Relationship between resilience, self-esteem, and burnout in Medical students during the Covid-19 pandemic

Relação entre resiliência, autoestima e burnout em estudantes de Medicina durante a pandemia de Covid-19

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ABSTRACT

Introduction: In Brazil, the lack of studies evaluating self-esteem in medical students is evident. In the academic field, it is known that individuals with high self-esteem and resilience are more likely to be successful. In previous studies, resilience was negatively associated with anxiety and Burnout Syndrome (BS). The BS has become a public health problem due to its increased incidence, especially among medical professionals during the coronavirus disease (COVID-19) pandemic, making it essential to expand and develop this issue.

Objectives: To evaluate the level of self-esteem in medical students and its association with the degree of resilience and burnout during the pandemic.

Method: A cross-sectional cohort study was conducted with medical students from the first to the eighth semesters at Centro Universitário Christus in Fortaleza - CE, Brazil. The students answered three surveys: in the beginning of the semester, at the midterms and during finals. We applied the Maslach Burnout Inventory, Wagnild and Young's resilience scale, the Rosenberg Self-Esteem scale and a sociodemographic questionnaire.

Results: Students with higher levels of emotional exhaustion showed less professional efficiency (P < 0.001). Disbelief and professional efficiency are inversely related (P < 0.001). There was no significant variation in the prevalence of burnout throughout the semester (P = 0.593). However, this prevalence has been high since the first period of the study. Additionally, the higher the resilience, the higher the self-esteem (P < 0.001).

Conclusion: Medical students show elevated levels of BS. There was no statistically significant variation in burnout, resilience, and self-esteem throughout the semester. Therefore, further studies are necessary to analyze these variables.

Keywords: Burnout; Self-esteem; Psychological Resilience; Medical Students; COVID-19.

RESUMO

Introdução: *No Brasil, é perceptível a escassez de estudos avaliando a autoestima dos alunos de Medicina durante a pandemia da Covid-19. No campo acadêmico, sabe-se que indivíduos com alta autoestima e resiliência são mais propensos ao sucesso. De acordo com a literatura atual, a resiliência foi negativamente associada à ansiedade e à síndrome de burnout (SB). A SB tornou-se um problema de saúde pública por causa do aumento de sua incidência, principalmente entre os profissionais de saúde durante a pandemia da doença por coronavírus 2019 (Covid-19), tornando imprescindível o aprofundamento desse tema.*

Objetivo: *Este estudo teve como objetivo avaliar o nível de autoestima de estudantes de Medicina e sua associação com o grau de resiliência e de burnout durante a pandemia.*

Método: *Trata-se de um estudo de coorte transversal com estudantes de Medicina do primeiro ao oitavo semestre realizado no Centro Universitário Christus, em Fortaleza, Ceará, Brasil. Foram realizados três pontos de corte: no início do semestre, no meio do semestre e no final. Aplicamos as escalas de Maslach, Wagnild e Young e Rosenberg, e um questionário sociodemográfico.*

Resultado: *Estudantes com maior desgaste emocional apresentaram menor eficácia profissional (p < 0,001). A descrença e a eficácia profissional estão inversamente relacionadas (p < 0,001). Não houve variação significativa na prevalência de burnout ao longo do semestre (p = 0,593), mas essa prevalência foi alta desde o primeiro período do estudo. Além disso, quanto maior a resiliência, maior a autoestima (p < 0,001).*

Conclusão: *Estudantes de Medicina apresentam altos níveis de burnout. Variações de burnout, resiliência e autoestima não se mostraram estatisticamente relevantes ao longo do semestre. Mais estudos são necessários para analisar essas variáveis.*

Palavras-chave: *Burnout; Autoestima; Resiliência Psicológica; Estudantes de Medicina; Covid-19.*

INTRODUCTION

Self-esteem is defined as the feeling of appreciation and consideration that people have for themselves[1]. According to SIGELMAN, 2017, self-esteem starts as the high or low evaluation, in a general context, of someone's value as a human being regarding all aspects, both positive and negative. This evaluation is based on a self-assessment that constitutes a concept of oneself. It is known that individuals with high self-esteem make decisions and engage in actions that benefit others in various areas of life, such as the academic environment, social relationships, and even their daily food choices. They also avoid putting themselves in situations where their physical and psychological health is sacrificed due to external factors They also avoid putting themselves in situations where their physical and psychological health is sacrificed due to external factors[3].

A study by SCHMITT (2005) in which the Rosenberg Self-Esteem Scale (RSES) was applied to 16,998 people showed that self-esteem operates in a similar way across different cultures. It significantly correlates with low levels of neuroticism, which is a tendency to experience negative emotions over the long term, and high levels of extraversion and positive self-perception. Despite its importance, there is a lack of studies in the health area that comprehensively evaluate self-esteem. It is therefore clear that individuals with high self-esteem are more likely to be successful in various endeavors.

According to JIRDEHI M. et al., self-esteem is positively correlated with academic achievement. The study by ZEIGLER-HILL et al. showed an important relationship between the unstable self-esteem and poor academic performance among students[5].

In view of the social distancing abruptly imposed on society[6], the coronavirus pandemic had immeasurable impacts on the academic sphere, requiring changes in teaching methods and on the students' mental health. Such modifications in the academic scenario characterized the Emergency Remote Learning[7].

The COVID-19 pandemic has had a profound effect on the academic world, with the sudden implementation of social distancing measures leading to a shift towards emergency remote learning[6].This change in the educational environment has resulted in modifications to teaching methods and impacts on students' mental health status[7].

Resilience is an important factor for medical students to navigate the stressors of a changing learning environment, including family relationships, work environments, and living conditions[8]. Medical students experience a higher level of suffering than the general population[9]. Therefore, it is important to identify mechanisms and support measures to address stressful situations and prevent the development of worse situations of psychological suffering[10,11]. Previous research has found a negative association between resilience and depression, anxiety, stress, and burnout syndrome[12], but the relationship with self-esteem has not been fully explored. The purpose of this study is to evaluate medical students' level of self-esteem and its association with resilience, self-esteem, and burnout during the COVID-19 pandemic.

Burnout Syndrome (BS), also known as professional exhaustion syndrome, is a type of psychological exhaustion caused by chronic work stress that is often observed among physicians and medical students. It consists of three main factors: depersonalization, low sense of accomplishment and psychological exhaustion[13]. The syndrome is the result of unsuccessful interactions between professional effort, goals, and performance[14]. In the healthcare area, BS has become increasingly prevalent[15].

Therefore, it is crucial to identify the signs of BS and take steps to address potential issues to improve the quality of life of healthcare professionals and students. Furthermore, previous studies have linked BS with resilience during the training and specialization of medical students, making it essential to further study and understand this topic[16].

METHODS
Population study and design

The Christus University Center is a private higher education institution approved by the Ministry of Education (MEC), which uses traditional and active teaching methodologies to prepare students to become knowledgeable and capable doctors. It employs objective structured clinical examination (OSCE) activities, Problem-Based Learning (PBL), and traditional classes to help students acquire the skills and desire to promote health, prevent diseases, and treat patients.

To evaluate the effectiveness of this approach, we conducted a cross-sectional cohort study with 399 medical students attending the first to the eighth semesters at Centro Universitário Christus in Fortaleza, CE, Brazil. The students were tested three times: in the beginning, at mid-term, and at the end of the semester. We used Maslach Burnout Inventory, Wagnild and Young's resilience Scale, and the Rosenberg Self-esteem Scale. The students also completed a sociodemographic questionnaire. (See attachments)

Data collection

Data was collected using online questionnaires via Google Forms, consisting of the scales and the sociodemographic questionnaire. The students were sent the questionnaire links via SMS. The first phase of data collection was carried out in August 2020, the second in November 2020, and the third in

January 2021. In each phase, the students completed two questionnaires: the first comprised the sociodemographic questionnaire, Rosenberg's scale, Wagnild, and Young's Scale, and the second consisted of the Maslach inventory.

Inclusion criteria

The inclusion criteria comprised all students enrolled in the Unichristus Medical School, attending the first to the eighth semesters and agreed to participate in the study by signing an informed consent form.

Exclusion criteria

Students who dropped out of participation during the study.

Scales

The Maslach Burnout Inventory is used to analyze burnout, and the MBI-SS (Maslach Burnout Inventory-Student Survey) is employed to evaluate burnout symptoms in students. It consists of a 15-item scale that measures emotional exhaustion, cynicism, and professional efficacy with scores ranging from 0 to 6, where 0 means the experience never occurs and 6 means it occurs daily[17].

Wagnild and Young's Resilience Scale is used to assess resilience and it comprises 25 items divided into two variables: personal competence and acceptance of self and life. Scores range from 25 to 175, with scores up to 125 indicating low resilience, scores between 125 and 145 indicating medium resilience, and scores above 145 indicating high resilience[18].

The Rosenberg Self-Esteem Scale is used to classify self-esteem as low, medium, or high based on 10 questions, five of which are related to positive self-image and five to negative self-image[19].

Statistical analysis

Data from the completed surveys was encoded and analyzed using the software Statistical Package for the Social Sciences (SPSS) version 20.0 in Windows (p<0.05).

The scores of the scales were correlated using Spearman's rank correlation tests and, after categorization, the reference categories were associated with all items of the questionnaire using Pearson's chi-squared test or Fisher's exact test.

RESULTS

The sociodemographic questionnaires, Maslach - MBI - SS scale (Maslach Burnout Inventory - Student Survey), Wagnild and Young's Resilience Scale and Rosenberg's Self-Esteem Scale are shown in Tables 1 and 2.

Table 1. Medical students' sociodemographic characteristics - part 1.

	Questionnaire 1					Questionnaire 2				
	Total	T1	T2	T3	p-Value	Total	T1	T2	T3	p-Value
Age										
Up to 25 yrs.	293 (73.4%)	139 (75.5%)	102 (71.3%)	52 (72.2%)	0.671	200 (75.8%)	82 (80.4%)	73 (70.2%)	45 (77.6%)	0.217
>25 yrs.	106 (26.6%)	45 (24.5%)	41 (28.7%)	20 (27.8%)		64 (24.2%)	20 (19.6%)	31 (29.8%)	13 (22.4%)	
Sex										
Female	281 (70.4%)	122 (66.3%)	103 (72.0%)	56 (77.8%)	0.17	198 (75.0%)	77 (75.5%)	80 (76.9%)	41 (70.7%)	0.673
Male	118 (29.6%)	62 (33.7%)	40 (28.0%)	16 (22.2%)		66 (25.0%)	25 (24.5%)	24 (23.1%)	17 (29.3%)	
Place of birth										
Capital of Ceará	283 (70.9%)	119 (64.7%)	107 (74.8%)	57 (79.2%)	0.126	207 (78.4%)	78 (76.5%)	86 (82.7%)	43 (74.1%)	0.502
Interior of Ceará	84 (21.1%)	47 (25.5%)	27 (18.9%)	10 (13.9%)		38 (14.4%)	17 (16.7%)	10 (9.6%)	11 (19.0%)	
Another state	32 (8.0%)	18 (9.8%)	9 (6.3%)	5 (6.9%)		19 (7.2%)	7 (6.9%)	8 (7.7%)	4 (6.9%)	
Previous Graduation										
Yes	77 (19.3%)	35 (19.0%)	29 (20.3%)	13 (18.1%)	0.919	38 (14.4%)	14 (13.7%)	14 (13.5%)	10 (17.2%)	0.782
No	322 (80.7%)	149 (81.0%)	114 (79.7%)	59 (81.9%)		226 (85.6%)	88 (86.3%)	90 (86.5%)	48 (82.8%)	

Data expressed as absolute value or frequency (%); Abbreviations: T1 – First application of the Sociodemographic questionnaire (August 2020) | T2 – Second application of the Sociodemographic questionnaire (November 2020) | T3- Third application of the Sociodemographic questionnaire (January 2021).
*p<0.05, chi-square and Fisher's exact tests; data shown as absolute and percentage frequencies.

Table 2.   Medical students' sociodemographic characteristics - part 2.

	Questionnaire 1					Questionnaire 2				
	Total	T1	T2	T3	p-Value	Total	T1	T2	T3	p-Value
Psychiatric disorder										
Yes	104 (26.1%)	40 (21.7%)	38 (26.6%)	26 (36.1%)	0.117	65 (24.6%)	24 (23.5%)	27 (26.0%)	14 (24.1%)	0.917
No	294 (73.7%)	144 (78.3%)	104 (72.7%)	46 (63.9%)		199 (75.4%)	78 (76.5%)	77 (74.0%)	44 (75.9%)	
Continuous-use medication										
Yes	128 (39.0%)	69 (37.5%)	28 (38.9%)	31 (43.1%)	0.715	91 (37.6%)	30 (37.5%)	38 (36.5%)	23 (39.7%)	0.926
No	200 (61.0%)	115 (62.5%)	44 (61.1%)	41 (56.9%)		151 (62.4%)	50 (62.5%)	66 (63.5%)	35 (60.3%)	
Hours of sleep/night										
< 6	215 (53.9%)	89 (48.4%)	92 (64.3%)*	34 (47.2%)	0.017	53 (20.2%)	21 (20.6%)	21 (20.4%)	11 (19.0%)	0.41
6-8	179 (44.9%)	91 (49.5%)	50 (35.0%)	38 (52.8%)*		205 (77.9%)	77 (75.5%)	81 (78.6%)	47 (81.0%)	
> 8	5 (1.3%)	4 (2.2%)*	1 (0.7%)	0 (0.0%)		5 (1.9%)	4 (3.9%)	1 (1.0%)	0 (0.0%)	

Data expressed as absolute value or frequency (%); Abbreviations: T1 – First application of the Sociodemographic questionnaire (August 2020) | T2 – Second application of the Sociodemographic questionnaire (November 2020) | T3- Third application of the Sociodemographic questionnaire (January 2021) |
*p<0.05, chi-square and Fisher's exact tests; data shown as absolute and percentage frequencies.

A total of 399 students participated in three phases of the first questionnaire, which included the Resilience and Self-Esteem Scales. The sample comprised 293 participants (73.4%) who were up to 25 years old and 106 participants (26.6%) who were over 25 years old. A total of 264 students participated in the three phases of the second questionnaire application, which included assessments of Burnout Syndrome and depression, with 200 (75.8%) being up to 25 years old and 64 (24.2%) being over 25 years old. The other sociodemographic characteristics of the study population are described in Tables 1 and 2.

Regarding the presence of Burnout Syndrome symptoms, we found that 84.6% of the participants exhibited such symptoms. Additionally, 40.6% of the students showed signs of low resilience, while only 15.5% demonstrated signs of high resilience. As for the students' self-esteem, 95.7% of the participants showed signs of healthy and strong self-esteem. There was no significant change in the prevalence of Burnout Syndrome symptoms throughout the semester (P = 0.593). It is noteworthy that this prevalence was already at elevated levels in the first phase of the study. The resilience pattern remained unchanged throughout the study period and showed no statistically significant variation in the sample (P = 0.132).

The results indicate a significant correlation (P = 0.002) between sleep deprivation and resilience, with longer sleep deprivation leading to lower levels of resilience. Additionally, there is a significant relationship (P = 0.013) between sleep deprivation and self-esteem, with increased sleep deprivation leading to a decline in self-esteem. However, a significant correlation (P < 0.001) was also found between resilience and self-esteem, with higher resilience levels resulting in higher self-esteem levels.

Regarding Burnout Syndrome, the assessment using the Maslach Burnout Inventory-Student Survey (MBI-SS) consists of three domains: emotional exhaustion, cynicism, and professional efficacy. In the study population, a significant relationship (P <0.001) was found between emotional exhaustion and cynicism, with higher levels of emotional exhaustion leading to increased levels of cynicism. Additionally, a significant inverse relationship (P < 0.001) was found between emotional exhaustion and professional efficacy, with higher levels of emotional exhaustion leading to decreased professional efficacy. Furthermore, a significant inverse relationship (P < 0.001) was observed between cynicism and professional efficacy.

Sociodemographic Data X Resilience

According to Table 3, participants aged up to 25 years showed low levels of resilience, while those aged over 25 years demonstrated medium levels of resilience. This suggests that older individuals have higher levels of resilience. Additionally, female participants demonstrated medium levels of resilience, while males showed high levels of resilience. s Students with a degree displayed high levels of resilience, while undergraduate students showed low levels of resilience. Participants without suggestive symptoms of ADHD demonstrated medium levels of resilience, while those with signs of ADHD displayed high levels of resilience.

Table 3. Correlation between Resilience and sociodemographic data, Self-esteem and sociodemographic data.

Variables	Resilience			p-Value	Self-esteem			p-Value
	< 125	125-145	>145		<15	15-25	>25	
Age								
Up to 25 yrs.	131 (80.9%)	125 (71.4%)	37 (59.7%)	0.004	13 (76.5%)	156 (85.7%)	122 (61.6%)	0.000
>25 yrs.	31 (19.1%)	50 (28.6%)	25 (40.3%)		4 (23.5%)	26 (14.3%)	76 (38.4%)	
Sex								
Female	121 (74.7%)	128 (73.1%)	32 (51.6%)	0.002	14 (82.4%)	129 (70.9%)	137 (69.2%)	0.516
Male	41 (25.3%)	47 (26.9%)	30 (48.4%)		3 (17.6%)	53 (29.1%)	61 (30.8%)	
Place of birth								
Capital of Ceará	109 (67.3%)	126 (72.0%)	48 (77.4%)	0.573	14 (82.4%)	122 (67.0%)	145 (73.2%)	0.083
Interior of Ceará	40 (24.7%)	34 (19.4%)	10 (16.1%)		3 (17.6%)	38 (20.9%)	43 (21.7%)	
Another state	13 (8.0%)	15 (8.6%)	4 (6.5%)		0 (0.0%)	22 (12.1%)	10 (5.1%)	
Previous Graduation								
Yes	19 (11.7%)	41 (23.4%)	17 (27.4%)	0.005	4 (23.5%)	20 (11.0%)	53 (26.8%)	0.000
No	143 (88.3%)	134 (76.6%)	45 (72.6%)		13 (76.5%)	162 (89.0%)	145 (73.2%)	
Psychiatric disorder								
Yes	50 (30.9%)	41 (23.4%)	13 (21.0%)	0.287	4 (23.5%)	55 (30.2%)	44 (22.2%)	0.341
No	111 (68.5%)	134 (76.6%)	49 (79.0%)		13 (76.5%)	126 (69.2%)	154 (77.8%)	
Hours of sleep /night								
<6	90 (55.6%)	92 (52.6%)	33 (53.2%)	0.982	12 (70.6%)	104 (57.1%)	97 (49.0%)	0.319
6-8	70 (43.2%)	81 (46.3%)	28 (45.2%)		5 (29.4%)	76 (41.8%)	98 (49.5%)	
>8	2 (1.2%)	2 (1.1%)	1 (1.6%)		0 (0.0%)	2 (1.1%)	3 (1.5%)	

Data expressed as absolute value or frequency (%);
*$p<0.05$, chi-square and Fisher's exact tests; data shown as absolute and percentage frequencies.

Sociodemographic data X Self-esteem

Individuals aged up to 25 years showed average levels, while those over 25 years displayed high levels of self-esteem. Married and divorced individuals demonstrated high levels of self-esteem, while single participants showed medium levels and those in a consensual marriage showed low levels. Participants with previous graduation degrees displayed high levels of self-esteem, while those without previous degrees showed medium levels. Furthermore, participants with borderline personality disorder showed low levels of self-esteem.

Sociodemographic data X Burnout

According to Tables 4 and 5, female individuals have more burnout than males and individuals with psychiatric disorders develop burnout more often than people without these disorders.

DISCUSSION

The COVID-19 pandemic has had a significant impact on global health, including mental health. According to a study by Zuljevic et al. (2021), the pandemic has led to an increase in psychiatric symptoms worldwide. Additionally, healthcare workers have experienced substantial psychological pressure, resulting in high rates of Burnout Syndrome[20].

The study by Zuljevic et al. also examined the impact of the pandemic on medical students, specifically in terms of burnout. They found no significant difference in burnout levels before and after the implementation of lockdowns. However, the present study reports a high prevalence of burnout (84.6%) among the study population, indicating a significant impact of the pandemic on mental health[20].

The present study found a high prevalence of Burnout Syndrome among medical students, with 258 students showing these symptoms. This is in line with other studies that have reported high rates of Burnout Syndrome among medical students, such as a study in Lebanon that found BS in 75% of medical students (Fares, 2016), but it is higher than other studies such as a study in Spain that showed 14.8% of

Table 4. Correlation between Burnout/ emotional exhaustion and disbelief and sociodemographic data.

Hours of sleep / night	N (%)	N (%)	N (%)	p-Value	N (%)	N (%)	p-Value
<6	53 (20.2%)	29 (15.6%)	24 (31.2%)	0.016	17 (14.9%)	36 (24.2%)	0.147
6-8	205 (77.9%)	153 (82.3%)	52 (67.5%)		94 (82.5%)	111 (74.5%)	
>8	5 (1.9%)	4 (2.2%)	1 (1.3%)		3 (2.6%)	2 (1.3%)	

Data expressed as absolute value or frequency (%);
*p<0.05, chi-square and Fisher's exact tests; data shown as absolute and percentage frequencies.

Table 5. Correlation between Burnout/professional effectiveness and Burnout and sociodemographic data.

Variables	Burnout/professional effectiveness		p-Value	Burnout		p-Value
	No	Yes		No	Yes	
Age						
Up to 25 yrs.	30 (61.2%)	170 (79.1%)	0.009	24 (66.7%)	176 (77.2%)	0.171
>25 yrs.	19 (38.8%)	45 (20.9%)		12 (33.3%)	52 (22.8%)	
Sex						
Female	31 (63.3%)	167 (77.7%)	0.036	20 (55.6%)	178 (78.1%)	0.004
Male	18 (36.7%)	48 (22.3%)		16 (44.4%)	50 (21.9%)	
Place of birth						
Capital of Ceará	38 (77.6%)	169 (78.6%)	0.054	26 (72.2%)	181 (79.4%)	0.058
Interior of Ceará	4 (8.2%)	34 (15.8%)		4 (11.1%)	34 (14.9%)	
Another state	7 (14.3%)	12 (5.6%)		6 (16.7%)	13 (5.7%)	
Previous Graduation						
Yes	9 (18.4%)	29 (13.5%)	0.380	6 (16.7%)	32 (14.0%)	0.676
No	40 (81.6%)	186 (86.5%)		30 (83.3%)	196 (86.0%)	
Psychiatric disorder						
Yes	9 (18.4%)	56 (26.0%)	0.260	4 (11.1%)	61 (26.8%)	0.043
No	40 (81.6%)	159 (74.0%)		32 (88.9%)	167 (73.2%)	
Continuous-use medication						
Yes	13 (31.7%)	78 (38.8%)	0.392	9 (28.1%)	82 (39.0%)	0.235
No	28 (68.3%)	123 (61.2%)		23 (71.9%)	128 (61.0%)	
Hours of sleep / night						
<6	6 (12.2%)	47 (22.0%)	0.310	5 (13.9%)	48 (21.1%)	0.375
6-8	42 (85.7%)	163 (76.2%)		31 (86.1%)	174 (76.7%)	
>8	1 (2.0%)	4 (1.9%)		0 (0.0%)	5 (2.2%)	

Data expressed as absolute value or frequency (%);
*p<0.05, chi-square and Fisher's exact tests; data showed as absolute and percentage frequencies.

students with the same diagnosis[21].These differences in results can be attributed to the varying stress factors found in different locations. Factors such as academic and medical course issues, as well as sociodemographic and political factors, contribute to the increase in Burnout Syndrome and stress levels among medical students.

According to the subdivision of the scale, in this study, 28.9% of the students had symptoms of Burnout-related emotional exhaustion, 56.1% had disbelief, and 79.3% had decreased professional efficacy symptoms. These findings are in agreement with those of other studies, such as a Spanish study conducted in Barcelona, which found that 65.1% of students had elevated levels of emotional exhaustion, 37.6% had prominent levels of depersonalization, and 34.2% had low personal efficacy[22].

Furthermore, the study found a considerable increase in emotional exhaustion levels, from 39.5% in the first year of the course to 84.2% in the sixth year (P < 0.001), as well as a similar increase in depersonalization levels, with 23.3% in the first year and 49.1% in the sixth year (P = 0.008). This suggests that the stressors faced by medical students increase as they progress through their studies.

According to the Rosenberg Self-Esteem Scale, this study shows that 45.8% of medical students have healthy self-esteem, while 49.9% demonstrate a level of self-esteem that corresponds to a strong and healthy person[19]. Additionally, this study found a correlation between higher self-esteem scores and fewer hours of sleep, which is not in agreement with previous research by Mistarebih (2023) which found that fewer hours of sleep were associated with daytime sleepiness, impaired memory and decision-making, resulting in low academic performance[23].

Another correlation found in this study was that higher resilience levels are associated with higher levels of self-esteem. YU et al. (2020) concluded that the psychological well-being of medical students is positively associated with resilience and negatively associated with academic burnout. This study provides further evidence of the negative association between academic burnout and psychological well-being and highlights the importance of interventions that promote resilience among medical students[24].

Resilience

The results of our study support previous research, such as the study by HOUPY in 2017, which found that the resilience of medical students is lower than that of the general population. Additionally, our study confirms that students who feel comfortable discussing Burnout and stress with their peers have higher resilience levels. Our findings indicate that over 80% of the students have low to medium resilience levels, emphasizing the need for a supportive environment that promotes open discussions about stress to build resilience[25].

Although our study did not find a statistically significant variation in resilience levels among students throughout the academic period, we did observe that nearly half of the participants had a low level of resilience, with only 15.5% having a high level and 43.9% having a medium level. This highlights the alarmingly low resilience levels among medical students and the importance of interventions that promote it.

The findings of our study are in line with previous research that has reinforced the significant impact of resilience level on the well-being of medical students throughout their training and professional lives as stated by YUNG KAY et al. in 2019[26]. Furthermore, KIZIELA in 2019 highlights the various stressors that medical students face, and the need for adequate resilience to adapt healthily during times of stress. Our study is the first to evaluate variations in resilience levels in medical students throughout the undergraduate course and emphasizes the need for further research in this field[27].

Burnout X Emotional Exhaustion, Disbelief, Professional Efficacy, and Depression

The correlation between Burnout syndrome symptoms and depression symptoms is significant among medical students. Our study revealed a direct relationship between the prevalence of emotional exhaustion and disbelief[28]. Conversely, there is an indirect proportionality between professional efficacy and emotional exhaustion. Research has shown that promoting extracurricular activities can help improve low professional and academic efficacy, ultimately reducing stress levels and promoting well-being[29].

CONCLUSION

In conclusion, this study has shown that medical students have elevated levels of Burnout Syndrome symptoms, which is consistent with previous literature. It is therefore essential to provide support mechanisms to help medical students cope with physical and mental stress during their training, as the clinical practice of medicine is known to be a challenging and demanding field.

Furthermore, this study is significant as it is the only one to currently evaluate the variables of self-esteem, resilience, and burnout during the COVID-19 pandemic, a period characterized by significant social and structural changes. The results revealed that variations in these variables were not statistically significant, indicating the need for further research to better understand the determinant factors for the training of medical students. By doing so, it will ultimately contribute to the improvement of healthcare for the general population.

In summary, this study highlights the importance of addressing the issue of Burnout Syndrome among medical students, and the need for additional research to better understand this phenomenon.

AUTHORS' CONTRIBUTION

Larissa Xavier Santiago da Silva, Marcos Kubrusly and Kristopherson Lustosa Augusto: conception and design of the study, collection, analysis or interpretation of data, critical review of intellectual content. Juliana Leitão Mesquita, Victoria Sudario Alencar, Victoria Bianca Holanda: manuscript writing, collection, analysis or interpretation of data.
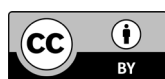
CONFLICTS OF INTEREST

SOURCES OF FUNDING

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