BURNOUT SYNDROME AMONG MEDICAL STUDENTS IN THE SOUTHWEST REGION OF BAHIA AND ITS ASSOCIATION WITH EMOTIONAL REGULATION STRATEGIES

SÍNDROME DE BURNOUT ENTRE ESTUDANTES DE MEDICINA DA REGIÃO SUDOESTE DA BAHIA E SUA ASSOCIAÇÃO COM ESTRATÉGIAS DE REGULAÇÃO EMOCIONAL

SÍNDROME DE BURNOUT EN ESTUDIANTES DE MEDICINA DE LA REGIÓN SUDOESTE DE BAHIA Y SU ASOCIACIÓN CON ESTRATEGIAS DE REGULACIÓN EMOCIONAL

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ABSTRACT: The aim of this study was to verify the prevalence of Burnout Syndrome (BS) among medical students and its association with levels of emotional regulation. This cross-sectional, descriptive, and quantitative study was carried out with 176 medical students from three universities in Bahia, who were assessed using an online questionnaire with socio-demographic questions and self-response scales to investigate Burnout Syndrome and emotional regulation strategies, both validated for Portuguese. The sample was characterized by young people aged between 17 and 30, mostly women, living away from their families. The prevalence of BS was 10.8%, with 1 in 5 students showing high levels of emotional exhaustion and 64% of them needing psychiatric or psychological care after graduating. There was a positive correlation between Burnout rates and maladaptive strategies. The results call for preventive institutional measures and specialized attention for students.

KEYWORDS: Psychological Burnout. Psychological distress. Medical students. Emotional regulation. Mental health.

RESUMO*: O presente estudo tem por objetivo verificar a prevalência da Síndrome de Burnout (SB) entre estudantes de medicina e sua associação com os níveis de regulação emocional. Este estudo transversal, descritivo e de abordagem quantitativa, foi realizado com 176 estudantes de medicina de três universidades bahianas, avaliados por um questionário online, com questões sociodemográficas e escalas de autorresposta para investigação da Síndrome de Burnout e estratégias de regulação emocional, ambas validadas para o português. A amostra caracterizou-se por jovens entre 17 e 30 anos, em sua maioria mulheres, que vivem longe de suas famílias. A prevalência de SB foi de 10,8%, sendo que 1 a cada 5 estudantes revelou índices elevados para exaustão emocional e 64% deles necessitou de atendimento psiquiátrico ou psicológico após ingresso na graduação. Verificou-se correlação positiva entre os índices de Burnout e as estratégias desadaptativas. Os resultados exigem medidas institucionais preventivas e atenção especializada aos discentes.*

PALAVRAS-CHAVE*: Esgotamento psicológico. Esgotamento emocional. Estudantes de medicina. Regulação emocional. Saúde mental.*

RESUMEN*: El objetivo de este estudio fue verificar la prevalencia del Síndrome de Burnout (SB) entre estudiantes de medicina y su asociación con los niveles de regulación emocional. Este estudio transversal, descriptivo y cuantitativo se realizó con 176 estudiantes de medicina de tres universidades de Bahía, que fueron evaluados mediante un cuestionario online con preguntas sociodemográficas y escalas de auto-respuesta para investigar el Síndrome de Burnout y las estrategias de regulación emocional, ambas validadas para el portugués. La muestra se caracterizó por jóvenes entre 17 y 30 años, en su mayoría mujeres, que vivían lejos de sus familias. La prevalencia del SB fue del 10,8%, con 1 de cada 5 estudiantes mostrando altos niveles de agotamiento emocional y el 64% de ellos necesitando atención psiquiátrica o psicológica después de graduarse. Se observó una correlación positiva entre las tasas de agotamiento y las estrategias desadaptativas. Los resultados reclaman medidas institucionales preventivas y atención especializada para los estudiantes.*

PALABRAS CLAVE*: Agotamiento psicológico. Distrés psicológico. Estudiantes de medicina. Regulación emocional. Salud mental.*

Introduction

Psychological burnout, and more specifically Burnout Syndrome (BS), has become a problem among university students and an important issue for study in the fields of health and education (Rudinskaitė *et al.* , 2020).

Emotional exhaustion related to the academic field has been described more recently and, therefore, compared to professional exhaustion, is less addressed in the scientific literature (Santos et al, 2022).

Around the world, research has shown varying prevalences of BS in medical schools, ranging from 12 to 65.1% in some countries, and in the first years of the course, around 35% of students may have moderate levels of Burnout (Boni *et al.* , 2018).

Studies carried out in Brazil at higher education institutions (HEIs) in various parts of the country show a high prevalence of BS among medical students. In the south of Santa Catarina and in Goiás, a prevalence of 12 and 12.3% was identified, respectively (Barbosa *et al.* , 2018). A survey of 376 students at the Federal or State University of Fortaleza found that 14.9% of medical students had BS, and 57.7% were at risk of developing BS (Almeida *et al.* , 2016).

Burnout Syndrome is a symptomatic triad, cited in 1974 by the American Freunderberger, and characterized by a gradual worsening of mood and lack of motivation culminating in physical and mental exhaustion resulting from the negative reaction to chronic stress and excessive working hours (Guimarães; Cardoso, 2004).

Initially described in areas of work related to human services, which are dedicated to caring for others. Teachers, social workers, police officers and health professionals are the most affected by BS (Gonçalves, 2016).

The concept of Burnout is described in students in the three dimensions, emotional exhaustion (EE), characterized by the feeling of being exhausted, exhausted due to the demands of the study; disbelief, understood as the development of a cynical and distanced attitude towards the study, colleagues and patients; professional inefficacy, characterized by the perception or interpretation of being incapable and inefficient as a student (Maia *et al.* , 2012; Prado *et al.* , 2019; Santos *et al.* , 2022).

Studies on Burnout in students have shown that the presence of at least one symptom of the triad can have an extremely negative impact on students' lives, from an individual point of view and on interpersonal relationships in the family, professional and social spheres (Moura *et al.* , 2018; Santos *et al.* , 2018; Boni *et al.* , 2018).

From an individual point of view, significant damage can be observed in the teaching/learning process, such as: risk of dropping out of school, low academic self-efficacy, reduced empathy, which can even have repercussions later on in professional life (Prado *et al.* , 2019; Santos *et al.* , 2022).

On the other hand, several conditions have been described that compromise health in general, such as eating disorders, migraines, emotional instability, sleepiness, fatigue, as well as substance abuse and even suicide (Boni *et al.* , 2018).

It's important to note that medical schools are characterized by a teaching style marked by a high study load, many demands, as well as high standards and a low tolerance for errors. In addition, the medical profession is dedicated to caring for people and, during the training process, students encounter situations of intense human suffering. This wide and complex variety of factors favors the development of stress and anxiety, as well as a high risk of developing the physical and emotional exhaustion that make up BS (Prado *et al.* , 2019).

In view of the above, it is clear that medical students are a population at risk of developing BS. The southwestern region of Bahia is characterized as a student hub, with two public universities and one private university with medical courses, making up a total of 1,200 students, including students from other health courses. It is therefore estimated that a significant number of young people are vulnerable to emotional exhaustion and at risk of becoming ill with BS.

The aim of this study was to verify the prevalence of BS and its association with levels of emotional regulation among medical students in the southwest region of the state of Bahia.

Methodology

This is a cross-sectional, descriptive study with a quantitative approach, carried out with medical students from three Higher Education Institutions (HEIs) located in the Southwest Region of the State of Bahia, one private HEI, one State Public HEI and one Federal Public HEI, with an estimated 600, 200 and 360 students, respectively, corresponding to an approximate study population of 1,200 students.

Based on this universe, a sample calculation was carried out considering a margin of error of 5% and a confidence level of 95%, which, when calculated, resulted in a sample of 292 participants.

The selection criteria for the sample were: age 17 and over, being a medical student, regularly enrolled at one of the three higher education institutions (HEIs) in the southwest region and agreeing to take part in the research after clarifying the objectives and methods.

Data collection took place between September 2022 and January 2023, using an online questionnaire formulated by the researchers using the Google Forms platform, consisting of questions to assess the sociodemographic profile (age, gender, marital status, living situation) and self-response scales validated for the Brazilian population. Two different scales were used to assess the dimensions of burnout and emotional/cognitive regulation. The scales used were:

Scale 1: Maslach Burnout Inventory-Student Survey, form adapted by Schaufeli, Leiter, Maslach and Jackson in 1996, called MBI-SS (Maslach Burnout Inventory/ Student Survey- MBI-SS), validated by Campos and Maroco in 2012 (Campos; Maroco, 2012). The inventory assesses each dimension of BS separately, counting score 4 (1x per week) as the cut-off point. For the dimensions of emotional exhaustion (EE) and disbelief or cynicism (CI), scores below 4 (i.e. 1,2,3) are considered low and scores equal to or above 4 (4,5,6) are considered high. For the professional efficacy dimension, the evaluation logic is reversed, with scores above 4 being considered normal and scores 1, 2 and 3 low. The presence of SB was defined as having both EE and CI above 4 and EF below 4 on the MBI scale.

Scale 2 - Cognitive Emotional Regulation Questionnaire CERQ, made up of 36 items divided equally into nine factors of cognitive Emotional Regulation strategies, which make up the subscales: Maladaptive strategies (Self-blame, Rumination, Catastrophizing, Blaming the other) and Adaptive strategies (Putting into perspective -PP, Focus on positive aspects-PRE, Positive reappraisal -PRF, Acceptance - AC, focus on planning-RP), used after experiencing stressful or threatening events. Participants self-assess the topics by answering a 5-point Likert scale (1 = never and 5 = always). The total of the subscale is calculated from the sum of the scores of the items belonging to the subscale. The higher the value on a subscale, the greater the use of the corresponding strategy (Schäfer *et al.* , 2017).

The form, together with the Informed Consent Form (ICF), was sent to the students' institutional e-mail addresses and to the Medicine course coordinators at the three institutions, so that it could be disseminated among the student body. The form was also sent to the academic community through the academic directories of each of the HEIs.

In order to motivate student participation, an Instagram page (@pesquisamedburnout) was created to publicize the research and invite students to take part in the survey, as well as

disseminating content and information on the subject. At the end of this process, this study had a sample of 176 participants.

The analytical strategy comprised two stages. The first stage involved testing the factorial structure of the instruments used to measure the study variables and generating the measurement scores. Because the instruments have ordinal scales, the analysis was implemented using a polychoric correlation matrix and Weighted Least Squares Mean and Variance Adjusted (WLSMV) as the method for estimating the factors, a procedure considered ideal for categorical data (Distefano *et al.* , 2019).

The fit of the models was checked using the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI). According to the literature (Cangur; Ercan, 2015; Kline, 2016; Lai; Green, 2016), RMSEA values must be less than 0.08, with a confidence interval not reaching 0.10, while CFI and TLI must have values ≥ .90, in order for the model not to be rejected. If the model is acceptable, we calculate Cronbach's alpha and McDonald's omega to check that the latent variables are not only valid but also reliable.

A latent variable was considered to have acceptable reliability if it had a minimum McDonald's omega value of .60. The confirmatory factor analyses were carried out using the lavaan 0.6-8 package (Rosseel, 2012) of the R Statistical language (version 4.0.3; R Core Team, 2020). Reliability indices were calculated using the semTools package (Jorgensen *et al.* , 2020).

For the MBI - Student Survey (MBI-SS), a model of three correlated factors was tested. In this model, items 1 to 5 load on the emotional exhaustion factor, items 6 to 9 load on the cynicism factor and items 10 to 15 load on the efficacy factor. For the CERQ, a model with eight correlated factors was tested, where each factor explains its respective marker items. In the original version, each factor has four marker items, as follows: self-blame (items 1, 10, 19 and 28), acceptance (items 2, 11, 20 and 29), rumination (items 3, 12, 21 and 30), positive reorientation (items 4, 13, 22 , and 31), reorient planning (items 5, 14, 23 and 32), positive reappraisal (items 6, 15, 24 and 33), putting into perspective (items 7, 16, 25 and 34), catastrophizing (items 8, 17, 26 and 35) and other guilt (items 9, 18, 27 and 36). The other guilt factor was not included in the analysis because there was an error in the data collection for item 36.

To estimate the factor scores, a measurement model integrating the MBI-SS and CERQ measurement models was used, so this measurement model had 11 dimensions. This was done because the correlations of the factor scores do not reproduce the correlations of the latent

variables either in the measurement model or between measurement models. Of the techniques for generating factor scores, the exception to preserving the correlations of the measurement model is the tenBerge technique (Logan *et al.*, 2021).

However, this method only generates scores that preserve the correlations of a measurement model. For example, if we used factor scores generated by the tenBerge technique for the MBI-SS and the CERQ, the correlations of the factor scores for each instrument would be similar to the true correlations of the latent variables for each instrument. However, when using these scores to calculate the correlations between emotional exhaustion and catastrophizing, for example, these correlations are different from the true correlations between the latent variables. To avoid this problem, we used an integrated model. With this integrated model we were able to preserve the correlational accuracy of the scores (Grice, 2001).

In the second stage, the data collected was subjected to descriptive analysis of the sociodemographic variables and correlation analysis of the factors of the scales of these respective variables. The Shapiro-Wilk and Kolmogorov-Smirnov normality tests were used to assess the distribution of the data. The evaluations of the questionnaire factors showed a non-normal distribution, so non-parametric statistical tests were used for the analysis. To compare the factor scores between the sociodemographic variables, the Mann-Whitney test was used when two groups were compared, or the Kruskal-Wallis test when three or more groups were compared, with the results presented as medians and interquartile ranges. The analyses were carried out using SPSS version 21 statistical software, with a significance level of 5% ($p<0.05$).

The study was approved by the Ethics and Research Committee of the Multidisciplinary Health Institute - Anísio Teixeira Campus - UFBA under opinion number 5.565.399 and CAAE 57921822.10000.5556.

Results and Discussion

The sample was characterized by 94.0% of young people aged between 17 and 30, who described themselves as female (68.2%), cisgender and single (86.9%). In terms of sexual orientation, 9.7% said they were homosexual and 10.7% bisexual. Only 3% of respondents chose not to answer this item. Almost half of the sample (46%) said they lived alone, and 10.8% lived in shared student houses, given that more than half of the students lived away from their families.

The sociodemographic data presented here is in line with other studies in Brazil and abroad. Among 158 students at a university in Bahia, the average age was 23.4 years, 51.94%

were female and 98.7% were single. In Minas Gerais, students were female (64.33%), single (92.4%), aged between 22 and 30 (56.14%) (Aguiar *et al.* , 2018). Further corroborating the data found, in addition to the national studies, a Spanish study, Gil-Calderón *et al.* (2021), collected data from 1073 students, in which almost 75% were women and 86% under 24 years of age.

About the mental health of the participants, it can be seen that around 70% were not undergoing psychiatric or psychological treatment during the study period. However, it is important to note that 64% of university students needed psychological and/or psychiatric support after starting university. This data is very important as it correlates entry to the medical course with the need for emotional support, and may suggest that the routine of studies, added to the new reality of being away from their families, having to take responsibility for running the house and eating well, is often associated with university students becoming psychologically ill, thus reinforcing the need to think about welcoming and assisting freshmen at the beginning of their journey,

> The extensive training process for medical professionals, coupled with external demands and self-blame, makes them vulnerable to the development of physical and mental fatigue, possibly interfering with their work performance and balance (Santos *et al.* , 2022, p.13875, our translation).

Thus, students are prone to developing BS, even though they do not yet have the same responsibilities or professional status, they are dealing with a period of adaptation to a new way of life. Having just finished high school, they sometimes have to live alone, taking on not only academic responsibilities but also domestic ones. This new life structure can lead to continued exposure to stress, which can lead to physical and emotional exhaustion.

The factor study of the scales used showed that the MBI-SS model had an unacceptable fit (χ^2 [87] = 231,99, CFI = .988, TLI = .985, RMSEA = .098 [.082 – .113]), considering that the RMSEA confidence interval exceeded .10. As a result, the model modification indices were analyzed, so that the models were tested until it was possible to identify a more parsimonious model for this sample. Based on the modification indices, alternative models were created for each suggested change. The model that showed an acceptable fit for all the criteria eliminated items 4 and 14. Item 14, from the efficacy factor, showed a cross-load with the emotional exhaustion factor and item 4, from the emotional exhaustion factor, showed a cross-load with the efficacy factor. The MBI-SS model without items 4 and 14 showed an acceptable fit (χ^2 [62] = 132,23, CFI = .992, TLI = .990, RMSEA = .080 [.061 – .099]), allowing us to conclude that

the latent variables emotional exhaustion, cynicism and efficacy are valid for the sample in this study.

Similarly, the CERQ model showed an unacceptable fit (χ^2 [436] = 1334,19, CFI = .962, TLI = .957, RMSEA = .108 [.102 - .115]). As with the MBI-SS, the model modification indices were analyzed and alternative models were proposed. Based on the indices, the decision was made to exclude items 5 and 30, as they both had cross-factor loadings with other factors. Item 5, from the planning reorientation factor, had a cross-factor loading on the positive reorientation factor, and item 30, from the rumination factor, had a cross-factor loading on positive re-evaluation. The CERQ model without items 5 and 30 showed an acceptable fit (χ^2 [377] = 868,06, CFI = .974, TLI = .970, RMSEA = .086 [.079 – .094]), allowing us to conclude that the latent variables self-blame, acceptance, rumination, positive reorientation, positive re-evaluation, reorient planning, putting into perspective and catastrophizing are valid for the sample in this study. Table 1 presents psychometric information on the instruments. All the factors showed reliability in McDonald's omega above .60, allowing us to conclude that the measures are reliable.

Table 1 - Factor loadings of emotional regulation factors, according to reliability indices of the MBI-SS and CERQ instruments. Vitória da Conquista, 2023

Factor	n	average	sd	Min	Max	Cronbach's Alpha	McDonald's Omega
Emotional exhaustion	4	.85	.07	.75	.91	.89	.90
Cynicism	4	.86	.06	.78	.92	.89	.92
Professional effectiveness	5	.71	.06	.64	.77	.79	.82
Self-blame	4	.82	.04	.77	.86	.85	.87
Acceptance	4	.71	.13	.51	.79	.71	.84
Rumination	3	.75	.01	.75	.76	.75	.76
Positive reorientation	4	.79	.10	.67	.89	.85	.85
Reorient planning	3	.77	.09	.67	.89	.78	.78
Positive re-evaluation	4	.85	.04	.82	.90	.88	.90
Putting things into perspective	4	.72	.08	.62	.80	.76	.81
Catastrophize	4	.69	.25	.46	.93	.75	.77

Note. n = Number of items per factor; dp = Standard deviation; min = minimum; max = Maximum.
Source: Devised by the authors.

The integrated model showed an acceptable fit (χ^2 [805] = 1341,097, CFI = .983, TLI = .981, RMSEA = .062 [.056 – .067]), allowing the true correlations between the factors to be estimated in order to calculate the factor scores using the tenBerge technique. The factor scores were standardized as z-scores, i.e. with a mean of 0 and a standard deviation of 1. The normality of the scores was tested using the Kolmogorov-Smirnov test. With the exception of the scores for the efficacy and positive reorientation factors, all the scores showed a normal distribution. The positive reorientation score showed asymmetry of .23 and kurtosis of -.14, not a very abnormal distribution. The efficacy score showed a skewness of -1.07 and a kurtosis of 1.64, also not a very abnormal distribution.

Table 2 - Distribution of emotional regulation factors, according to Pearson's correlation matrix. Vitória da Conquista, 2023

Variable	1	2	3	4	5	6	7	8	9	10	11
1. EE	1										
2. CI	.73** [.65, .79]	1									
3. EF	-.24** [-.37, -.10]	-.44** [-.55, -.31]	1								
4. SB	.46** [.33, .57]	.50** [.38, .6]	-.16* [-.30, -.01]	1							
5. AC	.34** [.20, .46]	.27** [.13, .40]	.09 [-.06, .23]	.60** [.50, .69]	1						
6. RU	.52** [.40, .62]	.45** [.32, .56]	-.13 [-.27, .02]	.79** [.73, .84]	.67** [.58, .74]	1					
7. PRF	-.21** [-.35, -.06]	-.27** [-.40, -.13]	.38** [.25, .50]	-.50** [-.60, -.38]	.08 [-.07, .23]	-.23** [-.37, -.08]	1				
8. RP	-.12	-.27**	.67**	.00	.36**	.27**	.66**	1			

	[-.26, .03]	[-.40, -.13]	[.58, .74]	[-.15, .15]	[.22, .48]	[.13, .40]	[.57, .74]				
9. PRE	-.30**	-.37**	.58**	-.37**	.18*	-.13*	.80**	.84**	1		
	[-.43, -.16]	[-.49, -.23]	[.47, .67]	[-.49, -.23]	[.03, .32]	[-.27, .02]	[.74, .85]	[.79, .88]			
10. PP	-.06	-.07	.34**	.05	.44**	.22**	.54**	.61**	.66**	1	
	[-.21, .09]	[-.22, .08]	[.20, .46]	[-.10, .20]	[.31, .55]	[.07, .36]	[.43, .64]	[.51, .70]	[.57, .74]		
11. CA	.45**	.47**	-.19*	.84**	.43**	.62**	-.38**	-.09	-.43**	-.10	1
	[.32, .56]	[.35, .58]	[-.33, -.04]	[.79, .88]	[.30, .54]	[.52, .70]	[-.50, -.25]	[-.23, .06]	[-.54, -.30]	[-.24, .05]	

Note. Values in brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$. EE = Emotional exhaustion. CI = Cynicism. EF = Efficacy. SB = self-blame. AC = acceptance. RU = rumination. PRF = positive reorientation. RP = reorient planning. PRE = positive re-evaluation. PP = put into perspective. CA = catastrophize.
Source: Devised by the authors.

It can be seen that emotional exhaustion correlates positively and significantly with cynicism, self-blame, acceptance, rumination and catastrophizing. There was a negative and significant correlation between emotional exhaustion and positive reappraisal and positive reorientation. However, emotional exhaustion did not show significant correlations with the factors reorienting planning and putting things into perspective.

The cynicism dimension, like the emotional exhaustion dimension, showed positive and significant correlations with the self-blame, acceptance, rumination and catastrophizing dimensions. As for the significant and negative correlations, it was found that cynicism showed these correlations with the dimensions positive reorientation, reorient planning and positive re-evaluation. Cynicism showed no significant correlation only with the factor of putting things into perspective.

On the other hand, professional efficacy correlated negatively with emotional exhaustion and cynicism. As a result, a different direction was expected from the correlations between this dimension and the dimensions of emotional regulation. On the other hand, professional efficacy correlated positively and significantly with positive reorientation, reorienting planning, positive reassessment and putting things into perspective.

The results show that some sociodemographic data had positive correlations with the dimensions of SB and emotional regulation, among them age group. Students aged between 17

and 30, i.e. the majority of the sample studied (93.75%), had higher scores (4.3) in emotional exhaustion (EE). Considering the cut-off point of 4 in this dimension, it is considered that younger students, just starting their course, have high levels of exhaustion, which determines a high risk of being diagnosed with BS. These young students also have higher scores in self-blame strategies, a maladaptive emotional regulation strategy, thus increasing the risk of mental illness.

It is important to note that this correlation suggests an inverse relationship between the emotional maturity developed over the years, the ability to regulate emotions and the dimensions of Burnout; the younger the age, the greater the impact of the stressors that determine BS (Carlotto *et al.* , 2006). In this sense, the present study found that 64% of students required psychological or psychiatric assistance after entering medical school.

With regard to emotional exhaustion, women also have high rates, and this is also where the gender debate comes in. Women are known to be more vulnerable to anxiety (TAG) and depressive disorders and all those related to stress, namely Burnout (Leão *et al.* , 2018). The National Comorbidity Survey (NCS) has shown that women are approximately twice as likely to have TAG as men in the same situation, with total lifetime prevalence rates of 6.6% and 3.6%, respectively (Andrade, et al, 2012).

Another striking finding is the correlation between marital status and the (maladaptive) regulation strategies of self-blame. In this respect, participants who are single or in a stable union have higher scores in this strategy than those who are married.

Despite the above data, statistical significance was only found for the correlations between age and the cynicism dimension, marital status and self-blame. This result can be explained by the small size of the sample studied.

For the diagnosis of SB, the total of the SB scale (MBI) and the Emotional Regulation scale (CERQ) was calculated for the participants, based on the sum of the dimensions. This enabled the MBI and CERQ to be compared and correlated with the sociodemographic categories. This analysis was carried out using the Mann-Whitney test (for two groups) or the Kruskal-Wallis test (for three groups or more). The presence of SB was defined as having both EE and CI above 4 on the MBI scale and EF below 4. The frequency of SB was compared by variables using the Chi-square test. Spearman's correlation was also used to check the association between the MBI and CERQ scales and their sub-scales (Table 3).

Table 3 - Prevalence of BS, according to sociodemographic characteristics. Vitória da Conquista, 2023

Burnout	**n**	**%**	**p**
Geral	19	10.8	
Age range			0.846
17-20 years	2	9.1	
21-25 years	11	10.8	
26-30 years	6	14.6	
31-55 years	0	0.0	
Gender*			0.824
Cisgender woman	12	10.0	
Cisgender man	6	11.1	
Sexual orientation			0.813
Heterosexual	15	10.9	
Homosexual	1	5.9	
Bisexual	2	11.1	
Marital status			0.202
Single	19	12.4	
Married or united	0	0.0	
Residence			0.904
Parents	4	11.4	
Siblings or cousins	2	12.5	
Shared or boarding house	2	10.5	
Alone	10	12.5	
Other	1	4.8	
Educational institution			0.996
UESB	9	10.6	
IMS-UFBA	5	11.1	
FASA	5	10.9	

Source: Devised by the authors.

Regarding the diagnosis of BS, around 10.8% of the sample studied met the criteria for BS, totaling 19 participants. This prevalence was lower than that identified in other Brazilian states, including Bahia, at 19.6% (Aguiar *et al.* , 2016). On the other hand, Boni *et al.* (2018) found a prevalence of 44.6% in first-year students at a private medical school in Barretos, São Paulo.

It's important to note that most of the students who meet the criteria with scores higher than 4 in EE and CI are between 17 and 30 years old, corresponding to the initial years of the course, as are those who are single and live alone or only with siblings or cousins. This suggests that the initial years of university, together with the new challenges away from family, contribute to psychological illness during university. The impact of the new reality, new responsibilities and assignments lead to physical and mental exhaustion and disbelief among students. This correlation was also found by Martinez *et al.* (2002) in Portuguese and Spanish young people. Young people have to learn to cope with the demands of work and for this reason may have higher levels of BS. They have just left secondary school and need to deal with a new reality. They need more autonomy and responsibility (Campos; Maroco, 2012).

To analyze students' emotional regulation and its correlation with BS scores, the values of the two subscales (adaptive and maladaptive) that make up the CERQ scale were calculated. It can be seen (Table 5) that students with higher scores on the maladaptive subscale also have higher scores on the MBI (Burnout) scale. This shows a significant difference and a positive correlation between the use of maladaptive strategies and the presence or high levels of burnout. This shows that the greater the access to maladaptive coping strategies, the greater the risk of developing BS. No correlation was found for the adaptive subscale.

Table 5. Description of the subdivisions of CERQ: maladaptive and adaptive regulation. Vitória da Conquista, 2023

Variables	**n**	**Maladaptive Regulation**	**p**	**Adaptive Regulation**	**p**
General	176	3.3 (2.6-3.8)		3,2 (2,7-3,8)	
Burnout			**<0,001**		**0,048**
Presence	19	3.9 (3.5-4.4)		3,0 (2,4-3,5)	
Absence	157	3.1 (2.4-3.7)		3,3 (2,8-3,8)	
		MBI			
Correlation		r		p	
CERQ general		0,259		0.001	
Maladaptive Regulation		0,457		0.001	
Adaptive Regulation		-0,001		0.991	

Source: Devised by the authors.

A significant difference was found between sociodemographic variables and the frequency of adaptive regulation for the housing variable. Students who live in a hostel/pension have higher scores and those who live with a partner/spouse have lower scores.

Regarding institutional differences, it was possible to note that students at the federal HEI use more adaptive strategies to cope with academic stress than those at the private HEI.

Final considerations

The sample studied was made up of a higher percentage of young people aged between 17 and 30, mostly women, who live far from their families, who already at the start of the course have high levels of emotional and physical exhaustion, using maladaptive strategies to cope with academic stress. There was an inverse correlation between emotional maturity and mental illness, requiring psychiatric and psychological assistance after entering university.

The prevalence of BS in the sample was 10.8%. The younger the age at the start of the course, the greater the likelihood of emotional exhaustion and risk of BS. One in five students in the sample showed high levels of emotional exhaustion (EE), with women being more vulnerable in this dimension. There was a positive correlation between Burnout indices and maladaptive strategies. Thus, the higher the Burnout index, the higher the score on the maladaptive emotional regulation scale.

Analysis of the factor structure of the instruments used, after making the necessary adjustments to both scales, led to the conclusion that in the MBI-SS model the latent variables emotional exhaustion, cynicism and efficacy were valid for the sample in this study. On the other hand, in the CERQ model, the emotional variables self-blame, acceptance, rumination, positive reorientation, positive re-evaluation, reorienting planning, putting into perspective and catastrophizing were valid for the sample in this study.

Despite the acknowledged limitations of its results, given the small sample studied, it was possible to extract initial data that can serve as a warning to teachers and managers of the universities evaluated, in order to encourage medical schools to develop activities to promote the health of students, understanding that their illness will have an impact on the future of the professional being trained.

It is essential that the university curriculum includes strategies to support students in coping adaptively with academic stress, helping to reduce dropout and promote mental health during the course. Measures to prevent mental health problems are recommended, such as

welcoming and caring for new students, as well as promoting sporting and/or artistic activities from the earliest years, and involving students in music, dance and humanities groups.

Relaxation exercises, active meditation (yoga, dance, biodance) and mindfulness help develop tolerance, empathy and self-compassion skills, which are fundamental for emotional regulation.

Finally, it should be borne in mind that the results of this study apply only to the population studied and do not allow for generalizations. It is therefore suggested that population-based studies be carried out on the subject, in order to guarantee results that subsidize policies for university education, including health science students in general.

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