

# Reasons for Perfectionism and Intolerance to Frustration in Medicine Students of University of Coimbra

## Motivos para o Perfeccionismo e Intolerância à Frustração nos Estudantes de Medicina da Universidade de Coimbra



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### ABSTRACT

**Introduction:** Perfectionism and intolerance to frustration are the main factors of vulnerability to psychological stress observed in students of the Integrated Master Degree in Medicine of the Faculty of Medicine, University of Coimbra, a study claims. We aimed to ascertain their reasons, seeking for their prevention.

**Material and Methods:** An observational triangulation study was performed, collecting the main reasons according to the opinion of a students focus-group, organized in a questionnaire completed with epidemiologic data, applied online to all students of the Integrated Master Degree in Medicine of the Faculty of Medicine, University of Coimbra. Statistical analysis was performed.

**Results:** A representative sample, of  $n = 368$ , 77.7% female, was studied. The most important responded reasons were 'intrinsic factors' and 'medical profession demands', with, respectively, 91.1% and 91.8% of 'important'/'very important' answers; 'environmental pressure' is the less important, with 68.2% attributing those classifications. Students satisfied with curricular life attribute less importance to 'environmental pressure' ( $p = 0.004$ ), 'insecurity about professional training' ( $p = 0.017$ ), 'curricular evaluation methods' ( $p = 0.002$ ) and 'Integrated Master Degree in Medicine of the Faculty of Medicine, University of Coimbra curricular demands' ( $p = 0.002$ ); female students assign more importance to 'Integrated Master Degree in Medicine curricular demands' ( $p = 0.001$ ); students involved in an extracurricular activity consider less important the 'environmental pressure' ( $p = 0.007$ ).

**Discussion:** In this Integrated Master Degree in Medicine of the Faculty of Medicine, University of Coimbra students sample, vulnerability to psychological stress associated to perfectionism and intolerance to frustration is due essentially to self-demanding personality. Insecurity about professional demands, associated to suffering in anticipation and the absence of professional perspectives, represent another important cause.

**Conclusion:** Psychological support, involvement in specific extracurricular activities and curricular reorganisation appear to be means of reducing the vulnerability to stress in medical students.

**Keywords:** Education, Medical; Frustration; Perfectionism; Stress, Psychological; Students, Medical

### RESUMO

**Introdução:** O perfeccionismo e a intolerância à frustração são os principais fatores de vulnerabilidade ao *stress* psicológico nos estudantes do Mestrado Integrado em Medicina da Faculdade de Medicina da Universidade de Coimbra. Este estudo procurou investigar a causalidade dos mesmos para sua prevenção.

**Material e Métodos:** Estudo observacional em triangulação, qualitativo-quantitativo, com inventariação dos principais motivos em painel de alunos, sendo a listagem obtida organizada e colocada em questionário complementado com inquérito epidemiológico, aplicado *online* a todos os alunos do Mestrado Integrado em Medicina da Faculdade de Medicina da Universidade de Coimbra, seguindo-se análise estatística.

**Resultados:** Estudou-se amostra representativa, de  $n = 368$ , 77,7% do sexo feminino. Os principais motivos para perfeccionismo e intolerância à frustração são 'fatores intrínsecos' e 'exigências da profissão médica', com, respetivamente, 91,1% e 91,8% de respostas 'importante'/'muito importante'; 'pressão ambiental' é o menos importante, com 68,2% em tais classificações. Alunos satisfeitos com a vida curricular atribuem menor importância à 'pressão ambiental' ( $p = 0,004$ ), 'insegurança quanto à formação profissional' ( $p = 0,017$ ), 'métodos de avaliação curricular' ( $p = 0,002$ ) e 'exigências curriculares do Mestrado Integrado em Medicina' ( $p = 0,002$ ); o sexo feminino dá maior importância às 'exigências curriculares do Mestrado Integrado em Medicina' ( $p = 0,001$ ); alunos inseridos em atividade extracurricular, consideram menos importante a 'pressão ambiental' ( $p = 0,007$ ).

**Discussão:** Nesta amostra a vulnerabilidade ao *stress* psicológico por perfeccionismo e intolerância à frustração depende essencialmente da personalidade auto-exigente. Outro importante fator corresponde à insegurança relativamente às exigências profissionais, com sofrimento por antecipação e ausência de perspetiva profissional.

**Conclusão:** O suporte psicológico, o envolvimento em atividades extracurriculares específicas e a reestruturação curricular parecem ser formas de diminuir a vulnerabilidade ao *stress* nos estudantes de medicina.

**Palavras-chave:** Educação Médica; Estudantes, Medicina; Frustração; Perfeccionismo; Stress Psicológico

### INTRODUCTION

Relevant levels of anxiety are noticeable from the earliest stages of medical education, leading to the perception that students are early on under the burden of stressful factors that will become a cause of exhaustion and burnout and with an impact on student's cognitive ability.<sup>1-12</sup> Psychological morbidity may also arise, including different anxiety

disorders, misuse of alcohol and of other substances, depressive disorders and suicidal ideation.<sup>1,4,5,8,9,11,13</sup> Their influence in clinical practice are also clear, affecting healthcare and medical professionalism.<sup>4,9,11</sup>

The study of the different stressors to which this population is exposed is therefore crucial and student's wellbeing

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promotion should be considered by medical schools as a priority<sup>1,2,5,13</sup> leading to the application of preventive strategies from an early stage of training.<sup>4,8</sup>

Therefore, a study has been carried out by Pereira APM,<sup>14</sup> aimed at the assessment of vulnerability to stress in 5<sup>th</sup> and 6<sup>th</sup> year medical students attending the Integrated Master Degree in Medicine (*Mestrado Integrado em Medicina*) of the Faculty of Medicine of the University of Coimbra (MIM-FMUC) during 2015/2016 school term, by use of the scale 23-QVS.<sup>15</sup> The main conclusions of the study included the fact that 25.2% of respondents were vulnerable to stress and the most affected dimension was the one related to perfectionism and intolerance to frustration,<sup>14</sup> in line with the typically perfectionist personality presented by those entering the medical career.<sup>16</sup> This study was aimed at the whole six years of the MIM-FMUC, as vulnerability to stress is found from the earliest years of the course and the adaptation period between the transition from secondary school to college is crucial.<sup>2,4-6</sup> This will allow for an early intervention and also to look for any differences between the different stages of the course through which students progress, dealing with different stressors.<sup>4,8,11</sup> In addition, different social and demographic variables eventually related to student's vulnerability to stress have been studied by different authors,<sup>2,3,9,14,17</sup> in order to enable the development of more focused coping strategies.<sup>2,4,5,8</sup>

This study was aimed at the identification of the reasons explaining such high levels of perfectionism and intolerance to frustration in students attending the MIM-FMUC and, in addition, at the identification of differences according to gender, to student's involvement in extracurricular activities and to satisfaction with life in college, as regards the relevance assigned to each reason.

## MATERIAL AND METHODS

This was an observational study in triangulation with a multi-stage qualitative and quantitative study.

The first qualitative phase was carried out in April 2017 and consisted of a request for the informal and voluntary participation in the study of two female and one male student attending each year of the MIM-FMUC and for the designation of two reasons explaining the perfectionism and intolerance to frustration found in this population. The selection of participants was made by the course committee of each year of the MIM-FMUC and to whom the names and contacts of the students to be invited for the participation in the study were requested and who were contacted as soon as possible.

A second phase of analysis and organisation of the responses was carried out by the authors and a series of statements representing the summary of the suggested views were obtained. These statements were organised as a list of reasons in which the questionnaire was based and to be responded on a Likert-type scale for the classification of each reason as 'not at all important', 'slightly important', 'important' or 'very important'. An open-ended question was also included, aimed at the inclusion of reasons other than

those that were previously defined. A survey on the following epidemiological data was also included: year of school attendance in the MIM-FMUC, age, gender, satisfaction with life in college and involvement in extracurricular activities. Prior to application, the questionnaire was sent to six fifth-year students, in order to obtain their validity regarding its clarity, comprehension, organisation and grammatical structure and a positive opinion was obtained and no changes were suggested.

A quantitative study with an analytical intention was included in the third phase and consisted of the application of the questionnaire to our group of participants, for a voluntary, anonymous and confidential filling; an informed consent for the participation in the study was obtained. The lack of any duplicated response was ensured, by requesting the last two digits of each student's identification card, the last letter of the surname and the day of birth (with no indication of the month or year).

The questionnaire was developed and applied in Google Drive and its disclosure was carried out by each year's course committee of the MIM-FMUC, which was held online between 1 and 30 June 2017 within each year's Facebook group. The database was closed at 30 Jun 2017.

The sample size was established according to the universe of students attending the MIM-FMUC during the 2016/2017 school term (n = 1,945) and a group of at least 277 respondents was defined.

Data regarding the questionnaire were recorded into a Microsoft Excel database and by use of the Statistical Package for the Social Sciences (SPSS – PASW 18) software, a descriptive and inferential statistical analysis was carried out; quantitative variables were represented by mean and standard deviation and qualitative variables by absolute and relative frequencies (descriptive analysis). Student's t-test and Mann-Whitney's U-test were used in the inferential analysis of ordinal variables; when these had a normal distribution, the Kolmogorov-Smirnov test was used. Chi-square test was used for nominal variables and a *p*-value <0.05 was defined as statistically significant.

This study was approved by the Ethics Committee of the *Administração Regional de Saúde do Centro, Instituto Público*.

## RESULTS

### Qualitative study

The reasons described by the participants during the first phase of the study are shown in Table 1, based on the analysis of the 36 responses that were obtained, explaining each of the environments that were randomly presented by the authors.

### Quantitative study

#### Epidemiological variables

A group of 368 participants has been included in the quantitative study (Table 2) (mean age 21.8 ± 2.41, 95% confidence interval 21.6-22.1 years, range 18-33 years). Mostly female respondents were found (286 female, 77.7%)

**Table 1** – Reasons for perfectionism and intolerance to frustration in students attending the MIM-FMUC

Reasons	Description
<b>Intrinsic factors</b>	Individual perfectionism; inability to adequately deal with failure; narcissistic personality; self-demand.
<b>Challenges of the medical profession</b>	Perception of no place for mistakes; fear of not being able to adequately practice medicine.
<b>Environmental pressure</b>	Imposed by society, family, peers, schools, teachers.
<b>Uncertainty regarding future career plans</b>	Reduction of the number of specialty vacancies; perception of the need to achieve better results than the others.
<b>Unsafety regarding medical training</b>	Little clinical practice throughout the course.
<b>Methods of curricular assessment</b>	Non-uniform assessments with different marks in different environments.
<b>Curricular requirements of the MIM</b>	Lack of leisure time.

**Table 2** – VEpidemiological variables measured by year of attendance in the MIM-FMUC during the 2016/2017 school term

	1 <sup>st</sup> year n (%)	2 <sup>nd</sup> year n (%)	3 <sup>rd</sup> year n (%)	4 <sup>th</sup> year n (%)	5 <sup>th</sup> year n (%)	6 <sup>th</sup> year n (%)	Total n (%)
<b>Gender *</b>							
Female	39 (79.6)	54 (87.1)	53 (76.8)	49 (76.6)	47 (68.1)	44 (80.0)	286 (77.7)
Male	10 (20.4)	8 (12.9)	16 (23.2)	15 (23.4)	22 (31.9)	11 (20.0)	82 (22.3)
<b>Satisfaction with life in college **</b>							
Yes	35 (71.4)	37 (59.7)	40 (58.0)	44 (68.8)	47 (68.1)	42 (76.4)	245 (66.6)
No	14 (28.6)	25 (40.3)	29 (42.0)	20 (31.3)	22 (31.9)	13 (23.6)	123 (33.4)
<b>Involvement in extracurricular activities ***</b>							
Yes	17 (34.7)	36 (58.1)	36 (52.2)	45 (70.3)	45 (65.2)	30 (54.5)	209 (56.8)
No	32 (65.3)	26 (41.9)	33 (47.8)	19 (29.7)	24 (34.8)	25 (45.5)	159 (43.2)
<b>Total</b>	<b>49 (13.3)</b>	<b>62 (16.8)</b>	<b>69 (18.8)</b>	<b>64 (17.4)</b>	<b>69 (18.8)</b>	<b>55 (14.9)</b>	<b>368 (100)</b>
<b>Age (in years)</b> (mean ± standard deviation)	19.24 ± 1.35	19.71 ± 1.08	21.33 ± 1.44	22.66 ± 1.84	23.43 ± 2.12	24.25 ± 1.66	21.84 ± 2.41

\*:  $p = 0.210$ ; \*\*:  $p = 0.244$ ; \*\*\*:  $p = 0.004$ 

and 33.4% of respondents were dissatisfied with their life in college and 56.8% were involved in extracurricular activities.

A distribution according to the year of attendance in the MIM-FMUC has obtained 49 responses from first-year students, 62 from second-year, 69 from third-year, 64 from fourth-year, 69 from fifth-year and 55 from sixth-year, corresponding to 12%, 22%, 23%, 21%, 20% and 17% of respondents from each year, when compared to the total group of students attending the MIM-FMUC during the 2016/2017 school term, respectively. A significant difference was only found between the year of attendance and the involvement in extracurricular activities; it is worth mentioning a 34.7% involvement rate in respondents attending the first year of the course, 70.3% attending the fourth and 54.5% the sixth.

#### Reasons for perfectionism and intolerance to frustration

The following were the reasons with the highest relevance as described by respondents, with over 90% of 'important' and 'very important' responses, as shown in Table 3: 'intrinsic factors' (91.1%) and 'challenges of the medical profession' (91.8%). 'Environmental pressure' was the less relevant reason, with 68.2% of 'important' and/or 'very im-

portant' responses.

#### Reasons for perfectionism and intolerance to frustration according to epidemiological variables

The study of reasons for perfectionism and intolerance to frustration according to epidemiological variables allowed for the identification of significant differences according to 'satisfaction with life in college', 'involvement in extracurricular activities' and 'gender'.

Respondents who were satisfied with their life in college have assigned less relevance to 'environmental pressure', as shown in Table 4, with a 24.9% percentage of those describing this as 'very important' vs. 38.2% of dissatisfied respondents considering this factor as 'very important'. A lower level of relevance has also been described by respondents who were most of the time satisfied with their life in college, as regards 'uncertainty regarding medical training', 'methods of curricular assessment' and 'curricular requirements of the MIM' (Table 4), while no significant differences were found as regards 'intrinsic factors', 'challenges of the medical profession' and 'uncertainty regarding future career plans'.

A higher percentage of female respondents have described curricular requirements of the MIM as 'important' (39.2% vs. 32.9%) or 'very important' (47.9% vs. 35.4%),

as shown in Table 5, while a higher percentage of male respondents have described this reason as 'not important at all' (6.1% vs. 0.7%) or 'slightly important' (25.6% vs. 12.2%).

A statistically significant relationship between the reasons according to student's involvement in extracurricular activities and 'environmental pressure' has been found. The analysis of, , with a higher number of 'important' or 'very important' responses among those that were not involved in any extracurricular activity: 78.6% vs. 61.7% of those that were involved in extracurricular activities (Table 6).

Five respondents have also completed the open-ended question of the questionnaire and three of the responses were included as 'methods of curricular assessment', one as 'curricular requirements of the MIM' and one as 'financial constraints'.

## DISCUSSION

This study aimed at understanding the reasons and influences underlying perfectionism, according to student's perception, rather than developing a psychometric

**Table 3** – Reasons and scoring according to the year of attendance in the MIM-FMUC during the 2016/2017 school term

	1 <sup>st</sup> year n (%)	2 <sup>nd</sup> year n (%)	3 <sup>rd</sup> year n (%)	4 <sup>th</sup> year n (%)	5 <sup>th</sup> year n (%)	6 <sup>th</sup> year n (%)	Total n (%)
<b>Intrinsic factors</b>							
1 - Not at all important	1 (2.0)	1 (1.6)	0 (0.0)	2 (3.1)	0 (0.0)	1 (1.8)	5 (1.4)
2 - Slightly important	3 (6.1)	2 (3.2)	8 (11.6)	3 (4.7)	5 (7.2)	7 (12.7)	28 (7.6)
3 - Important	20 (40.8)	25 (40.3)	30 (43.5)	24 (37.5)	25 (36.2)	19 (34.5)	143 (38.9)
4 - Very important	25 (51.0)	34 (54.8)	31 (44.9)	35 (54.7)	39 (56.5)	28 (50.9)	192 (52.2)
<b>Challenges of the medical profession</b>							
1 - Not at all important	0 (0.0)	0 (0.0)	2 (2.9)	1 (1.6)	0 (0.0)	0 (0.0)	3 (0.8)
2 - Slightly important	3 (6.1)	3 (4.8)	5 (7.2)	0 (0.0)	10 (14.5)	6 (10.9)	27 (7.3)
3 - Important	18 (36.7)	22 (35.5)	20 (29.0)	24 (37.5)	22 (31.9)	24 (43.6)	130 (35.3)
4 - Very important	28 (57.1)	37 (59.7)	42 (60.9)	39 (60.9)	37 (53.6)	25 (45.5)	208 (56.5)
<b>Pressão ambiental</b>							
1 - Not at all important	1 (2.0)	3 (4.8)	2 (2.9)	5 (7.8)	6 (8.7)	3 (5.5)	20 (5.4)
2 - Slightly important	17 (34.7)	13 (21.0)	23 (33.3)	13 (20.3)	17 (24.6)	14 (25.5)	97 (26.4)
3 - Important	16 (32.7)	27 (43.5)	27 (39.1)	22 (34.4)	29 (42.0)	22 (40.0)	143 (38.9)
4 - Very important	15 (30.6)	19 (30.6)	17 (24.6)	24 (37.5)	17 (24.6)	16 (29.1)	108 (29.3)
<b>Incerteza quanto ao futuro pretendido</b>							
1 - Not at all important	1 (2.0)	0 (0.0)	0 (0.0)	4 (6.3)	2 (2.9)	0 (0.0)	7 (1.9)
2 - Slightly important	7 (14.3)	7 (11.3)	9 (13.0)	7 (10.9)	10 (14.5)	9 (16.4)	49 (13.3)
3 - Important	19 (38.8)	21 (33.9)	30 (43.5)	19 (29.7)	14 (20.3)	19 (34.5)	122 (33.2)
4 - Very important	22 (44.9)	34 (54.8)	30 (43.5)	34 (53.1)	43 (62.3)	27 (49.1)	190 (51.6)
<b>Insegurança quanto à formação profissional</b>							
1 - Not at all important	0 (0.0)	1 (1.6)	2 (2.9)	2 (3.1)	2 (2.9)	1 (1.8)	8 (2.2)
2 - Slightly important	11 (22.4)	13 (21.0)	11 (15.9)	10 (15.6)	9 (13.0)	10 (18.2)	64 (17.4)
3 - Important	21 (42.9)	23 (37.1)	26 (37.7)	20 (31.3)	16 (23.2)	20 (36.4)	126 (34.2)
4 - Very important	17 (34.7)	25 (40.3)	30 (43.5)	32 (50.0)	42 (60.9)	24 (43.6)	170 (46.2)
<b>Métodos de avaliação curricular</b>							
1 - Not at all important	0 (0.0)	0 (0.0)	2 (2.9)	3 (4.7)	2 (2.9)	1 (1.8)	8 (2.2)
2 - Slightly important	3 (6.1)	14 (22.6)	12 (17.4)	11 (17.2)	11 (15.9)	12 (21.8)	63 (17.1)
3 - Important	22 (44.9)	22 (35.5)	25 (36.2)	21 (32.8)	24 (34.8)	23 (41.8)	137 (37.2)
4 - Very important	24 (49.0)	26 (41.9)	30 (43.5)	29 (45.3)	32 (46.4)	19 (34.5)	160 (43.5)
<b>Exigências curriculares do MIM</b>							
1 - Not at all important	1 (2.0)	0 (0.0)	1 (1.4)	1 (1.6)	3 (4.3)	1 (1.8)	7 (1.9)
2 - Slightly important	3 (6.1)	9 (14.5)	9 (13.0)	12 (18.8)	11 (15.9)	12 (21.8)	56 (15.2)
3 - Important	15 (30.6)	29 (46.8)	35 (50.7)	21 (32.8)	23 (33.3)	16 (29.1)	139 (37.8)
4 - Very important	30 (61.2)	24 (38.7)	24 (34.8)	30 (46.9)	32 (46.4)	26 (47.3)	166 (45.1)

**Table 4** – Environmental pressure, uncertainty regarding medical training, methods of curricular assessment and curricular requirements of the MIM according to satisfaction with life in college

	Satisfaction with life in college	
	Yes n (%)	No n (%)
<b>Environmental pressure *</b>		
1 - Not at all important	16 (6.5)	4 (3.3)
2 - Slightly important	71 (29.0)	26 (21.1)
3 - Important	97 (39.6)	46 (37.4)
4 - Very important	61 (24.9)	47 (38.2)
<b>Uncertainty regarding medical training **</b>		
1 - Not at all important	6 (2.4)	2 (1.6)
2 - Slightly important	45 (18.4)	19 (15.4)
3 - Important	93 (38.0)	33 (26.8)
4 - Very important	101 (41.2)	69 (56.1)
<b>Methods of curricular assessment ***</b>		
1 - Not at all important	7 (2.9)	1 (0.8)
2 - Slightly important	49 (20.0)	14 (11.4)
3 - Important	95 (38.8)	42 (34.1)
4 - Very important	94 (38.4)	66 (53.7)
<b>Curricular requirements of the MIM §</b>		
1 - Not at all important	5 (2.0)	2 (1.6)
2 - Slightly important	43 (17.6)	13 (10.6)
3 - Important	103 (42.0)	36 (29.3)
4 - Very important	94 (38.4)	72 (58.5)

\*:  $p = 0.004$ ; \*\*:  $p = 0.017$ ; \*\*\*:  $p = 0.002$ ; §:  $p = 0.002$ **Table 5** – Curricular requirements of the MIM according to Gender

	Gender	
	Female n (%)	Male n (%)
<b>Curricular requirements of the MIM *</b>		
1 - Not at all important	2 (0.7)	5 (6.1)
2 - Slightly important	35 (12.2)	21 (25.6)
3 - Important	112 (39.2)	27 (32.9)
4 - Very important	137 (47.9)	29 (35.4)

\*:  $p = 0.001$ 

instrument for the measurement of perfectionism, which was not the aim of the study.

Social networks were used for the application and disclosure of the questionnaire, carried out by the course committees of the MIM-FMUC, instead of using any technology for a randomised selection of participants or the application of the questionnaire in the classroom. Therefore, this convenience sample produced the loss of randomisation as a limitation to the study, as well as the loss of volunteering and the inability to keep control on the size of the sample as well as leaving no control on respondents. However, an easy application, easier data recording and uninfluenced response with subsequent removal of any biases regarding

**Table 6** – Environmental pressure according to student's involvement in extracurricular activities

	Involvement in extracurricular activities *	
	Yes n (%)	No n (%)
<b>Environmental pressure *</b>		
1 - Not at all important	12 (5.7)	8 (5.0)
2 - Slightly important	68 (32.5)	29 (18.2)
3 - Important	75 (35.9)	68 (42.8)
4 - Very important	54 (25.8)	54 (34.0)

\*:  $p = 0.007$ 

availability and opportunity are strengths of this methodology, which has also allowed for an adequate sample size ( $n=368$ ), above the number initially estimated as necessary ( $n=277$ ). The fact that 77.7% of our group of respondents were female enhanced it as a representative sample of the population to be studied, in line with data of the MIM-FMUC and the population of Portuguese medicine students mostly including women.<sup>2,14</sup>

The reasons that were described by students were in line with literature<sup>7,8,13,14</sup> and, in our study, all the reasons that were identified as relevant for perfectionism and intolerance to frustration have been considered by more than half of respondents. However, an acquiescence bias may have

been caused by the use of the Likert-type scale and, on the other hand, the 'important' / 'very important' classifications that were mostly assigned may be explained by the typically perfectionist profile of this population, a confounding factor which is worth mentioning.<sup>14,16</sup>

It was found that 33.4% of respondents were not satisfied with their life in college, regardless of the year of attendance in the MIM, which raises the question whether these results were in fact related to the curriculum<sup>5-7,9</sup> or to factors underlying the very own personality of this population, demanding and perfectionist.<sup>7,9,14,16</sup>

Considering that 56.8% of respondents were involved in extracurricular activities, in line with other Portuguese studies,<sup>2,14</sup> even though different from the higher percentages that were found in international studies,<sup>3,9,17</sup> the question whether the curricular workload in Portuguese medical schools is in fact related to the lack of spare time for these activities<sup>2,7,8,14</sup> or is it just a cultural or social issue should be taken into consideration. Differences in students' involvement in extracurricular activities were found between the different years of the course and should be the object of further studies, considering that the low percentage of students involved in extracurricular activities on the first year of the course is due to the initial period of adaptation<sup>6</sup> as to the pressure that was felt by students in order to keep with the learning rhythm that was acquired in high school.<sup>2,5,16</sup> A better adaptation<sup>4</sup> and higher availability will follow, shown by the higher percentage of students involved in extracurricular activities over the subsequent years, which is reduced upon the fourth year, probably due to the approaching competitive national examination (*Prova Nacional de Seriação*), a time more focused on life in college due to the perceived need to exceed the others in order to reach future career plans.<sup>13</sup>

Even though major stressors in medical training were found by different authors to be related to the curricular environment,<sup>4,6,7,9,12,13</sup> these results have shown personality traits and concern with the challenges related to the own medical profession as the major reasons for perfectionism and intolerance to frustration in students attending the MIM-FMUC. It is known that maladaptive perfectionism (neurological) is frequently found in medical students,<sup>16</sup> with high levels of neuroticism,<sup>8,13</sup> harm avoidance<sup>20</sup> and low levels of self-directedness<sup>20</sup> associated with higher vulnerability to stress. In addition, the fact that medical profession compels to deal with issues of an extreme sensitivity<sup>13</sup> not leaving any place for error, despite this permanent uncertainty,<sup>13,18</sup> converts this issue into a similar stressor for professionals as for students, who seem to be suffering in anticipation.

'Environmental pressure' has been considered by respondents as the less relevant reason, even though medical training is on its own described in medical literature as an environment with extreme pressure,<sup>8,11,13</sup> "that encourages competition instead of cooperation between colleagues".<sup>11</sup>

The remaining reasons have also represented an important role in perfectionism and intolerance to frustration in these students and 80.4 and 84.8% of respondents have

considered these as 'important' and 'very important', respectively and students who were not satisfied with their life in college were those who have mostly described these as the important reasons. Therefore, these variables should be analysed in further studies providing information on the causes for curricular dissatisfaction, allowing for the proposal of curricular changes aimed at the optimisation of the balance between student's wellbeing and the quality of medical education.<sup>12</sup>

Students involved in extracurricular activities have considered 'environmental pressure' as less important, allowing for the conclusion that extracurricular activities probably have had a protective role due to the development of coping skills with pressures or constraints.<sup>9</sup>

This study has contributed to the understanding of major reasons underlying vulnerability to psychological stress in students attending the MIM-FMUC and gives support to the development of strategies aimed at the prevention of this vulnerability, namely (i) the development of organisational skills and the acquisition of study methods from high school<sup>19</sup> (ii) stress management training programs<sup>7,13</sup> aimed at students,<sup>1,5,8</sup> (iii) psycho-social support<sup>1,7</sup> made available by older students,<sup>5</sup> teachers, psychologists or colleagues, including the promotion of group activities and curricular/extracurricular programs for the promotion of inter-student cooperation<sup>13</sup> (iv) training of teachers and assistants in educational approaches preventing negative stress, wellbeing promotion and adequate learning<sup>13</sup> (v) share of experiences by senior physicians<sup>18</sup> focused on the uncertainty that is present in all the moments of professional life under a humanistic and contemporary medicine perspective<sup>7</sup> and even (vi) positive behavioural cognitive techniques.<sup>21</sup>

Socially prescribed perfectionism that may jeopardize academic self-efficiency and produce burnout in students and future doctors, was not addressed in this study<sup>22</sup> and should be considered as relevant in further studies. In addition, the cross-sectional nature of this study, not allowing for any causality to be assigned, explains for further longitudinal studies involving wider samples and/or other populations within the universe of Portuguese medical students.

## CONCLUSION

Personality-related 'intrinsic factors' and 'challenges of the medical profession' were found as major reasons for perfectionism and intolerance to frustration in students attending the MIM-FMUC, followed by 'uncertainty regarding future career plans', 'uncertainty regarding medical training', 'methods of curricular assessment' and 'curricular requirements of the MIM'. 'Environmental pressure' was the less important reason described, even though all the reasons were identified as relevant by more than half of our group of participants.

The weight of the different factors did not depend on the attendance year in the MIM-FMUC, while 'unsafety regarding medical training', 'methods of curricular assessment' and 'curricular requirements of the MIM' were considered as less important by students who were satisfied with their life

in college and 'environmental pressure' was less relevant not only for these students, as well as for those involved in extracurricular activities.

Based on the results that were presented and discussed, it was our purpose that these would lead to actions by the Faculty of Medicine of the University of Coimbra aimed at the prevention of the reasons that were identified and that these should serve as an example for the remaining medical schools in the country.

#### 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.

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#### 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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