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SELF-COMPASSION AS A PROTECTIVE FACTOR FROM BURNOUT IN MEDICAL
AND DENTISTRY STUDENTS - A PROSPECTIVE STUDY

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"Segue o teu destino,

Rega as tuas plantas,

Ama as tuas rosas.

O resto é a sombra

De árvores alheias."

Ricardo Reis, em "Odes de Ricardo Reis", 1916

[Escreva aqui]

Self-Compassion as a protective factor from Burnout in Medical and Dentistry Students – A prospective study

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Abbreviations

BTPS – Big Three Perfectionism Scale

CBT – Cognitive Behaviour Therapy

CI – Confidential Interval

CIU- Cognitive interference and unproductiveness

ComHu – Common Humanity

Deperson - Depersonalization

EExhaust - Emotional Exhaustion

Ineff – Academic Inefficacy

Isolat – Isolation

M – Mean

MBI – Mindfulness Based Intervention

MBI-SS - Maslach Burnout Inventory-Student Survey

MDF – Mindfulness

NP - Narcissistic Perfectionism

OverId – Overidentification

PTQ-15 - Preservative Thinking Questionnaire-15

RNT- Repetitive Negative Thinking

RP- Rigid Perfectionism

SCP - Self-critical Perfectionism

SCS - Self-Compassion Scale

SD - Standard Deviation

SelfCT – Total Self - compassion

SelfJudg – Self judgement

SelfKind – Self- kindness

Abstract

Introduction: Burnout negatively affects around 40% of medical and dentistry students, a vulnerable group due to their characteristic high levels of perfectionism, repetitive negative thinking, and low self-compassion. As the consequences of burnout are pernicious, it is essential to find strategies to prevent and manage Burnout. So far, literature has highlighted the beneficial effects of mindfulness and self-compassion-based interventions on reducing stress, depression, and anxiety while increasing well-being and quality of life; nevertheless, the relationship between perfectionism, self-compassion, repetitive negative thinking, and burnout has not yet been studied in medicine and dentistry students.

Objective: The aim of this prospective study is to analyse the role of perfectionism, self-compassion, and repetitive negative thinking on burnout in medical, dentistry and other health-related students, to support whereas self-compassion and Repetitive Negative Thinking are relevant therapeutic targets in managing and preventing Burnout.

Materials and Methods: 202 medical and dentistry students answered to an online self-report Google Forms questionnaire that included the Portuguese validated BIG-3 Perfectionism Scale (BTPS), Maslach Burnout Inventory-Student Survey (MBI-SS), Preservative Thinking Questionnaire-15 (PTQ-15) and Self-Compassion Scale (SCS). This was an observational, correlational, and prospective study, with two assessment times at T0 and after 18 months (T1).

Results: Both at T0 and T1, Perfectionism, Repetitive Negative Thinking and self-compassion correlated significantly with each other, and all correlated with Burnout. In mediation analyses, total perfectionism, at T0, predicted burnout at T1, both directly and indirectly, through the mediation effect of Self-compassion and RNT. Self-compassion, at T0, does not directly have a significant effect on burnout, however, including Repetitive negative thinking in the pathway, the effect is already significant.

Discussion: This study reinforces the recent finding that low self-compassion is a mediator of the relationship between perfectionism and burnout and adds that Repetitive Negative Thinking also plays an important role in this predictive pathway.

Conclusion: This study emphasizes the importance of taking a long-term approach, such as mindfulness and self-compassion-based interventions, to preserve the mental health and wellbeing of medical and dentistry students, who often face demanding and stressful environments. These interventions can help reduce repetitive negative thinking and decrease the risk of burnout.

Keywords: Burnout, Perfectionism, Self-compassion, Repetitive Negative Thinking, Medical Students, Dentistry Students

Resumo

Introdução: O Burnout afeta negativamente cerca de 40% dos estudantes de medicina e de Medicina Dentária, um grupo vulnerável devido aos seus elevados níveis de Perfeccionismo, Pensamento Negativo Repetitivo e reduzidos de Auto-compaixão. Como as consequências do Burnout são graves, é essencial encontrar estratégias para prevenir e gerir o Burnout. A literatura tem demonstrado os efeitos benéficos de intervenções baseadas no Mindfulness na redução do stress, depressão e ansiedade, enquanto aumenta o bem-estar e a qualidade de vida; no entanto, a relação entre Perfeccionismo, Auto-compaixão, Pensamento Negativo Repetitivo e Burnout ainda não foi estudada em estudantes de medicina e de medicina dentária.

Objetivo: O objetivo deste estudo prospetivo é analisar o papel do Perfeccionismo, da Auto-compaixão e do Pensamento Negativo Repetitivo no Burnout em estudantes de Medicina, Medicina Dentária e de outros cursos da área da saúde, a fim de perceber se a Auto-compaixão e o Pensamento Negativo Repetitivo são mediadores da relação entre aquele traço de personalidade e o Burnout.

Materiais e métodos 202 estudantes de medicina e medicina dentária responderam a um formulário online Google Forms, de autopreenchimento, que incluía os seguintes questionários, validados para a população portuguesa: BIG-3 Perfectionism Scale, Maslach Burnout Inventory-Student Survey (MBI-SS), Preservative Thinking Questionnaire-15 (PTQ-15) e Self-Compassion Scale (SCS). Este foi um estudo observacional, correlacional e prospetivo, com tempos de avaliação em T0 e após 18 meses (T1).

Resultados: Perfeccionismo, Pensamento Negativo Repetitivo e Auto-compaixão estão correlacionados significativamente entre si e todos estão correlacionados com o Burnout, em T0 e em T1. Nas análises de mediação, o perfeccionismo total, em T0, teve efeitos diretos significativos sobre o Burnout, bem como efeitos indiretos, com um papel de mediação através da Auto-Compaixão e do Pensamento Repetitivo Negativo. A Auto-compaixão, em T0, não se revelou um preditor significativo do Burnout; contudo, com a inclusão do pensamento negativo repetitivo na via de predição, esta revela-se significativa.

Discussão: Este estudo reforça a recente descoberta de que baixa Auto-compaixão é um mediador entre Perfeccionismo e Burnout, destacando o papel do Pensamento Negativo Repetitivo nesta relação.

Conclusão: Este estudo enfatiza a importância de adoptar uma abordagem a longo prazo, nomeadamente intervenções baseadas no Mindfulness e na Auto-compaixão para preservar a saúde mental e bem-estar dos estudantes de medicina e medicina dentária, que enfrentam ambientes exigentes e potencialmente stressantes. Estas

intervenções podem ajudar a reduzir o Pensamento Negativo Repetitivo e diminuir o risco de Burnout.

Palavras-Chave: Burnout, Perfecionismo, Auto-compaixão, Pensamento Repetitivo Negativo, Estudantes de Medicina, Estudantes de Medicina Dentária

Introduction

The term Burnout was first introduced by the psychologist Herbert Freudenberger, in the 1970s. (1)

Later, it was defined by Maslach, as a state of physical, emotional, and mental exhaustion that arises as a response to intense and chronic stressors in the context of a professional or academic activity. (2)

As a syndrome, Burnout comprises three major independent components: emotional exhaustion, depersonalisation or disbelief and reduced perceived efficacy. Emotional exhaustion is characterised by decreased energy and eagerness to perform tasks. Depersonalisation consists of a state of increasing dehumanisation, indifference towards others and emotional dissatisfaction. The reduction of the perception of effectiveness is associated with the absence of personal achievement, as well as of technical competence.(3)

Several studies have associated Burnout with professions in which there is a "helping relationship", namely doctors (4), nurses and teachers, but more recent research has shown that Burnout is transversal to multiple professional domains (5) and even to the undergraduates.(6)

Burnout affects around 40% of medical students (6), as well as a considerable number of dentistry students (7), from the first year onwards.(8) It is significantly higher than in the general population as well as in students from other areas, including other health areas.(9)

In the field of medicine, Burnout can occur at all stages, since pre graduated to specialist physician (10) and is increasingly recognized as an urgent problem due to its high prevalence and negative impact on personal health, patient care and economic costs. It occurs in all specialties, but the prevalence is higher among surgical residencies.(11)

The consequences of Burnout are serious. In personal terms, it is associated with substance abuse (12), anxiety, depression (13), and suicidal ideation. (14) In fact, students with burnout are three times more likely to have suicidal thoughts. In professional terms, it leads to more errors and malpractice. (15,16)

Burnout arises from the interaction between internal and external factors. Among the internal ones, intrinsic to the individual, some personality traits such as high perfectionism, neuroticism, and conscientiousness stand out. (17) In truth, students with these personality traits, may be drawn to the Medicine and Dentistry areas. (18)

Among the external factors, Medical Faculties are well known for their competitive environment, the high workload, the large number of assessments and subjects required

and the long working hours. During the medical career, physicians still have to deal with other stressors, namely administrative burdens, restricted autonomy, unclear hierarchies, economic pressure, lack of work-life balance, separation from family and exposure to sickness, pain, suffering, and death, for the first time. (19)

The pursuit of perfection, unrealistic high-performance standards and wildly critical self-evaluations are all included in the definitions of perfectionism, according to Flett and Hewitt. (20) This trait has recently been conceptualized and measured by three general dimensions – self-critical perfectionism, rigid perfectionism, and narcissistic perfectionism. (21) Although a few argue that perfectionism can be seen as a positive trait, in which individuals set achievable goals for themselves, research has consistently found that this trait is maladaptive, as it is associated with high levels of psychological distress, particularly in medical students. (22) This is because it leads to psychological distress, including depression, anxiety, and fatigue by increasing levels of negative repetitive thinking (22) (which is defined as the repetitive, passive, intrusive and self-focused thinking about one's problems, past experiences, and future concerns, in a way that is complicated to disengage, and other negative cognitive emotional regulation strategies. (23)

The prevention of Burnout is fundamental and involves developing skills in the individual such as adaptability, self-regulation, empathy, and resilience.

Cognitive Behavioural Therapy (24), Self-compassion (25) and Mindfulness-based therapies are promising strategies to diminish Burnout.

Self-Compassion encompasses three elements: self-kindness, common humanity, and mindfulness. Self-kindness is underpinned by the principle that we should be understanding of ourselves when we suffer, kind and gentle. Common humanity is admitting that suffering is a part of the human condition. Mindfulness relates to the ability to be aware of one's own thoughts and feelings.

Higher levels of self-compassion are associated with lower levels of Burnout (18) in mental health professionals or students, so interventions that promote self-compassion and self-care have already been made in order to reduce Burnout symptoms. (26)

Mindfulness and Self-compassion-based interventions are known to reduce mental distress and promote well-being. A large body of literature has demonstrated the beneficial effects of mindfulness interventions on reducing stress, depression, and anxiety while increasing well-being and quality of life. Studies have found that mindfulness and self-kindness practices can lead to a reduction in symptoms of shame and criticism (27–29), as well as an improvement in overall well-being and quality of life.

The connection between repetitive negative thinking (RNT) and self-compassion is intriguing. Meditation practices, including self-compassion practices, can be seen as training in more beneficial ways of perceiving and dealing with experiences. For example, consistently practicing self-compassionate ways of seeing could retrain the mind from negative habit patterns (e.g., RNT and self-judgment) to healthier ones (e.g., self-kindness). With enough practice, meditation-induced intentions and states can become lasting traits. Additionally, by developing the capacity to approach experiences with self-compassion, the intrusive nature and negative cognitive and emotional impact of RNT may be reduced. (29–31)

Mindful-self compassion aided those who practiced it to improve their skill of detaching from unhealthy, repetitive thoughts, leading to a more positive outlook towards the future. (27)

In addition to promoting well-being for individuals, mindfulness interventions have also been found to improve the quality of care, leading to improvements in clinical communication, empathy, compassion, and dedication to work for healthcare professionals.(32,33) This is particularly true for physicians, since studies have found that mindfulness interventions can lead to reductions in burnout and stress for physicians. (34–36)

A recent meta-analysis conducted by Fendel (37) has further solidified the effectiveness of mindfulness-based practices in reducing burnout and stress among physicians, showing that MBIs are a highly promising approach in addressing the well-being and quality of care of healthcare professionals. Mindfulness-based interventions can help physicians to develop the necessary skills to manage the stress and demands of their work and improve the quality of care they provide to their patients.

Our hypothesis is that Self-compassion, at T0, and Repetitive Negative Thinking, at T0, can mediate the relationship between Perfectionism (at T0) and Burnout, at T1, thus providing more information about the psychological mechanisms that can lead to Burnout.

The aim of this study is to analyse the role of perfectionism, self-compassion, and repetitive negative thinking on burnout in medical, dentistry and other health-related students over a period of 18 months. If confirmed, our hypothesis that self-compassion, at T0, and repetitive negative thinking, at T0, can mediate the relationship between perfectionism (at T0) and Burnout, at T1, will contribute to better understand the psychological mechanisms that can lead to Burnout and support the relevance of testing the efficacy of Self-compassion interventions to reduce perfectionistic Repetitive Negative Thinking and, thus, prevent Burnout.

Materials and Methods

This is a prospective study covered by the research project "COMBURNOUT", ongoing at the Institute of Medical Psychology of the Faculty of Medicine of the University of Coimbra. This project is funded by the Calouste Gulbenkian Foundation's Academias do Conhecimento and was approved by the Ethics Committee and Scientific Council of the Faculty of Medicine of the University of Coimbra on 25th November 2020 (refª 146-CE-2020).

Procedure

Health fields students from Portuguese Universities voluntarily answered to an online self-response google forms questionnaire, which was promoted via email, social media, and by student organizations. Before answering the questionnaire, the participants were asked to give their informed consent, and the confidentiality of their data was guaranteed. In addition to sociodemographic and academic variables, the questionnaires included the Portuguese validated versions of the following scales: BIG3 Perfectionism Scale (BTPS), Maslach Burnout Inventory – Student Survey (MBI-SS), Preservative Thinking Questionnaire-15/PTQ-15 and the Self-Compassion Scale (SCS).

Participants

The participants were recruited during finals season of a set of self-reported questionnaires in two time periods: T0 (January – February 2021) and T1 (Jun-Jul 2021 and Jun-Jul 2022); an interval of approximately 18 months (mean=17.82±1,021), respectively.

The sample was composed of 202 participants: the majority of which were from the Faculty of Medicine of the University of Lisbon (31.2%; n=63) and University of Coimbra (16.8%; n=34). Little more than half of the students were in their pre-clinical years (1st-3rd year – 78.2%; n =158). Most participants were medical students (58.9%; n=119), (28.2%; n= 57) were Dentistry students and 12.9% (n=26) were from other health-related courses. The vast majority (93.1%; n=188) hadn't completed another high degree course previously.

Out of the 202 students, 166 (82,2%) were female. Age ranged from 18 to 41, with a mean age of 20.79 (± 3.25) years old. The vast majority was Portuguese (95.5%; n=193), all students were fluent in the Portuguese language and lived in Portugal at the time of the recruitment. Most of the students (58.9%; n=119) lived in a different city from where they were studying.

In what concerns their subjective perception of one's physical and mental health, most students (61.4%; n=124) rated their physical health as 'good'. Regarding their mental health, 37.6% (n=76) rated their mental health as "nor bad nor good", 31.2% (n=63) reported having a bad mental health and 24.3% (n=49) rated their mental health as good.

Measures

All the questionnaires used in the present study revealed good reliability and validity (construct and concurrent) in Portuguese samples. The internal consistency coefficients (Cronbach's alpha), obtained with this study, are presented in Table 1.

Perfectionism (BIG-3 Perfectionism Scale (BTPS)

The BTPS-SF is a short version of the BTPS (Big Three Perfectionism Scale) and consists in a 16-item self-report questionnaire, using a five-point Likert scale, that evaluates three higher-order global factors (rigid perfectionism, self-critical perfectionism, and narcissistic perfectionism). BTPS-SF was proved to have acceptable model fit and strong test-retest reliability.(38) Portuguese version of BTPS-SF has been validated.(39) The internal consistencies of this sample are shown in table 1.

Maslach Burnout Inventory – Student Survey (MBI-SS)(40)

The Maslach Burnout Inventory-Student Survey (MBI-SS) is an adaptation of the Maslach Burnout Inventory, the most widely used instrument in assessing burnout. It is a self-report measure, comprising of 15 items that evaluate three factors: exhaustion, disengagement, and academic efficacy. Both the original version and Portuguese translation showed a good model fit to data and adequate construct validity and reliability for the three-factor structure of burnout. In another study (carried out with a larger sample that included participants of the present study), the second order factor, the overall burnout measure, presented a good fit. The internal consistencies of this sample are shown in table 1.

Self-Compassion Scale (41)

The self-compassion scale (SCS) is the most used measure in the study of self-compassion in undergraduate samples. It is composed of 26 items, organized in three positive factors and three negative factors, part of three opposing pairs: self-kindness vs. self-judgment; common humanity (which consists of seeing the experience of our life, as part of the experience of humanity) vs. isolation; and mindfulness (which consists on holding a balanced awareness) vs. over-identification. The Portuguese version has shown good internal consistency, factorial validity, and convergent validity. The internal consistencies of this sample are shown in table 1.

Preservative Thinking Questionnaire-15/PTQ-15[21](42)

The PTQ-15 consists of 15 items that are scored on a Likert scale ranging from "Never" (0 points) to "Almost Always" (4 points). The goal of this multidimensional scale is to assess the basic properties of Repetitive Negative Thinking (RNT) without necessarily linking them to specific disorders. Two subscales were discovered in the Portuguese version: Repetitive Thinking (RT) – with seven items – which indicates RNP's mental process, and Cognitive Interference and Unproductivity (CIU) – with eight items – which assesses the RNT's dysfunctional effects of unproductivity and interference. The internal consistencies of this sample are shown in table 1.

Data Analysis

Descriptive, t-test, and Pearson correlation analyses were conducted using IBM®
SPSS® Statistics, version 27. In the descriptive analysis, were used parametric measures of central tendency (mean) and dispersion (standard deviation). We utilized parametric measures due to the big sample size and the central limit theorem. (43) Pearson's correlation was used to investigate if the independent, dependent, and mediator variables were correlated to each other. The levels of correlation coefficients were defined as follows: 0.10—low, 0.30—moderate, and 0.50 high. Cronbach's α coefficients were used, when assessing the internal consistency. A value of this coefficient greater than 0.7 is usually required to consider the variables reliable, however when applying to subscales with less than 10 items, a value of 0.5 is sufficient. (44)

The mediation analyses were performed using PROCESS macro (Model 4) for SPSS®.
The mediation analyses were performed using PROCESS macro (Model 4.1)41 for SPSS®. The PROCESS macro uses the bootstrapping method, which calculates confidence intervals for direct and indirect effects of variables and maximizes power, being robust against non-normality. These analyses examined the mediator roles of Self-compassion and Repetitive Negative Thinking in the relationship between perfectionism (rigid/narcissistic/self-critical), at T0, and burnout, at T1. The direct effect represents the influence pathway between the independent (perfectionism) and the outcome variable (burnout), while the mediator remains unaltered. The indirect effect represents the impact of the mediator variables (Self-compassion and RNT) on this original association. If zero is not contained within the confidence interval (CI) of the indirect effect, the difference between the total and direct effects is not zero and thus the indirect effect is significant.

Results

Descriptive Analysis

Table 1 shows the measures of central tendency and dispersion of the variables being studied, as well as the Cronbach's alpha coefficients obtained for the total and dimensional scores of the scales used.

Table 1 - Descriptive statistics and respective internal consistencies.

Variables	M	SD	Min-Max	Asymmetry	SD Asymmetry	Kurtosis	SD Kurtosis	α Cronbach
PerfectT T0	40.87	10.57	16 - 71	.031	.171	-.235	.341	.855
RigPerf T0	11.91	4.04	4 - 20	-.133	.171	-.783	.341	.793
SCritPerf T0	18.49	5.75	6 - 30	-.021	.171	-.741	.341	.862
NarcPerf T0	10.48	3.77	6 - 25	1.046	.171	1.096	.341	.665
RNT_T T0	30.98	12.65	0 - 60	-.076	.171	-.204	.341	.953
PTQ_RT T0	15.99	6.64	0 - 28	-.299	.171	-.392	.341	.948
PTQ_CIU T0	15.34	7.13	0 - 32	.044	.172	-.449	.341	.905
SelfCT T0	34.83	9.23	15 - 59	.025	.171	-.320	.341	.891
SelfKind T0	5.82	2.15	2 - 10	.048	.171	-.806	.341	.731
SelfJudg T0	5.71	1.81	2 - 10	-.168	.171	-.312	.341	.631
MDF T0	5.80	1.63	2 - 10	-.080	.171	-.046	.341	.363
Overld T0	5.83	1.99	2 - 10	.058	.171	-.587	.341	.481
Isolat T0	5.77	2.15	2 - 10	.120	.171	-.729	.341	.731
ComHu T0	5.81	1.74	2 - 10	.373	.171	-.016	.341	.309
BurnoutT T0	39.31	15.69	3 - 80	.278	.171	-.468	.341	.727
EExhaust T0	15.41	6.72	0- 30	.212	.171	-.823	.341	.922
Deperson T0	7.07	6.37	0 - 24	.927	.171	-.033	.341	.751
Ineff T0	16.83	6.04	2 - 35	-.162	.171	-.198	.341	.779
PerfectT T1	21.72	6.21	10 - 47	.731	.171	1.315	.341	.838
RigPerf T1	9.86	3.21	4 - 19	.277	.171	-.314	.341	.843
SCritPerf T1	18.76	5.85	7 - 30	.000	.171	-.874	.341	.768
NarcPerf T1	11.86	3.70	6 - 28	.997	.171	1.931	.341	.701
RNT_T T1	32.54	12.36	4 - 64	.249	.171	-.472	.341	.953
PTQ_RT T1	16.05	6.86	.00 - 32	.084	.171	-.221	.341	.917
PTQ_CIU T1	14.97	7.36	.00 - 34	.203	.171	-.377	.341	.905
SelfCT T1	40.21	9.86	16 - 70	.293	.171	-.111	.341	.881
SelfKind T1	5.71	1.92	2 - 10	-.006	.171	-.468	.341	.696
SelfJudg T1	5.74	1.96	2 - 10	.148	.171	-.525	.341	.563
MDF T1	5.68	1.64	2 - 10	.123	.171	-.411	.341	.414

OverId T1	5.65	1.95	2 - 10	.172	.171	-.491	.341	.442
Isolat T1	5.74	2.07	2 - 10	.241	.171	-.652	.341	.710
ComHu T1	5.85	1.87	2 - 10	.267	.171	-.367	.341	.326
BurnoutT T1	40.55	11.84	13 - 80	.531	.171	-.064	.341	.739
EExhaust T1	14.02	6.66	.00 – 29	.262	.171	-.812	.341	.889
Deperson T1	8.62	4.59	1 - 21	.905	.171	.012	.341	.757
Ineff T1	17.91	5.01	1 - 33	.012	.171	.282	.341	.752
Notes:	**M** - Mean; **SD** - Standard Deviation; **RigPerf** - Rigid Perfectionism; **NarcPerf** - Narcissistic Perfectionism; **SCritPerf** - Self-critical Perfectionism; **PTQ** - Preservative Thinking Questionnaire; **RT**- Repetitive Thinking; **CIU**- Cognitive interference and unproductiveness; **SelfCT** – Self- compassion; **SelfKind** – Self- kindness; **SelfJudg** – Self judgement; **MDF** – Mindfulness; **OverId** – Overidentification; **Isolat** – Isolation; **ComHu** – Common Humanity; **EExhaust** - Emotional exhaustion; **Deperson** - Depersonalization; **Ineff** – Academic Inefficacy.							

Comparison by gender

The mean comparison of all variables between genders revealed no significant differences (p>.05) (Table 2), except for Mindfulness at baseline - T0.

Table 2 - Comparison by gender.

Variables	Female		Male		*t*	*p*
	(n=166; 82,2%)		*(n= 36; 17,8%)*			
	M	SD	M	SD		
PerfectT T0	41.05	10.61	40.00	10.50	-.542	.589
RigPerf T0	11.89	4.03	12.00	4.15	.154	.878
SCritPerf T0	18.85	5.76	16.81	5.46	-1.947	.053
NarcPerf T0	10.32	3.78	11.19	3.70	1.265	.207
RNT_T T0	31.42	12.37	28.92	13.88	-1.078	.283
PTQ_RT T0	16.11	6.46	15.42	7.47	-.566	.572
PTQ_CIU T0	15.58	7.11	14.25	7.18	-1.016	.311
SelfCT T0	34.64	9.19	35.69	9.48	.618	.537
SelfKind T0	5.83	2.16	5.75	2.13	-.206	.837
SelfJudg T0	5.63	1.85	6.06	1.64	1.270	.206
MDF T0	5.67	1.60	6.36	1.68	2.318	.021
OverId T0	5.75	2.02	6.17	1.83	1.134	.258
Isolat T0	5.76	2.11	5.83	2.35	.187	.851
ComHu T0	5.79	1.72	5.92	1.86	.398	.691

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BurnoutT T0	39.63	15.61	37.83	16.18	-.621	.536
EEExhaust T0	15.49	6.72	15.03	6.83	-.376	.707
Deperson T0	7.01	6.48	7.33	5.91	.274	.784
Effect T0	18.88	5.82	20.53	6.86	1.489	.138
Ineff T0	17.12	5.82	15.47	6.86	-1.489	.138
PerfectT T1	21.66	6.29	22.00	5.91	.295	.769
RigPerf T1	9.90	3.27	9.67	2.95	-.401	.689
SCritPerf T1	19.07	5.85	17.36	5.73	-1.592	.113
NarcPerf T1	11.76	3.73	12.33	3.59	.844	.400
RNT_T T1	32.61	12.10	32.22	13.68	-.172	.863
PTQ_RT T1	16.15	6.61	15.58	8.03	-.449	.654
PTQ_CIU T1	15.27	7.32	13.56	7.50	-1.269	.206
SelfCT T1	39.70	9.41	42.56	11.55	1.582	.115
SelfKind T1	5.63	1.90	6.06	2.01	1.197	.233
SelfJudg T1	5.67	1.95	6.06	1.99	1.076	.283
MDF T1	5.53	1.59	6.39	1.71	2.903	.004
OverId T1	5.55	1.97	6.08	1.84	1.477	.141
Isolat T1	5.69	2.01	5.97	2.37	.748	.456
ComHu T1	5.81	1.84	6.00	2.01	.542	.588
BurnoutT T1	40.11	12.19	42.58	9.98	1.135	.258
EEExhaust T1	14.07	6.65	13.83	6.75	-.190	.850
Deperson T1	8.4398	4.71933	9.4722	3.88761	1.225	.222
Ineff T1	17.6084	5.09280	19.2778	4.41174	1.823	.070
Note:	**M** - Mean; **SD** - Standard Deviation; **RigPerf** - Rigid Perfectionism; **NarcPerf** - Narcissistic Perfectionism; **SCritPerf** - Self-critical Perfectionism; **PTQ** - Preservative Thinking Questionnaire; **RT**- Repetitive Thinking; **CIU**- Cognitive interference and unproductiveness; **SelfCT** – Self- compassion; **SelfKind** – Self-kindness; **SelfJudg** – Self judgement; **MDF** – Mindfulness; **OverId** – Overidentification; **Isolat** – Isolation; **ComHu** – Common Humanity; **EEExhaust** - Emotional exhaustion; **Deperson** - Depersonalization; **Ineff** – Academic Inefficacy.

Correlation Analysis

Table 3 presents the Pearson´s correlation coefficients between the variables under study, at T0 and T1.

Total Perfectionism, at T0, significantly correlated with all variables (p<.01). It showed high magnitude correlation with itself, at T1 and moderate magnitude with RNT, SelfC and Burnout.

RNT, at T0, correlated with all variables (p<.01), except with Inefficacy and NarcPerf, at T1, which correlation was not statistically significant.

SelfC, at T0, correlated with all variables (p<.01), except with Inefficacy and NarcPerf, at T1, which correlation was not statistically significant. It showed moderate magnitude with Burnout, EExhaust and Depperson, at T1.

Academic Inneficacy does not correlate with any variable, except with itself, PerfectT, OverId and total burnout, at T1.

Table 3 - Pearson's correlation coefficients between the variables, at T0 and T1.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1PerfectT	.808*	.862**	.847**	.610**	.374**	.348**	.432**	-.383**	-.346**	-.345**	-.262**	-.332**	-.358**	-.164**	.441**	.420**	.409**	.110**
2RigPerf	.668**	.793**	.690**	.434**	.275**	.268**	.315**	-.345**	-.294**	-.295**	-.268**	-.276**	-.343**	NS	.374**	.313**	.364**	NS
3SCritPerf	.513**	.715**	.980**	.242**	.466**	.445**	.521**	-.527**	-.493**	-.462**	-.389**	-.461**	-.427**	-.246	.495**	.522**	.482**	NS
4NarcPerf	.768**	.477**	.143*	.877**	NS	NS	NS	NS	NS	NS	.145*	NS	NS	NS	NS	NS	NS	NS
5RNT_T	.202**	.328**	.550**	NS	.800**	.810**	.934**	-.547**	-.476**	-.495**	-.406**	-.430**	-.489**	-.265**	.496**	.581**	.432**	NS
6 PTQ_RT	.198**	.314**	.532**	NS	.729**	.782**	.839**	-.509**	-.449**	-.479**	-.378**	-.403**	-.456**	-.230**	.419**	.481**	.354**	NS
7 PTQ_CIU	.151*	.282**	.550**	NS	.733**	.701**	.873**	-.533**	-.473**	-.467**	-.356**	-.431**	-.468**	-.277**	.475**	.582**	.414**	NS
8SelfCT	-.149*	-.320**	-.570**	NS	-.444**	-.450**	-.546**	.802**	.708**	.635**	.643**	.703**	.653**	.407**	-.371**	-.446**	-.383**	NS
9SelfKind	-.153*	-.295**	-.508**	NS	-.326**	-.411**	-.370**	.613**	.654**	.483**	.488**	.579**	.444**	.265**	-.319**	-.358**	-.337**	NS
10SelfJudg	NS	-.282**	-.482**	NS	-.421**	-.429**	-.538**	.718**	.692**	.697**	.579**	.557**	.547**	.324**	-.379**	-.430**	-.413**	NS
11 MDF	NS	-.204**	-.372**	.148*	-.323**	-.334**	-.397**	.738**	.631**	.555**	.934**	.529**	.457**	.392**	-.256**	-.341**	-.289**	NS
12 OverId	NS	-.317**	-.587**	NS	-.368**	-.366**	-.470**	.763**	.651**	.605**	.565**	.875**	.550**	.349**	-.277**	-.372**	-.343**	.154*
13 Isolat	-.151*	-.298**	-.436**	NS	-.399**	-.395**	-.506**	.724**	.564**	.613**	.444**	.581**	.884**	.309**	-.338**	-.392**	-.351**	NS
14 CHum	NS	-.226**	-.407**	NS	-.362**	-.321**	-.354**	.770**	.604**	.486**	.542**	.525**	.487**	.682**	-.316**	-.383**	-.320**	NS
15BurnT	NS	.258**	.483**	NS	.447**	.431**	.546**	-.453**	-.372**	-.406**	-.333**	-.341**	-.371**	-.260**	.617**	.884**	.703**	-.359**
16EExhaust	.188**	.287**	.483**	NS	.485**	.496**	.586**	-.422**	-.403**	-.410**	-.346**	-.327**	-.362**	-.168*	.741**	.934**	.656**	NS
17Deperson	.171*	.297**	.461**	NS	.433**	.396**	.504**	-.393**	-.337**	-.351**	-.260**	-.297**	-.333**	-.227**	.731**	.785**	.836**	NS
18 Ineff	NS	NS	.232**	NS	.166*	.151*	.236**	-.292**	-.164*	-.228**	-.206**	-.211**	-.211**	-.250**	NS	.430**	.214**	-.746**

Note: **M** - Mean; **NS**: Non Significant; **SD** - Standard Deviation; **RigPerf** - Rigid Perfectionism; **NarcPerf** - Narcissistic Perfectionism; **SCritPerf** - Self-critical Perfectionism; **PTQ** - Preservative Thinking Questionnaire; **RT**- Repetitive Thinking; **CIU**- Cognitive interference and unproductiveness; **SelfCT** – Self- compassion; **SelfKind** – Self- kindness; **SelfJudg** – Self judgement; **MDF** – Mindfulness; **OverId** – Overidentification; **Isolat** – Isolation; **ComHu** – Common Humanity; **EExhaust** - Emotional exhaustion; **Deperson** - Depersonalization; **Ineff** – Academic Inefficacy.

Mediation Analysis

A serial multiple mediation model was tested to examine the mediation roles of self-compassion (M1) and repetitive negative thinking (M2), both at T0, in the relationship between perfectionism (at T0) and burnout, at T1.

Perfectionism (at T0) was hypothesized to have an enhancing effect on low self-compassion (at T0), that in turn was supposed to be reinforced by RNT (at T0), so these were entered as the first and the second mediators, respectively.

Burnout levels, at T0, were statistically controlled in the tested model (entered as a covariate).

Table 4 present the summary of the results of the serial mediation analysis, with an indication of the total (c), direct (c') and indirect [1 (a1b1), 2 (a1d12b2) and 3 (a2b2)] effects that were estimated for all mediations.

Table 4 - Direct and indirect effects of the mediation model.

				Bootstraping BC 95% CI	
Effects	Coefficient	SE	p	Lower	Upper
PREDICTOR: Total Perfectionism T0					
Total effect c	.2713	.0647	<.001	.0000	.1438
Direct effect c'	.2195	.0691	<.001	.0017	.0831
Indirect effects					
Total indirect efect	.0519	.0258	Significant	.0041	.1067
a1b1	-.0081	.0279	NS	-.0621	.0521
a1d12b2	.0350	.0224	Significant	.0014	.0874
a2b2	.0249	.0125	Significant	.0034	.0529
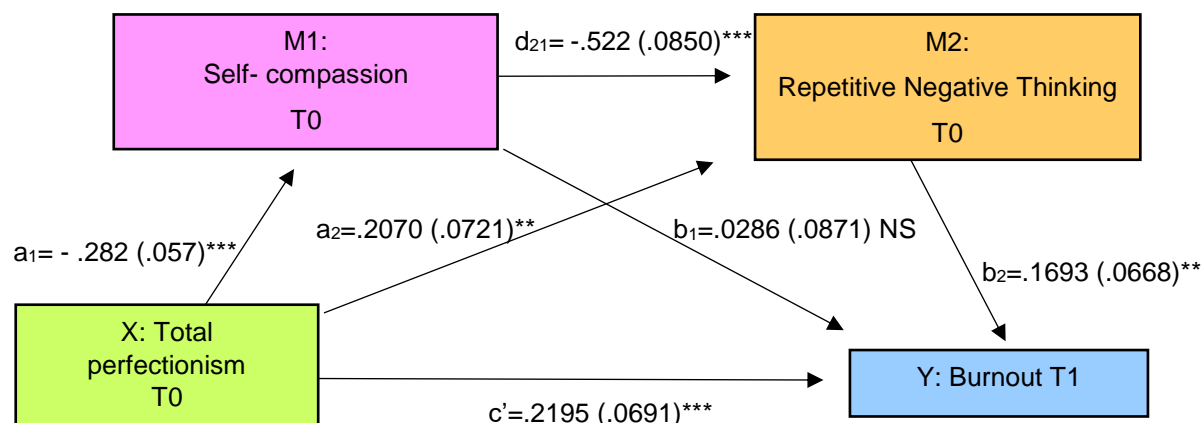
Figure 1 - A mediation model, with total perfectionism, at T0, as the predictor, and self-compassion and repetitive negative thinking as mediators. Numbers represent unstandardized coefficients. Numbers in parentheses represent standard errors.

Note: NS: non significative; **p<0.01, ***p<0.001

Results indicated that the total effect of perfectionism on burnout was significant (Effect=.2713 SE=.0647, t=3.1741, p<0.001), as well as the direct effect (Effect=.2195, SE=.0691, t=4.1949, p<0.001). Table 4 also shows that the total indirect effect was .0519 and statistically different from zero (95% CI: .0041 to .1067). The specific indirect effects of perfectionistic on burnout through self-compassion (indirect effect 1) were non-significant whereas through RNT (indirect effect 2) was different from zero, so this specific indirect effect was significantly positive. The indirect sequential effect through self-compassion and RNT (indirect effect 3) was significant. This model explained 43.16% of burnout, at T1, variance (F=75.54, p<.001).

Discussion

The purpose of this study was to thoroughly analyse and investigate, in a representative sample of the Portuguese medical and dentistry students, the psychological mechanisms that may contribute to Burnout, with a focus on exploring the role of perfectionism, as a predictor, and the potential mediating effects of self-compassion and RNT.

Our hypothesis is that Self Compassion and Repetitive Negative Thinking might have a mediating role in the relationship between Perfectionism, at T0 and Burnout, at T1. This study arises from the need to find effective intervention strategies to prevent and managing Burnout, in a particularly susceptible group - medical and dentistry students. Our hypothesis was partially confirmed.

We began by analysing gender differences in relation to the evaluated constructs and found no significant differences (p>.05), except for Mindfulness at T0.

Several studies have provided strong evidence of a relationship between burnout and perfectionism, a personality trait of particular interest in the medical field due to the fact that medical students exhibit higher levels of perfectionism compared to the general population. (45)

Total perfectionism, at T0, correlates significantly with all the variables under study, at T1; positively with Burnout and RNT (moderate magnitude) and negatively with Self-compassion (moderate magnitude) and all its dimensions.

Only Rigid Perfectionism and Self Critic Perfectionism, at T0, were positively correlated to emotional exhaustion and depersonalization, at T1. The three dimensions of perfectionism did not correlate with academic inefficacy. In one hand, individuals who exhibit high levels of rigid and self-critical perfectionism tend to experience emotional exhaustion and depersonalization, but they do not typically perceive themselves as academically ineffective.

In the other hand, individuals with narcissist traits have less intense feelings of emotional exhaustion and depersonalization (narcissistic perfectionism did not correlate significantly with Burnout or any of its dimensions). This can be explained by an exaggerated sense of self-importance and belief in their superiority, which lately may contribute to a higher level of self-esteem and perceived effectiveness. Ultimately, this may lead to a reduced risk of burnout associated with narcissistic perfectionism.

A study conducted with university students (46) found that higher self-esteem can be associated with high levels of mindfulness, whereas higher self-critical perfectionism is significantly associated with less mindfulness. This can explain why narcissistic perfectionism has a positive correlation with MDF (low magnitude), at T1.

In the mediation models, perfectionism predicted burnout both directly and indirectly, through the mediation effect of self-compassion and RNT. These findings show that the influence of self-critical perfectionism on burnout does not depend on the concomitant effect of Self-compassion, although the latter reinforces that effect.

Among all perfectionism factors, self-critical was the one that revealed the highest correlation with burnout. Literature states that individuals with high self-critical perfectionism are known to be overly harsh on themselves; they often overthink and worry excessively, which includes catastrophizing, self-blaming and having concerns and ruminant thoughts about making mistakes.

In short, perfectionism can explain increasing levels of negative repetitive thinking, such as worry and rumination. (22,23,47)

Repetitive Negative Thinking, at T0, correlates positively with Burnout, at T1 (moderate magnitude), and is a mediator of the relationship between perfectionism, at T0, and Burnout, at T1.

Self-Compassion, at T0, correlates negatively with total Burnout, at T1 and its dimensions – Emotional exhaustion and Depersonalization (moderate magnitude) and with Repetitive Negative Thinking (moderate magnitude). Self-compassion, at T0, does not directly have a significant effect on burnout, however, if we consider repetitive negative thinking, the effect is already significant.

Perfectionists tend to have low self-compassion, that will reinforce repetitive negative thinking which can end up triggering burnout.

In other words, if a student has low self-compassion and has Repetitive Negative Thinking about it (worry and rumination about perfectionistic and self-critical content) - they will be more susceptible to burnout after one year. All these effects are significant even controlling for Burnout, at T0.

It is important to mention that total burnout at T0 correlates positively and very highly with total burnout at T1. This magnitude of r=. 617 can be explained by the fact that all the questionnaires were answered at finals season, a circumstance in which students are more prone to develop this syndrome.

RNT is a modifiable cognitive process, through therapy, as the individual may recognize the ruminative thoughts as a spectator, but not give credence to, in other words, the individual can distance oneself from the unconstructive worry and negative and disruptive content. In fact, a study was carried out whose objective was analyse the effect of a one-session acceptance and commitment therapy protocol in reducing RNT through altering the discriminative functions; of 11 participants, 9 showed significant reductions in at least three out of the four RNT measures. (48)

Therefore, working on RNT and self-compassion through recommended interventions, such as those focused on mindfulness, should be a strategy to be considered, in the future.

Mindfulness as a domain of self-compassion is opposed to overidentification, which promotes rumination and cognitive interference of negative thoughts. Hence, a Mindfulness-based intervention will promote lesser focus on current problems and feelings.

Mindful based interventions already have been shown to be effective in individuals with low self-compassion. In fact, a Short-Term Online Version of a Mindfulness-Based Intervention (26) was already conducted with very promising results, reporting a significant reduction in self-criticism and self-uncompassionate behaviour.

Flett, Hewitt et al., the world's leading authorities on perfectionism research, report on two empirical studies with university students demonstrating uniquely that socially prescribed perfectionism and facets of perfectionistic self-presentation are both associated with low mindfulness to suggest that people who experience pressures to be perfect can benefit substantially from increased mindfulness. (49)

A recent study, conducted in an university setting presented positive effects of mindfulness and self-compassion based interventions, by showing that even a short 3-week mindfulness/self-compassion intervention can have positive effects on students perfectionism, as well as on anxiety and depression. (50)

Cognitive-Behavioural Therapy, a type of psychotherapy that address all three areas (cognitive, emotional, and behavioural), has also demonstrated to be useful for perfectionists, by helping individuals whose self-evaluation is dependent on the pursuit and achievement of their high standards for performance. (51)

In a reflection of the first 21 years of cognitive behaviour therapy for perfectionism, that examined 15 randomised controlled trials (RCTs), across a variety of groups, CBT for perfectionism was undoubtedly considered the leading treatment for perfectionism. It has been demonstrated to be an effective, accessible and transdiagnostic treatment, which works as prevention, early intervention, and treatment program. (52)

In the Gordon Parker´s (2022) very new book entitled "Burnout: A Guide to Identifying Burnout and Pathways to Recovery", there are two entire chapters full dedicated to perfectionism, one in the part dedicated to the causes of burnout and the other on the part focused on overcoming it. (53)

Overall, apart from the classic Cognitive Behaviour Therapy there are several approaches based on the contextual-CBT, such as Mindful Compassion, Mindfulness-

Based Cognitive Therapy, Acceptance and Commitment Therapy that can provide individuals with emotional regulation strategies that allow them to overcome perfectionism. (48,54–58)

It is important to take into account the limitations of the study when evaluating our findings, such as: the high proportion of female participants - while it may limit the ability to make generalizations, the proportion of the sample is illustrative of the portuguese population of medicine and dentistry students (5:1); a potential self-selection bias – perfectionist students were possibly more eager to participate; and the fact that the questionnaires were applied during the COVID pandemic, a landmark that changed students' lives significantly.

This research provides further information on how low self-compassion which encompasses feelings of isolation, lack of social support, fixation on problems and depletion of kindness can lead to increased negative thoughts, that can be modified through individual training. These can be implemented through group intervention programs based on mindfulness meditation and mindful self-compassion.

In the future, it would be interesting to implement an experimental clinical study, in students who have been found to have high levels of burnout and/or of its known predictors. If the efficacy and effectiveness of these therapies are to be confirmed, then it will be important to propose the inclusion of these type of programs in the medical education curricula to prevent and reduce students' burnout.

Conclusion

To our knowledge, this is the first study to examine the mediation role of both Self-compassion and Repetitive Negative Thinking on medical students' perfectionism and burnout, providing us more robust information on how to prevent this problem.

Medical students face unique challenges. They are often exposed to demanding and stressful environments and is important to recognize that and provide them with the necessary support and resources to maintain well-being. The findings of this study highlight the potential advantages that individuals with high levels of perfectionism, low self-compassion and repetitive negative thinking could gain from Mindfulness-based interventions that are designed to improve their emotional management skills and promote self-compassion. It is crucial that we take a long-term approach to preserve the mental health of medical students.

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Annexes

Annex I

Informed Consent

PROJETO COMBURNOUT

Compaixão para a diminuição do *burnout* dos estudantes de medicina e de medicina dentária

Convidamo-lo/a a participar neste estudo porque é estudante de medicina ou de medicina dentária.

A sua participação poderá contribuir para melhorar o conhecimento, a prevenção e o tratamento do burnout nos estudantes de medicina e medicina dentária.

Este estudo irá decorrer no Instituto de Psicologia Médica da Faculdade de Medicina da Universidade de Coimbra e foi aprovado pela Comissão de Ética da Faculdade de Medicina da Universidade de Coimbra (FMUC), de modo a garantir a proteção dos direitos, segurança e bem-estar de todos os participantes e a garantir prova pública dessa proteção.

Se aceitar participar, iremos solicitar o preenchimento de questionários de autorresposta cujas perguntas são sobre si e o modo como se tem sentido. O preenchimento demora cerca de 20 minutos.

Após submeter as suas respostas, poderemos ou não vir a convidá-lo/a a participar num programa de intervenção, denominado COMBURNOUT. Quer participe ou não, precisaremos de o/a voltar a contactar daqui a alguns meses, para solicitar que volte a preencher alguns questionários (menos do que os deste primeiro momento de avaliação).

A participação é voluntária e tem toda a liberdade de recusar ou de a abandonar. A sua participação não acarreta qualquer risco.

[Escreva aqui]

Se não estiver interessado/a em participar, a sua relação com os/as investigadores/as não será prejudicada.

Aos/às interessados/as em participar, pedimos que leiam atentamente todas as questões e respondam segundo as instruções.

Os seus registos manter-se-ão confidenciais e anonimizados de acordo com os regulamentos e leis aplicáveis. Todas as pessoas ou entidades com acesso aos seus dados pessoais estão sujeitas a sigilo profissional.

Agradecemos desde já a participação!

CONTACTOS

Se tiver perguntas relativas aos seus direitos como participante deste estudo, deve contactar:

Presidente da Comissão de Ética da FMUC,

Azinhaga de Santa Comba, Celas – 3000-548 Coimbra Telefone: 239 857 707
e-mail: comissaoetica@fmed.uc.pt

Se tiver questões sobre este estudo deve contactar: comburnout.fmuc@gmail.com

Contactos dos investigadores:
Ana Telma Pereira: apereira@fmed.uc.pt, 964404676 Carolina Cabaços: 914665651
Mário Carneiro: 910209698
Frederica Carvalho: 913377985

CONSENTIMENTO INFORMADO:

Declaro que recebi informação acerca das circunstâncias da minha participação neste projeto de investigação. Li atentamente e compreendi a informação do Consentimento Informado. Concordo com as condições e compreendo que a participação neste estudo é voluntária e confidencial e que os dados recolhidos serão analisados apenas para fins de investigação.

Reservo o direito de desistir da minha participação a qualquer momento.

☐ Dou o meu consentimento informado e desejo prosseguir para o estudo.

Annex II

Questionnaire

QUESTÕES SOBRE SI

Género: Masculino ☐ Feminino ☐ Outro ☐

Qual a sua idade?

Nacionalidade:

_____

Instituição de Ensino Superior
Por ex., Universidade de Coimbra

_____

Curso:

_____

Ano de escolaridade:

1º ano ☐ 2º ano ☐ 3º ano ☐ 4º ano ☐ 5º ano ☐ 6º ano ☐

Em que país reside?

_____

Estuda na cidade em que reside?

_____

Com quem reside?

Sozinho/a ☐ Com pais/familiares ☐ Com amigos/colegas em apartamento/casa

partilhada ☐ Residência universitária ☐

Possui um curso superior concluído? Sim ☐ Não ☐

Indique com que frequência é sujeito a avaliações no semestre atual?

Semanal ☐ Quinzenal ☐ Mensal ☐ Trimestral ☐ Semestral ☐

Como se autoavalia relativamente ao seu desempenho académico?

Péssimo ☐ Mau ☐ Razoável ☐ Bom ☐ Excelente ☐

Como classifica o seu grau de satisfação com o curso atual?

Péssimo ☐ Mau ☐ Razoável ☐ Bom ☐ Excelente ☐

Já pensou em abandonar o seu curso atual?

Nunca ☐ Raras vezes ☐ Algumas vezes ☐ Muitas vezes ☐ Muitíssimas

vezes ☐

Se respondeu afirmativamente à última questão, indique por favor o(s) motivo(s) pelo(s) qual(ais) pensou abandonar o seu curso.

Questões financeiras ☐ Exigência excessiva do curso ☐ Problemas

familiares ☐ Problemas de saúde ☐ Falta de vocação ☐ Dificuldade em

lidar com o stress ☐

Como classifica o seu grau de satisfação com o curso atual?

[Escreva aqui]

EBM

As afirmações seguintes são referentes aos sentimentos/emoções de estudantes em contexto escolar. Leia cuidadosamente cada afirmação e decida sobre a frequência com que se sente da forma descrita:

0 - Nunca; 1 - Quase Nunca; 2 - Algumas vezes; 3 – Regularmente; 4 - Bastantes vezes; 5 -Quase Sempre; 6 - Sempre

	0	1	2	3	4	5	6
Exaustão Emocional							
1. Os meus estudos deixam-me emocionalmente exausto.							
2. Sinto-me de 'rastos' no final de um dia na universidade.							
3. Sinto-me cansado quando me levanto de manhã e penso que tenho de enfrentar mais um dia na universidade.							
4. Estudar ou assistir a uma aula deixam-me tenso.							
5. Os meus estudos deixam-me completamente esgotado.							
Descrença							
1. Tenho vindo a desinteressar-me pelos meus estudos desde que ingressei na universidade.							
2. Sinto-me pouco entusiasmado com os meus estudos.							
3. Sinto-me cada vez mais cínico relativamente à utilidade potencial dos meus estudos.							
4. Tenho dúvidas sobre o significado dos meus estudos.							
Eficácia Profissional							
1.Consigo resolver, de forma eficaz, os problemas que resultam dosmeus estudos.							
2. Acredito que participo, de forma positiva, nas aulas a que assisto.							
3. Sinto que sou um bom aluno.							
4. Sinto-me estimulado quando alcanço os meus objetivos escolares.							
5.Tenhoaprendidomuitasmatériasinteressantesduranteomeu curso.							
6. Durante a aula, sinto que consigo acompanhar as matérias de forma eficaz.							

QUESTÕES SOBRE A SUA MANEIRA DE SER

BIG3

Para cada afirmação, assinale um *círculo***,** à volta do número que melhor corresponde ao seugrau de *acordo* ou *desacordo,* desde 1 a 5. Use a seguinte escala de avaliação.

Utilize a seguinte escala de resposta:

Discordo muito	Discordo	Não concordo, nem discordo	Concordo	Concordo muito
1	2	3	4	5

9.	Toda a gente espera que eu seja perfeito.	1	2	3	4	5
10.	Tenho uma forte necessidade de ser perfeito.	1	2	3	4	5
19.	Critico-me duramente quando faço alguma coisa que não esteja perfeita.	1	2	3	4	5
20.	Para me sentir bem comigo preciso constantemente de procurar alcançar a perfeição.	1	2	3	4	5
22.	Tenho dúvidas sobre tudo o que faço.	1	2	3	4	5
25.	Sinto incerteza em relação à maior parte das coisas que faço.	1	2	3	4	5
26.	Fico desapontado comigo quando não faço as coisas de modo perfeito.	1	2	3	4	5
28.	Tenho o direito de ser tratado de forma especial.	1	2	3	4	5
29.	Para mim, é importante ser perfeito em tudo o que tento fazer.	1	2	3	4	5
30.	Sinto-me insatisfeito com as outras pessoas, mesmo quando sei que estão a tentar fazer o seu melhor.	1	2	3	4	5
31.	As outros admiram secretamente a minha perfeição.	1	2	3	4	5
33.	Espero que as outras pessoas abram uma exceção às regras para mim.	1	2	3	4	5
39.	Espero que os que me são próximas sejam perfeitos.	1	2	3	4	5
40.	A opinião que tenho de mim está ligada a ser perfeito.	1	2	3	4	5
41.	Fico frustrado quando os outros cometem erros.	1	2	3	4	5
44.	Cometer um pequeno erro, mesmo que pequeno, iria incomodar-me.	1	2	3	4	5

QPP-15

Neste questionário ser-lhe-á pedido que descreva a forma como habitualmente pensa sobre experiências negativas ou problemas. Por favor leia as seguintes afirmações e assinale em que medida elas se aplicam a si, quando pensa nas experiências negativas ou problemas.

Utilize a seguinte escala de resposta:

Nunca	Raras vezes	Algumas vezes	Muitas vezes	Sempre
0	1	2	3	4

1.	Os mesmos pensamentos passam pela minha cabeça vezes sem conta.	0	1	2	3	4
2.	Os pensamentos metem-se na minha cabeça.	0	1	2	3	4
3.	Não consigo parar de cismar neles.	0	1	2	3	4
4.	Penso em muitos problemas sem resolver nenhum deles.	0	1	2	3	4
5.	Não consigo fazer mais nada enquanto penso sobre os meus problemas.	0	1	2	3	4
6.	Os meus pensamentos repetem-se.	0	1	2	3	4
7.	Os pensamentos vêm-me à cabeça sem que eu queira.	0	1	2	3	4
8.	Fico bloqueado em certas questões e não consigo avançar.	0	1	2	3	4
9.	Questiono-me continuamente sem encontrar nenhuma resposta.	0	1	2	3	4
10.	Os meus pensamentos impedem-me de prestar atenção a outras coisas.	0	1	2	3	4
11.	Estou continuamente a pensar na mesma coisa.	0	1	2	3	4
12.	Os pensamentos surgem subitamente na minha cabeça.	0	1	2	3	4
13.	Sinto-me levado a pensar na mesma coisa.	0	1	2	3	4
14.	Os meus pensamentos não me ajudam muito.	0	1	2	3	4
15.	Os meus pensamentos consomem toda a minha atenção.	0	1	2	3	4

EAC

Como é que, habitualmente, se comporta em momentos difíceis? Indique qual a frequência

com que se comporta das seguintes formas, utilizando a seguinte escala:

1	2	3	4	5
Quase nunca	Raramente	Algumas vezes	Muitas vezes	Quase sempre

	1	2	3	4	5
1. Desaprovo-me e faço julgamentos acerca dos meus erros e inadequações.	1	2	3	4	5
2. Quando me sinto em baixo tendo a fixar-me e a ficar obcecada com tudo aquilo que está errado.	1	2	3	4	5
3. Quando as coisas me correm mal vejo as dificuldades como fazendo parte da vida, e pelas quais toda a gente passa.	1	2	3	4	5
4. Quando penso acerca das minhas inadequações e defeitos sinto-me mais separada e desligada do resto do mundo.	1	2	3	4	5
5. Tento ser carinhosa comigo própria quando estou a sofrer emocionalmente.	1	2	3	4	5
6. Quando falho em alguma coisa que é importante para mim martirizo-me com sentimentos de inadequação.	1	2	3	4	5
7. Quando estou em baixo lembro-me que existem muitas outras pessoas no mundo que se sentem como eu.	1	2	3	4	5
8. Quando passo por tempos difíceis tendo a ser muito exigente e dura comigo mesma.	1	2	3	4	5
9. Quando alguma coisa me aborrece ou entristece tento manter o meu equilíbrio emocional (controlo as minhas emoções).	1	2	3	4	5
10. Quando me sinto inadequada de alguma forma, tento lembrar-me que a maioria das pessoas, por vezes, também sente o mesmo.	1	2	3	4	5
11. Sou intolerante e pouco paciente em relação aos aspectos da minha personalidade que não gosto.	1	2	3	4	5
12. Quando atravesso um momento verdadeiramente difícil na minha vida dou a mim própria a ternura e afecto que necessito.	1	2	3	4	5
13. Quando me sinto em baixo tenho tendência para achar que a maioria das pessoas é, provavelmente, mais feliz do que eu.	1	2	3	4	5
14. Quando alguma coisa dolorosa acontece tento ter uma visão equilibrada da situação.	1	2	3	4	5
15. Tento ver os meus erros e falhas como parte da condição humana.	1	2	3	4	5
16. Quando vejo aspectos de mim própria que não gosto fico muito em baixo.	1	2	3	4	5
17. Quando eu falho em alguma coisa importante para mim tento manter as coisas em perspectiva (não dramatizo).	1	2	3	4	5
18. Quando me sinto com muitas dificuldades tendo a pensar que para as outras pessoas as coisas são mais fáceis.	1	2	3	4	5
19. Sou tolerante e afectuosa comigo mesma quando experiencio sofrimento.	1	2	3	4	5
20. Quando alguma coisa me aborrece ou entristece deixo-me levar pelos meus sentimentos.	1	2	3	4	5
21. Posso ser bastante fria e dura comigo mesma quando experiencio sofrimento.	1	2	3	4	5
22. Quando me sinto em baixo tento olhar para os meus sentimentos com curiosidade e abertura.	1	2	3	4	5
23. Sou tolerante com os meus erros e inadequações.	1	2	3	4	5
24. Quando alguma coisa dolorosa acontece tendo a exagerar a sua importância.	1	2	3	4	5
25. Quando falho nalguma coisa importante para mim tendo a sentir-me sozinha no meu fracasso.	1	2	3	4	5

26. Tento ser compreensiva e paciente em relação aos aspectos da minha personalidade de que não gosto.	1	2	3	4	5

QUESTÕES SOBRE A SUA SAÚDE

1. SF|SP – Em geral como tem sido a sua saúde?

Coloque um círculo à volta da resposta apropriada.

	Muito má	Má	Nem boa nem má	Boa	Muito boa
1. Em geral, como tem sido a sua saúde física?	Muito má	Má	Nem boa nem má	Boa	Muito boa
2. Em geral, como tem sido a sua saúde psicológica/mental?	Muito má	Má	Nem boa nem má	Boa	Muito boa

2. Atualmente, sofre de alguma doença diagnosticada pelo médico?

☐ Não ☐ Sim

Se assinalou "sim", por favor indique:

Doença:_____

Ano em que foi diagnosticada: ____ /____ / ____

3. No passado, sofreu de alguma doença diagnosticada pelo médico?

☐ Não ☐ Sim

Se assinalou "sim", por favor indique:

Doença:_____

Ano em que foi diagnosticada: ____ /____ / ____

4. Alguma vez teve outro problema psicológico ou psiquiátrico, em que não se sentisse ou comportasse como lhe era habitual?

☐ Não   ☐ Sim

5.1 Se "sim", por favor descreva brevemente:

_____

(Exemplos: Depressão; Ansiedade; Stresse; Perturbação do Comportamento Alimentar; Perturbação Obsessivo-Compulsiva; Psicose; Perturbação Afectiva Bipolar; Esquizofrenia; Outra…)

1.1.1 <u>Se "sim", por favor responda às seguintes perguntas:</u>

a. Alguma vez procurou algum profissional por problemas psicológicos ou psiquiátricos, ou pela maneira como se sentia ou agia? a1. **Se "sim", por favor indique qual/quais:** Médico de família ☐ Médico psiquiatra ☐ Psicólogo ☐ Outro ☐ Qual?_____	☐ Não ☐ Sim
b. Alguma vez teve um período de tempo em que não estivesse capaz de trabalhar, ir à escola, ou cuidar de outras responsabilidades por razões psicológicas ou psiquiátricas?	☐ Não ☐ Sim
c. Alguma vez tomou medicamentos para problemas psicológicos ou psiquiátricos? c1. **Se "sim", por favor indique qual/quais medicamentos:** _____ _____	☐ Não ☐ Sim

Por favor, verifique se respondeu a todas as questões.

Muito obrigada pela sua colaboração.

Ana Telma Pereira, Carolina Cabaços, Frederica Carvalho, Mário Carneiro

Instituto de Psicologia Médica, Faculdade de Medicina da Universidade de Coimbra (Pólo I)

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Annex III

Ethics Commission

1290 FACULDADE DE MEDICINA UNIVERSIDADE Đ COIMBRA

COMISSÃO DE ÉTICA DA FMUC

Of. Refª 146-CE-2020

Data 25/11/2020

C/C aos Exmos. Senhores

Investigadores e co-investigadores

Exmo. Senhor

Prof. Doutor Carlos Robalo Cordeiro

Director da Faculdade de Medicina de

Universidade de Coimbra

Assunto: Pedido de parecer à Comissão de Ética - Projeto de Investigação autónomo (refª CE-149/2020).

Investigador(a) Principal: Ana Telma Fernandes Pereira

Co-Investigador(es): António João Ferreira de Macedo e Santos, Frederica Romana Fradique Namorado Ramalheira Carvalho, Carolina Sampaio Meda Cabaços, Mário Rui Sousa Carneiro e Ana Paula Amaral

Título do Projeto: *"Comburnout - Compaixão para a diminuição do burnout dos estudantes de medicina e de medicina dentária".*

A Comissão de Ética da Faculdade de Medicina, após análise do projeto de investigação supra identificado, decidiu emitir o parecer que a seguir se transcreve:

"Parecer favorável".

Queira aceitar os meus melhores cumprimentos.

O Presidente,

Prof. Doutor João Manuel Pedroso de Lima

Annex IV

Abstract for the 29th International Symposium on Controversies in Psychiatry

Repetitive negative thinking mediates the relationship between perfectionism and burnout in medical students – A prospective study

Authors:

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6 Faculdade de Ciências da Saúde, Universidade da Beira Interior, Portugal

Introduction: Burnout negatively affects around 40% of medical and dentistry students, a vulnerable group due environmental factors related to the demanding context typical of medical schools and individual factors, such as their characteristic high levels of perfectionism and repetitive negative thinking (RNT). We have found that the influence of perfectionism on burnout appears to operate through increasing the levels of RNT (Cunha et al. 2022).

Objectives: In this observational, correlational, and prospective study, we want to analyse if RNT mediates the relationship between perfectionism and burnout even when this condition is measured a year and a half later.

Materials and Methods: 202 medical, dentistry and other health areas students answered to an online self-report questionnaire that included the Portuguese validated versions of BIG-3 Perfectionism Scale, Preservative Thinking Questionnaire-15, and Maslach Burnout Inventory-Student Survey in two assessment times, both during the exams period, at T0 and after 18 months (T1).

Results: Self-critical perfectionism/SCP and Rigid perfectionism/RP significantly ($p>.01$) and moderately ($r>.30$) correlated with RNT and with the three burnout dimensions – emotional exhaustion/EE; feelings of cynicism and detachment/CD; sense of ineffectiveness/SI. In mediation analyse (model 4 by Hayes et al. 2018 MACRO PROCESS for SPSS), even controlling for burnout levels at T0, total perfectionism at T0 predicted burnout at T1, both directly ($c'=.160$, $p=.002$) and indirectly, through the mediation effect of RNT at T0 ($a1b1=.057$; 95% CI: $.014$ - $.112$). Total effect was significant ($c=.271$, $p<.001$; $R2=43.16$; $F=54.16$; $p<.001$).

Conclusion: By confirming the prospective association between perfectionism, RNT and burnout, this study emphasizes the importance of taking a long-term approach focused in reducing this dysfunctional but modifiable cognitive process. Mindfulness and self-compassion-based interventions are recommended. Our next research task will be to implement a clinical trial to test its efficacy for the prevention and treatment of burnout in medical students.