricular escolhido não mostrou relação com a prevalência de *burnout*.

Discussão: Apenas 53,9% dos alunos participam numa atividade extracurricular, fator associado a uma menor prevalência de *burnout*, especialmente nos alunos que a realizam várias vezes por semana. A escolha de um tipo de atividade em detrimento de outro não parece influenciar a prevalência desta síndrome, estando todos associados a benefícios em diferentes domínios.

Conclusão: Verificou-se menor prevalência de *burnout* em estudantes que praticavam atividades extracurriculares. Será necessária a realização de estudos que nesta relação permitam inferir causalidade, de forma a formular soluções efetivas e específicas do contexto do curso médico.

Palavras-chave: Atividades de Lazer; Esgotamento Profissional; Estudantes de Medicina; Inquéritos e Questionários; Perfeccionismo; Portugal; Stress Psicológico

INTRODUCTION

Certain intellectual and personal characteristics are required by the medical profession for an effective management of biopsychosocial aspects of the disease and clinical performance.^{1,2} In addition, the narrow margin for error and the permanent uncertainty when dealing with extremely sensitive issues are an important source of stress for medical students, who seem to suffer in anticipation.³

Prolonged exposure to high levels of anxiety, particularly related to the educational environment of the medical course, has shown an association with a reduced quality of life,⁴⁻⁶ often leading to depression, substance abuse and suicidal ideation^{3,5,7-10} and to the development of burnout syndrome,^{4,7,8,10,11} defined by Schaufeli and Greenglass¹² as "a state of physical, emotional and mental exhaustion resulting

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from long-term involvement in emotionally demanding work situations”, which is associated with impaired healthcare delivery and medical professionalism,^{3,7,8,11} in addition to a typically perfectionist personality,^{7,13,14} characterised by the need to be perfect, with high levels of performance and self-criticism,¹³⁻¹⁶ associated with greater vulnerability to burnout^{13,14} and social anxiety.^{15,16}

Coping mechanisms, based on a balanced management of time, have an impact on the prevention of such outcomes,^{4,5,8,10,11} with extracurricular activities (EA) standing out as strategies that allow students to develop interpersonal skills and show crucial qualities for academic success, specifically in healthcare professionals, such as critical attitude, leadership potential, desire for personal growth and social awareness.^{2,4,5,10,17}

The desire to add to a better performance of the Faculty of Medicine of the University of Coimbra (FMUC) in reducing the incidence of stress and burnout led to the search for strategies of promotion of the quality of life and health, an example being the inclusion of EAs in the course curriculum. Therefore, considering the fact that the involvement in these occupations reduces the importance assigned to some of the reasons for perfectionism,³ on which vulnerability to stress^{3,6} and the prevalence of burnout in medical students depend on,^{4,10,11,17} it is important to study the way this relationship occurs and which factors does it depend on.

This study was aimed at the assessment of perfectionism and burnout in students of the Integrated Master Degree in Medicine (*Mestrado Integrado em Medicina* [MIM]) at the FMUC, as well as the relationship with the type of extracurricular activity, including its regularity and time spent, in addition to its relationship with sociodemographic variables.

MATERIAL AND METHODS

This was an observational study based on the development and application of a questionnaire to a convenience sample of FMUC medical students, during 2018/2019 academic year.

An epidemiological survey followed by a survey on the reasons for perfectionism and frustration intolerance were included in the questionnaire, which had been applied as part of a previous study³ in which different factors were ranked on a Likert-type scale – from (1), “Not at all important”, to (4), “Very important” –, for the assessment of the impact on perfectionism and frustration intolerance.

The third part consisted of a survey for the assessment of the engagement on EA (activities that do not directly contribute to the course marks, requiring a certain level of skill, dedication or self-discipline).⁵ In case of involvement in at least one EA at the time of completing the questionnaire, its type, frequency and duration were asked and, if not, respondents were asked whether they had ever done so and, if so, what type, frequency, duration and how long ago had they dropped out.

Finally, we used a translation adapted and validated

for the Portuguese population¹⁸ of an instrument to assess burnout in students, the Copenhagen Burnout Inventory adapted for students (CBI-S), originally proposed by Kristensen *et al.* (2005). This instrument includes different scales that can be used independently for the assessment of the state of fatigue/exhaustion of the population, a core characteristic, by definition, of burnout syndrome.¹² Since the aim of the present study was to understand the influence of EA specifically on the personal characteristics of the FMUC students and on their studies, we chose to use only the scales “Personal Burnout” (six items) and “Study-related Burnout” (seven items) as these evaluate the degree of physical and psychological exhaustion experienced by students and perceived as related to their studies, having also shown a higher correlation, both among themselves and with other burnout assessment instruments.^{12,18,19} ‘Student-related burnout’ and ‘Teacher-related burnout’ scales were excluded as these were not found as relevant manifestations of burnout,¹⁹ avoiding the use of an extensive questionnaire, in order to reduce dropouts.

Answers were given on a Likert-type scale, with five options: “Never” (1), “Rarely” (2), “Sometimes” (3), “Frequently” (4) and “Always” (5), scored with 0, 25, 50, 75 and 100 points, respectively (except one of the questions, with reverse scoring, the score of each scale being obtained by the mean of its answers).²⁰ Burnout levels were ranked as low, moderate or high, using the 33rd and 66th percentiles as cut-offs, in line with other instruments.²¹ A higher probability of presenting with burnout syndrome, when compared to the group, was considered for a score >P66 for both scales simultaneously. The percentage of students who were exhausted was obtained by comparing both scales, assigning this state to factors unrelated to studies.¹² For both CBI-S scales, the internal consistency was verified through Cronbach’s alpha and this was adequate when $\alpha > 0.700$.²²

The questionnaire was tested for clarity and organisation on a small group of MIM students at the *Universidade da Beira Interior*, in order to exclude ambiguous or misleading questions, respecting the gender ratio that was found in students of the FMUC.

It was applied through the Google Forms online platform, starting the quantitative study phase. Participation was anonymous, confidential and voluntary, which was ensured by the acceptance of the informed consent required to complete the questionnaire and non-duplication of answers was also ensured. The social network Facebook groups of the six years of the course were used for study disclosure and the questionnaire was made available between December 10th, 2018 and January 10th, 2019.

The required sample size was obtained using a 95% confidence interval and a 5% error margin, taking into account the 1,798 students enrolled in MIM in the 2018/2019 academic year.

After data registration in Microsoft Excel, descriptive and inferential statistical analysis was carried out using the Statistical Package for the Social Sciences - SPSS software.

The quantitative variables were characterised by their mean and standard deviation and normality of its distribution was checked with the Kolmogorov-Smirnov test, while absolute and relative frequencies were used for qualitative variables. The inferential analysis of nominal variables was obtained by the chi-square test (χ^2) and non-parametric Mann-Whitney and Kruskal-Wallis U-tests for ordinal variables with non-normal distribution; p -value >0.05 was defined as statistically significant.

The study was approved by the Ethics Committee of the FMUC.

RESULTS

Sample characteristics

A convenience sample of 360 students was used (a required sample size $n = 317$ was obtained), with ages ranging between 17 and 36 (21.07 ± 2.68), 76.9% female (277). A 22.2% participation rate has been found in first-year students, 18.1% in second-year, 11.9%, third-year, 13.6% fourth-year, 12.2% fifth-year and 21.9% in sixth-year and 71.3% of the students lived in non-owned dwelling. A 'current engagement in extracurricular activities' was described by 53.9% of the respondents, which was not significantly related to any of the epidemiological variables that were analysed (Table 1).

The distribution of engagement in EA by MIM students is shown in Table 2 and "Sports" and "Cultural activities" options were most frequently selected by students (60.3% and 35.6% respectively). Only the 'Sports' option as 'Type of EA' has shown a statistically significant variation with the year of the medical course ($p = 0.036$) and was described by 79.5% of the sixth-year students.

A 'Several times per week' frequency of practice ($p = 0.001$) was described by 44.4% of 1st-year students, compared to 72.7% by sixth-year students. A >3 -year engagement ($p = 0.003$) has been described by more than half of first and sixth-year students and by only around 30% of third and fourth-year students. Finally, for those who had been already involved in EA in the past, the time elapsed since dropping out showed to vary with the year of study ($p = 0.005$); half of first-year students would be those who had dropped out of EA less than six months ago, while a higher percentage of sixth-year students did so more than three years ago.

Burnout

The distribution of burnout levels in MIM students is shown in Table 3, as well as the scores of each scale obtained through the formula for the averages of the items of each dimension of the CBI-S scales; 40% of the respondents have obtained scores corresponding to high levels of personal burnout and high levels of study-related burnout have been found in 28.1% of the respondents in our group, while low or moderate levels of study-related burnout with high levels of personal burnout have been found in 17.7% of the students. Finally, 80 students (22.2% of the population) presented with high levels of overall burnout (variable that considers high levels of personal burnout and study-related burnout, simultaneously).

A 0.731 ($p < 0.001$) Spearman's correlation coefficient has been found in these two scales, corresponding to the presence of a strong association between personal burnout and study-related burnout, constructs that have shown good internal consistency indices, $\alpha = 0.866$ and $\alpha = 0.848$,

Table 1 – Characteristics of the study sample according to the involvement in extracurricular activities among the students of the *Mestrado Integrado em Medicina* at the *Faculdade de Medicina da Universidade de Coimbra* throughout 2018/2019 academic year

Variables	Involvement in extracurricular activities			Total n (%)	
	Current n (%)	Previous n (%)	Never n (%)		
Gender*	Male	51 (61.4)	24 (28.9)	8 (9.6)	83 (23.1)
	Female	143 (51.6)	107 (38.6)	27 (9.7)	277 (76.9)
Year of course attendance**	1 st year	36 (45.0)	38 (47.5)	6 (7.5)	80 (22.2)
	2 nd year	29 (44.6)	28 (43.1)	8 (12.3)	65 (18.1)
	3 rd year	29 (67.4)	12 (27.9)	2 (4.7)	43 (11.9)
	4 th year	33 (67.3)	10 (20.4)	6 (12.2)	49 (13.6)
	5 th year	23 (52.3)	16 (36.4)	5 (11.4)	44 (12.2)
	6 th year	44 (55.7)	27 (34.2)	8 (10.1)	79 (21.9)
Residence during term time***	Owning their own home with their household	51 (56.7)	31 (34.4)	8 (8.9)	90 (25.0)
	Non-shared owner-occupied housing	9 (69.2)	4 (30.8)	0 (0.0)	13 (3.6)
	Rented dwelling not shared	11 (50.0)	8 (36.4)	3 (13.6)	22 (6.1)
	Rented room in shared accommodation	109 (51.9)	79 (37.6)	22 (10.5)	210 (58.3)
	University housing	14 (56.0)	9 (36.0)	2 (8.0)	25 (6.9)
Total	194 (53.9)	131 (36.4)	35 (9.7)	360 (100.0)	
Age**** (mean \pm standard deviation)	21.11 \pm 2.46	21.02 \pm 3.1	21.03 \pm 2.22	21.07 \pm 2.68	

*: $p = 0.248$; **: $p = 0.103$; ***: $p = 0.807$; ****: $p = 0.560$

Table 2 – Involvement in extracurricular activities by students of the *Mestrado Integrado em Medicina at the Faculdade de Medicina da Universidade de Coimbra*

Variables	Year of course attendance						Total n (%)
	1 st year n (%)	2 nd year n (%)	3 rd year n (%)	4 th year n (%)	5 th year n (%)	6 th year n (%)	
Type of EA							
Sports*	20 (55.6)	12 (41.4)	18 (62.1)	18 (54.5)	14 (60.9)	35 (79.5)	117 (60.3)
Cultural activity	11 (30.6)	16 (55.2)	12 (41.4)	12 (36.4)	9 (39.1)	9 (20.5)	69 (35.6)
Student associations	8 (22.2)	6 (20.7)	3 (10.3)	6 (18.2)	8 (34.8)	9 (20.5)	40 (20.6)
Social services	4 (11.1)	7 (24.1)	3 (10.3)	5 (15.2)	4 (17.4)	7 (15.9)	30 (15.5)
Remunerated activity	1 (2.8)	0 (0.0)	2 (6.9)	3 (9.1)	3 (13.0)	1 (2.3)	10 (5.2)
Frequency of involvement**							
Every day	1 (2.8)	3 (10.3)	1 (3.4)	2 (6.1)	5 (21.7)	5 (11.4)	17 (8.8)
Several times a week	16 (44.4)	11 (37.9)	22 (75.9)	23 (69.7)	13 (56.5)	32 (72.7)	117 (60.3)
Once a week	13 (36.1)	9 (31.0)	6 (20.7)	6 (18.2)	4 (17.4)	6 (13.6)	44 (22.7)
1 - 3 times per month	4 (11.1)	3 (10.3)	0 (0.0)	2 (6.1)	0 (0.0)	1 (2.3)	10 (5.2)
Occasionally	2 (5.6)	3 (10.3)	0 (0.0)	0 (0.0)	1 (4.3)	0 (0.0)	6 (3.1)
Duration of involvement***							
Less than 6 months	8 (10.8)	6 (10.5)	6 (14.6)	8 (18.6)	2 (5.1)	0 (0.0)	30 (9.2)
6 months to 1 year	8 (10.8)	10 (17.5)	9 (22.0)	6 (14.0)	7 (17.9)	7 (9.9)	47 (14.5)
1 to 2 years	10 (13.5)	8 (14.0)	10 (24.4)	10 (23.3)	7 (17.9)	15 (21.1)	60 (18.5)
2 to 3 years	5 (6.8)	4 (7.0)	4 (9.8)	6 (14.0)	5 (12.8)	11 (15.5)	35 (10.8)
More than 3 years	43 (58.1)	29 (50.9)	12 (29.3)	13 (30.2)	18 (46.2)	38 (53.5)	153 (47.1)
Time of dropout of EA****							
Less than 6 months ago	19 (50.0)	3 (10.7)	1 (8.3)	3 (30.0)	2 (12.5)	9 (33.3)	37 (28.2)
6 months to 1 year ago	5 (13.2)	5 (17.9)	2 (16.7)	3 (30.0)	3 (18.8)	3 (11.1)	21 (16.0)
1 to 2 years ago	10 (26.3)	11 (39.3)	2 (16.7)	1 (10.0)	3 (18.8)	2 (7.4)	29 (22.1)
2 to 3 years ago	1 (2.6)	5 (17.9)	7 (58.3)	1 (10.0)	1 (6.3)	2 (7.4)	17 (13.0)
More than 3 years ago	3 (7.9)	4 (14.3)	0 (0.0)	2 (20.0)	7 (43.8)	11 (40.7)	27 (20.6)

*: $p = 0.036$; **: $p = 0.001$; ***: $p = 0.003$; ****: $p = 0.005$ **Table 3** – Levels of burnout in students of the MIM at the FMUC in 2018/2019

Scales	Study-related burnout			Total n (%)	Mean \pm standard deviation
	Low level n (%) ≤ 39.29 (P33)	Moderate level n (%) 39.29 - 57.14	High level n (%) ≥ 57.14 P(66)		
Personal burnout	Low level n (%) ≤ 41.67 (P33)	81 (22.5)	49 (13.6)	5 (1.4)	50.16 \pm 19.06
	Moderate level n (%) 41.67 - 58.33	17 (4.7)	48 (13.3)	16 (4.4)	
	High level n (%) ≥ 58.33 P(66)	7 (1.9)	57 (15.8)	80 (22.2)	
Total n (%)	105 (29.2)	154 (42.8)	101 (28.1)	360 (100.0)	
Mean \pm standard deviation	48.15 \pm 18.15				

respectively.

The association between the epidemiological variables and the involvement in EA and burnout levels is shown

in Table 4, including the scores obtained with the scales that were applied. For simplification, "Age" ($p = 0.052$), "Residence during the school period" ($p = 0.176$) and

“Time spent in EA practice” ($p = 0.644$) were omitted, as a statistically significant relationship was not found with these.

Personal burnout showed a relationship with gender ($p = 0.009$), with 43% of female respondents presenting high levels of this variable. A statistically significant relationship was also found with the study year ($p = 0.012$). Only 34% of those who engaged in EA ($p = 0.013$) showed high levels of personal burnout, a component that was found to be less prevalent in daily involvement in EA ($p = 0.001$). Dropout of EA ($p = 0.014$) less than six months ago was associated with lower percentage of students with high levels of personal burnout. Overall burnout only showed a statistically relevant relationship with the involvement in EA ($p = 0.013$), with high

levels of burnout more frequently observed in students who were not engaged in extracurricular activities or had never done so. The type of EA showed no significant relationship with the prevalence of any burnout component.

Reasons for perfectionism and frustration intolerance

The importance attributed to the reasons for perfectionism and frustration intolerance by the students who were not involved in EA did not show any significant variation in relation to those who were. Among the latter, the importance attributed to the reasons for perfectionism and frustration intolerance did not vary significantly when compared to those who were not involved in EA.

Nevertheless, among the students who were involved in

Table 4 – Percentage of MIM students at the FMUC with high levels of burnout, overall and at each domain, according to epidemiological variables and related to extracurricular activities

Variables	High level of personal burnout		High level of study-related burnout		High level of overall burnout			
	n (%)	p	n (%)	p	n (%)	p		
Gender	Male	25 (30.1)	0.009	22 (26.5)	0.413	16 (19.3)	0.283	
	Female	119 (43.0)		79 (28.5)		64 (23.1)		
Year of course attendance	1 st year	26 (32.5)	0.012	14 (17.5)	0.764	9 (11.3)	0.563	
	2 nd year	38 (58.5)		26 (40.0)		23 (35.4)		
	3 rd year	19 (44.2)		15 (34.9)		12 (27.9)		
	4 th year	15 (30.6)		8 (16.3)		7 (14.3)		
	5 th year	20 (45.5)		17 (38.6)		14 (31.8)		
	6 th year	26 (32.9)		21 (26.6)		15 (19.0)		
EA involvement	Current	66 (34.0)	0.013	45 (23.2)	0.050	32 (16.5)	0.013	
	Previous	61 (46.6)		46 (35.1)		40 (30.5)		
	Never	17 (48.6)		10 (28.6)		8 (22.9)		
Frequency of involvement	Every day	4 (23.5)	0.001	3 (17.6)	0.502	3 (17.6)	0.370	
	Several times a week	36 (30.8)		27 (23.1)		17 (14.5)		
	Once a week	16 (36.4)		9 (20.5)		7 (15.9)		
	1 - 3 times a month	6 (60.0)		3 (30.0)		3 (30.0)		
	Occasionally	4 (66.7)		3 (50.0)		2 (33.3)		
Time of dropout	Less than 6 months ago	14 (37.8)	0.014	10 (27.0)	0.823	9 (24.3)	0.473	
	6 months to 1 year ago	10 (47.6)		9 (42.9)		7 (33.3)		
	1 to 2 years ago	16 (55.2)		11 (37.9)		9 (31.0)		
	2 to 3 years ago	9 (52.9)		7 (41.2)		7 (41.2)		
	More than 3 years ago	12 (44.4)		9 (33.3)		8 (29.6)		
Type of EA	Sports	No	63 (45.0)	0.239	41 (29.3)	0.426	34 (24.3)	0.266
		Yes	81 (36.8)		60 (27.3)		46 (20.9)	
	Cultural activity	No	97 (42.4)	0.247	64 (27.9)	0.71	52 (22.7)	0.539
		Yes	47 (35.9)		37 (28.2)		28 (21.4)	
	Student associations	No	115 (40.4)	0.782	78 (27.4)	0.628	63 (22.1)	0.514
		Yes	29 (38.7)		23 (30.7)		17 (22.7)	
	Social services	No	112 (38.4)	0.262	81 (27.7)	0.503	63 (21.6)	0.321
		Yes	32 (47.1)		20 (29.4)		17 (25.0)	
	Remunerated activity	No	133 (39.3)	0.386	93 (27.5)	0.516	75 (22.2)	0.564
		Yes	11 (50.0)		8 (36.4)		5 (22.7)	

EA at the time of the study and considering the frequency of their involvement (Table 5), the “Intrinsic factors (self-determined)” ($p = 0.048$) were a “Very important” reason for 35.3% of the students who were involved “Every day” in EA, while this was described by all those who did it “Occasionally”. The “Environmental pressure” (*Pressão Ambiental*) ($p = 0.028$) was a “Slightly important” / “Not at all important” reason for 35.3% and 32.5% of those who were involved “Every day”/“Several times a week” in EA, respectively. However, this was described by almost half of those who were only involved “Once a week” (47.7%). “Insecurity regarding vocational training” (“*Insegurança sobre a formação profissional*”) ($p = 0.030$) was described as a “Slightly important” / “Not at all important” reason by 36.4% of those who were engaged “Once a week” in EA, while this was described as a “Moderately important”/“Very important” reason by 80% or more of the remaining respondents. Finally, the “MIM curriculum requirements” (p

$= 0.027$) were described as a “Very important” reason by at least half of those who were engaged “Once a week” or less in EA and by 41.2% of those who were daily involved in EA.

Finally, considering those who were not involved in any EA but had done so in the past, the time of interruption was significantly related to the relevance assigned to the “Insecurity regarding vocational training” (“*Insegurança sobre a formação profissional*”) ($p = 0.035$) - Table 6 and those who had dropped out from the activity two or more years ago more frequently selected this as a ‘Very important’ reason, when compared to those who had dropped out less than six months ago.

DISCUSSION

Prolonged stress to which students are exposed affects their academic performance, mental health and professionalism^{3,5,6,8,11} and studies were held on the determinants of their vulnerability, such as perfectionism

Table 5 – “Intrinsic factors (self-determined)”, “Environmental pressure”, “Insecurity related to vocational training” and “Curricular demands” according to the frequency of the involvement in extracurricular activities

Variables		Frequency of the current involvement in extracurricular activities				
		Every day	Several times a week	Once a week	1 - 3 times a month	Occasionally
		n (%)	n (%)	n (%)	n (%)	n (%)
Intrinsic factors (self-determined)*	Not at all important	1 (5.9)	1 (0.9)	1 (2.3)	0 (0.0)	0 (0.0)
	Slightly important	1 (5.9)	11 (9.4)	1 (2.3)	0 (0.0)	0 (0.0)
	Moderately important	9 (52.9)	49 (41.9)	19 (43.2)	3 (30.0)	0 (0.0)
	Very important	6 (35.3)	56 (47.9)	23 (52.3)	7 (70.0)	6 (100.0)
Environmental pressure**	Not at all important	4 (23.5)	4 (3.4)	2 (4.5)	0 (0.0)	0 (0.0)
	Slightly important	2 (11.8)	34 (29.1)	19 (43.2)	0 (0.0)	0 (0.0)
	Moderately important	8 (47.1)	57 (48.7)	15 (34.1)	7 (70.0)	3 (50.0)
	Very important	3 (17.6)	22 (18.8)	8 (18.2)	3 (30.0)	3 (50.0)
Insecurity regarding vocational training***	Not at all important	1 (5.9)	5 (4.3)	1 (2.3)	1 (10.0)	0 (0.0)
	Slightly important	1 (5.9)	15 (12.8)	15 (34.1)	1 (10.0)	0 (0.0)
	Moderately important	8 (47.1)	53 (45.3)	16 (36.4)	6 (60.0)	1 (16.7)
	Muito importante	7 (41.2)	44 (37.6)	12 (27.3)	2 (20.0)	5 (83.3)
Curricular demands****	Not at all important	0 (0.0)	2 (1.7)	0 (0.0)	0 (0.0)	0 (0.0)
	Slightly important	4 (23.5)	17 (14.5)	2 (4.5)	1 (10.0)	1 (16.7)
	Moderately important	6 (35.3)	52 (44.4)	13 (29.5)	4 (40.0)	1 (16.7)
	Very important	7 (41.2)	46 (39.3)	29 (65.9)	5 (50.0)	4 (66.7)

*: $p = 0.048$; **: $p = 0.028$; ***: $p = 0.030$; ****: $p = 0.027$

Table 6 – “Insecurity regarding vocational training” and time of dropout of the involvement in extracurricular activities

Variables		How long ago did you drop out of your previous extracurricular activity				
		Less than 6 months ago	6 months to 1 year ago	1 to 2 years ago	2 to 3 years ago	More than 3 years ago
		n (%)	n (%)	n (%)	n (%)	n (%)
Insecurity regarding vocational training*	Nada importante	1 (2.7)	0 (0.0)	3 (10.3)	0 (0.0)	1 (3.7)
	Slightly important	11 (29.7)	5 (23.8)	5 (17.2)	2 (11.8)	2 (7.4)
	Moderately important	17 (45.9)	8 (38.1)	15 (51.7)	6 (35.3)	12 (44.4)
	Very important	8 (21.6)	8 (38.1)	6 (20.7)	9 (52.9)	12 (44.4)

*: $p = 0.035$

and burnout.^{1,3,6,9}

On the other hand, extracurricular activities appear as effective coping mechanisms^{10,11} and our study aimed at understanding and deepen the impact of these on the perfectionist nature of medical students,^{7,13,14} as well as on the prevalence of burnout.

The results have shown that 40% of medical students at the FMUC presented with high levels of personal burnout and 28.1% with high levels of study-related burnout. Higher scores have been obtained, on average (50.2% with personal burnout and 48.2 with study-related burnout), when compared to those found in a prospective study by Kristensen *et al.*¹² in human resources and healthcare professionals (35.9% and 33%, respectively). In addition, 22.2% of the respondents presented with high indices of both components and these should be taken into consideration, even though this is not a global score of overall burnout. High levels of personal burnout have been found in 17.7% of the students, but not of study-related burnout and these have described their state of exhaustion as associated with non-academic factors including health or family issues,¹² as for example poor mental health⁸ and the pressure from medical relatives.⁴

The analysis of demographic data showed that female gender was associated with high levels of personal burnout and that more than half (58.5%) of second-year students showed high levels of this component, a prevalence that decreased with progression in the course. The comparison of these results with the literature is limited by the assessment instruments used. Further studies using the CBI-S scale would be relevant to establish these comparisons.

More than half of the MIM-FMUC were regularly involved in EA (53.9%), which is below what has been found in other international studies,^{3,4,10,17} showing higher scores in third and fourth-year students (approximately 67%) and lower in the remaining years, presumably due to the initial adaptation to the new pace of work in higher education^{3,9,17} followed by the perception of the need to acquire mechanisms to cope with stress.^{7,11,17}

High levels of burnout were associated with students not involved in any EA, in support to the protective role of these occupations when faced with a state of exhaustion, in line with literature.^{4,5,10,11,23,24} In fact, a higher prevalence of high levels of personal burnout has been described by students who dropped out of EA longer ago and supported the insecurity related to vocational training as a reason for their perfectionism. This observation may be related to the gain of interpersonal skills and the reduction in anxiety and stress inherent to the involvement in EA,^{4,10} while dropout leads to greater insecurity regarding the ability to solve problems, with greater dependence on the experience given by vocational training.

There is a preference for sports, which was described by 60.3% of the participants, a lower value when considering the whole population, showing the limited sports practice among university students, perhaps more vulnerable to stress.^{23,25,26} Nevertheless, no significant variation in burnout

has been found with physical activity, not invalidating its several benefits in the students' lifestyle,^{4,10,11,23-25} but rather showing that their choice, to the detriment of other EA, does not determine a greater reduction in the frequency of burnout.

Cultural activities, such as music, are also associated with beneficial effects in reducing the incidence of burnout, particularly in the medical community, considered as a cost-effective strategy that improves empathy and compassion.^{10,11} Voluntary work (included in "Social services") promotes solidarity, social responsibility and sense of community,¹⁰ key qualities in healthcare providers. Finally, activities involving organisation and leadership ("Student associations") are highlighted, which are found to be reflected in better academic performance,⁴ with a positive impact on the incidence of burnout.

The frequency of the involvement in EA increases with the progression of the medical course and more and more students choose to engage in EA several times a week, which relates to the devaluation of intrinsic factors and curricular demands of the MIM as reasons for perfectionism. In these students, there was also a lower prevalence of personal burnout, a finding that contradicts a previous study that denied a relationship between the frequency of the involvement in EA and burnout.⁴ A regular and frequent involvement in EA seems to help deal with self-oriented perfectionism, a core dimension of this personality trait which is generally high among medical students,¹³ in addition to the proven benefit in academic performance²⁵ and in quality of life.⁵

The duration of the involvement in EA, longer in the first and sixth-year students, influenced neither the prevalence of burnout nor the reasons for perfectionism. However, a comprehensive longitudinal study found that a longer involvement in EA was predictive of higher psychological resilience and school achievement among adolescents.²⁷

This study used an online questionnaire, which made it limited to voluntarism. We must also consider the social acceptability bias associated with the use of Likert-type scales, in a typically perfectionist population.^{7,13,14} In order to avoid an extensive construct, we chose not to use all the scales included in the CBI - S which, although possible,¹² may generate limitations in the interpretation of the global value of overall burnout. In addition, the comparison with literature is limited by the scarce use of this scale. This was a cross-sectional study, limited to just one faculty, despite analysing a representative sample size, respecting the gender proportion characteristic of the population of the FMUC.³ This invalidates both the attribution of causality and the extrapolation of conclusions to the Portuguese medical student community. Studies with the same scope carried out in other faculties would be relevant.

Despite these limitations, it is possible to formulate suggestions that may improve the quality of life of FMUC medical students. It is in the interest of medical schools to establish a teaching environment conducive to training with competences that are essential for the good performance

of medical care.^{4,11} For all the advantages associated with extracurricular activities, it is considered crucial to formally encourage their practice, enhancing the factors that motivate them and removing any constraints.^{10,11,17,23} Thus, it is suggested: the creation of tutoring programs to guide students in the controlled involvement in EA, without jeopardizing their academic performance^{4,6,10,14,17} and the valuation of a multidisciplinary curriculum in the entry in the medical career, not just based on the final classification of the National Access Exam, one of the main reasons for these activities in countries that take it into consideration.¹⁷

Given the high prevalence of burnout, greater attention to mental health of students by professionals involved in teaching^{4,10,11} is also necessary through measures such as the promotion of psychosocial support programs,^{3,6,8} education for organisational strategies^{5,8,14} and the sharing of experiences by senior physicians, focusing on the uncertainty inherent to the acts of the profession from a humanistic perspective of medicine.^{3,11}

CONCLUSION

A significant prevalence of burnout has been found among medical students at the FMUC, estimated both in their personal and study-related dimensions and that should not be neglected, given its potential impact on the future professional performance.

Extracurricular activities are considered as effective coping mechanisms in stress management and used by more than half of the students, in whom a lower prevalence of high levels of burnout has been found, particularly in those involved several times per week in EA, ending up in the devaluation of intrinsic factors as reasons for their perfectionism.

REFERENCES

- Marques M, Macedo A, Soares M, Maia B, Pereira A, Bos S, et al. O premedical syndrome: será que existe em Portugal? *Acta Med Port*. 2009;22:789–96.
- Kim S. Extracurricular activities of medical school applicants. *Korean J Med Educ*. 2016;28:201–7.
- Batista S, Santiago L, Rosendo I. Motivos para o perfeccionismo e intolerância à frustração nos estudantes de medicina da universidade de coimbra. *Acta Med Port*. 2008;31:527–33.
- Almalki S, Almojali A, Allothman A, Masuadi E, Alaqeel M. Burnout and its association with extracurricular activities among medical students in Saudi Arabia. *Int J Med Educ*. 2017;8:144–50.
- Lumley S, Ward P, Roberts L, Mann J. Self-reported extracurricular activity, academic success, and quality of life in UK medical students. *Int J Med Educ*. 2015;6:111–7.
- Pereira A, Santiago L, Simões J. Qualidade de vida e vulnerabilidade ao stress nos estudantes de medicina dos 5º e 6º anos. Coimbra: Faculdade de Medicina da Unversidade de Coimbra; 2017.
- Moir F, Yelder J, Sanson J, Chen Y. Depression in medical students: current insights. *Adv Med Educ Pract*. 2018;9:323–33.
- Chunming W, Harrison R, MacIntyre R, Travaglia J, Balasooriya C. Burnout in medical students: a systematic review of experiences in Chinese medical schools. *BMC Med Educ*. 2017;17:1–11.
- Gómez H, Pérez C, Parra P, Ortiz L, Matus O, McColl P, et al. Relación entre el bienestar y el rendimiento académico en alumnos de primer año de medicina. *Rev Med Chil*. 2015;143:930–7.
- Fares J, Saadeddin Z, Al Tabosh H, Aridi H, El Mouhayyar C, Koleilat M, et al. Extracurricular activities associated with stress and burnout in preclinical medical students. *J Epidemiol Glob Health*. 2016;6:177–85.
- Fares J, Al Tabosh H, Saadeddin Z, El Mouhayyar C, Aridi H. Stress, burnout and coping strategies in preclinical medical students. *N Am J Med Sci*. 2016;8:75–81.
- Kristensen T, Borritz M, Villadsen E, Christensen K. The Copenhagen Burnout Inventory: a new tool for the assessment of burnout. *Work Stress*. 2005;19:192–207.
- Seeliger H, Harendza S. Is perfect good? - Dimensions of perfectionism in newly admitted medical students. *BMC Med Educ*. 2017;17:1–7.
- Yu J, Chae S, Chang K. The relationship among self-efficacy, perfectionism and academic burnout in medical school students. *Korean J Med Educ*. 2016;28:49–55.
- Mohammadian Y, Mahaki B, Dehghani M, Vahid M, Lavasani F. Investigating the role of interpersonal sensitivity, anger, and perfectionism in social anxiety. *Int J Prev Med*. 2018;9:2.
- Besharat M, Issazadegan A, Etemadinia M, Golssanamlou S, Abdolmanafi A. Risk factors associated with depressive symptoms among undergraduate students. *Asian J Psychiatr*. 2014;10:21–6.
- Almasry M, Kayali Z, Alsaad R, Alhayaza G, Ahmad M, Obeidat A, et al. Perceptions of preclinical medical students towards extracurricular activities. *Int J Med Educ*. 2017;8:285–9.
- Campos J, Carlotta M, Marôco J. Copenhagen Burnout Inventory - student version: adaptation and transcultural validation for Portugal and Brazil. *Psicol Reflexão Crítica*. 2013;26:87–97.
- Maroco J, Campos J. Defining the student burnout construct: a structural analysis from three burnout inventories. *Psychol Rep*. 2012;111:814–30.
- National Academy of Medicine. Validated instruments to assess work-related dimensions of well-being. [consultado 2019 jan 24]. Disponível em: <https://nam.edu/valid-reliable-survey-instruments-measure>

The results did not allow to define any particular EA as more beneficial than other, nor any ideal duration of practice. However, a positive association between the prevalence of burnout and a longer dropout of these activities has been found. These conclusions should encourage the adoption of any type of EA at any stage of the academic career.

Despite the important relationships found, further studies are required to demonstrate whether the lower prevalence of burnout is in fact related to the involvement in EA and, if so, by which mechanism this occurs. This will allow the development and implementation of specific measures within the medical course, aimed at the improvement of the quality of life of students.

HUMAN AND ANIMAL PROTECTION

The authors declare that the followed procedures were according to regulations established by the Ethics and Clinical Research Committee and according to the Helsinki Declaration of the World Medical Association.

DATA CONFIDENTIALITY

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest in writing this manuscript.

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- burnout-well-work-related-dimensions/#copenhagen.
21. Grau-Alberola E, Gil-Monte P, Garcia-Juesas J, Figueiredo-Ferraz H. Incidence of burnout in Spanish nursing professionals: a longitudinal study. *Int J Nurs Stud*. 2010;47:1013–20.
 22. Vicente C, Oliveira R, Maroco J. Análise fatorial do inventário de burnout de Maslach (Mbi-Hss) em profissionais portugueses. *Psicol Saúde Doenças*. 2013;14:152–67.
 23. Cecil J, McHale C, Hart J, Laidlaw A. Behaviour and burnout in medical students. *Med Educ Online*. 2014;19:25209.
 24. Gerber M, Brand S, Elliot C, Holsboer-Trachsler E, Pühse U, Beck J. Aerobic exercise training and burnout: a pilot study with male participants suffering from burnout. *BMC Res Notes*. 2013;6:78.
 25. Slade A, Kies S. The relationship between academic performance and recreation use among first-year medical students. *Med Educ Online*. 2015;20:1–8.
 26. Loureiro E, Mcintyre T, Mota-Cardoso R, Ferreira M. Estudo da relação entre o stress e os estilos de Psicologia, vida nas estudantes de Medicina. *Acta Med Port*. 2008;21:209–14.
 27. Fredricks J, Eccles J. Extracurricular involvement and adolescent adjustment: Impact of duration, number of activities, and breadth of participation. *Appl Dev Sci*. 2006;10:132–46.