

ARTICLE

ANALYSIS OF THE MEDIATING ROLE OF RESILIENCE IN THE RELATIONSHIP BETWEEN SOCIAL SUPPORT AND BURNOUT IN UNIVERSITY STUDENTS¹

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ABSTRACT: This research aimed to assess the mediating role of resilience in the relationship between social support and academic burnout among undergraduate students. To do so, a cross-sectional study was conducted with undergraduate students enrolled at a public university in Paraná, Brazil, who participated in the GraduaUEL project – Analysis of Health and Lifestyle Habits of Undergraduates at the State University of Londrina, interviewed in 2019. The dependent variable of this study was academic exhaustion, measured using the Copenhagen Burnout Inventory questionnaire (CBI-S). The independent variable was social support, measured using the Medical Outcomes Study Social Support Survey (MOS-SSS), and the mediating effect of resilience was assessed using the CD-RISC-10 scale. Both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to obtain the model with the best-fitting model using Mplus software, with a 95% confidence interval (95% CI). Total social support significantly and positively influenced resilience, while resilience had a significantly negative effect on burnout. It was observed that the direct effect of social support on burnout and the indirect effect of social support on burnout through resilience were both significant, with resilience mediating this relationship by approximately 54.9%. In conclusion, social support and resilience impact academic burnout; thus, reducing university students' exhaustion can be achieved by enhancing both social support and resilience among them.

Keywords: students, student burnout, social support, resilience.

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ANÁLISE DO PAPEL MEDIADOR DA RESILIÊNCIA NA RELAÇÃO ENTRE APOIO SOCIAL E BURNOUT EM ESTUDANTES UNIVERSITÁRIOS

RESUMO: Esta pesquisa teve como objetivo avaliar o papel mediador da resiliência no efeito do suporte social e sua relação com o burnout acadêmico de estudantes universitários. Para tal, foi realizado um estudo transversal com estudantes matriculados em cursos de graduação de uma universidade pública paranaense, participantes do projeto GraduaUEL – Análise da Saúde e Hábitos de Vida dos Estudantes de Graduação da Universidade Estadual de Londrina, entrevistados em 2019. A variável dependente deste estudo foi a exaustão acadêmica, mensurada por meio do questionário *Copenhagen Burnout Inventory* (CBI-S). A independente foi o apoio social, medido pela Escala de Apoio Social (MOS-SSS), e o efeito mediador da resiliência foi verificado a partir da escala CD-RISC-10. Foram realizadas análise fatorial exploratória (AFE) e confirmatória (AFC) para obter o modelo com melhores resultados através do software Mplus, com intervalo de confiança de 95% (IC95%). O apoio social total afetou significativamente e positivamente a resiliência, enquanto a resiliência teve um efeito negativo significativo no burnout. Observou-se que tanto o efeito direto quanto o efeito indireto do suporte social no burnout por meio da resiliência foram significativos, sendo que a resiliência media essa relação em aproximadamente 54,9%. Em suma, o apoio social e a resiliência têm efeito sobre o burnout acadêmico, dessa forma a exaustão dos estudantes universitários pode ser reduzida ampliando-se o apoio social e a resiliência entre eles.

Palavras-chave: estudantes, burnout acadêmico, apoio social, resiliência.

ANÁLISIS DEL PAPEL MEDIADOR DE LA RESILIENCIA EN LA RELACIÓN ENTRE EL APOYO SOCIAL Y EL AGOTAMIENTO EN ESTUDIANTES UNIVERSITARIOS

RESUMEN: Esta investigación tuvo como objetivo evaluar el papel mediador de la resiliencia en la relación entre el apoyo social y el agotamiento académico de estudiantes universitarios. Para ello, se realizó un estudio transversal con estudiantes universitarios inscritos en una universidad pública en Paraná, Brasil, que participaron en el proyecto GraduaUEL – Análisis de la Salud y los Hábitos de Vida de los Estudiantes de Grado en la Universidad Estatal de Londrina, con entrevistas realizadas en 2019. La variable dependiente de este estudio fue el agotamiento académico, medido a través del cuestionario *Copenhagen Burnout Inventory* (CBI-S). La variable independiente fue el apoyo social, evaluado mediante la Encuesta de Apoyo Social (MOS-SSS), y el efecto mediador de la resiliencia se evaluó utilizando la escala CD-RISC-10. Se llevaron a cabo análisis factorial exploratorio (AFE) y análisis factorial confirmatorio (AFC) para obtener el modelo con el mejor ajuste, utilizando el software Mplus, con un intervalo de confianza del 95% (IC95%). El apoyo social total influyó de manera significativa y positiva en la resiliencia, mientras que la resiliencia tuvo un efecto significativamente negativo en el agotamiento. Se observó que el efecto directo y el efecto indirecto del apoyo social en el agotamiento a través de la resiliencia fueron significativos, con la resiliencia mediando esta relación en aproximadamente un 54,9%. En conclusión, el apoyo social y la resiliencia impactan el agotamiento académico; por lo tanto, reducir el agotamiento de los estudiantes universitarios puede lograrse mejorando tanto el apoyo social como la resiliencia entre ellos.

Palabras clave: estudiantes, burnout, apoyo social, resiliencia.

INTRODUCTION

Entering higher education is a phase of many changes in students' lives, including in their personal lives and the need to develop new relationships and skills. During this journey, students face several challenges, which require intense adaptive processes that can lead to unhealthy behaviors, capable of causing harm to their physical and emotional health (Almeida, 2014; Oliveira et al., 2014; Marôco et al., 2020; Teixeira et al., 2008; Velando-Soriano et al., 2023).

Given this scenario, students are more susceptible to academic burnout, a relatively common phenomenon among university students (Hwang; Kim, 2022; Kong et al., 2023; Liu et al., 2023). A review study found that the overall prevalence of academic burnout varies widely, from 2.5% to 57.2%. In this same study, the main factors related to emotional exhaustion were usually involved with issues directly linked to academic life (Moura et al., 2019).

Although the first studies on burnout were related to the field of occupational health, burnout has also been found in other areas such as in the student population (Farrell et al., 2019; Kilic et al., 2021; Kong et al., 2023). Several studies have identified that students who suffer from burnout experience high levels of exhaustion, increased emotional detachment from studying and other people, and a lack of efficacy in their academic activities, which implies the inability to produce desirable academic achievements (Alahmari et al., 2022; Almutairi et al., 2022; Shin et al., 2011). Studies with students have found a statistically significant association between burnout and the intention to drop out of the course. As a way to minimize the effects of burnout, the protective role of social support and resilience has been identified (Alves et al., 2022; Altharman et al., 2023).

Alves et al. (2022) showed that the higher the level of satisfaction with social support and academic engagement, the lower the intention to drop out, suggesting that social support mitigates the impact of burnout on the intention to drop out. Satisfaction with social support can directly prevent burnout and promote academic engagement, emphasizing the fundamental role that family, friends, and other colleagues have on students. In this context, studies show that social support provides a protective factor against the negative effects of stress and emotional exhaustion (Alves et al., 2022; Altharman et al., 2023). Social support involves the care, support, and assistance of family, friends, or the community, which can strengthen young people to deal with stress (Chu et al., 2021). In addition, social support promotes positive social contacts among students, which contributes to emotional balance and the reduction of burnout (Kim et al., 2018).

According to the World Health Organization, lifestyle and social support play a fundamental role in health (WHO, 2019), being able to increase resilience and help protect against the development of psychopathologies (Bule; Ruliati; Benu, 2021). Resilience is a characteristic that reflects the ability of individuals to actively deal with adversity and recover quickly, adapting healthily to challenges, stress or trauma (Aburn; Gott; Hoare, 2016). It is also defined as a dynamic capacity that can allow people to thrive in the face of challenges, given the appropriate social and personal contexts, suggesting that resilience can be learned or modified and depends on personal and social factors (Troy et al., 2023).

Individuals with high resilience engage in a restructuring process when faced with sources of stress and difficulties, going through more positive experiences and, consequently, responding actively, showing to be more flexible and with greater self-efficacy (Aburn; Gott; Hoare, 2016; Hughes et al., 2021). When they do not have adequate resilience to face stressful events, individuals are more prone to the negative mental and psychological consequences of these events (Dias et al., 2022; Li; Hasson, 2020).

Resilience attributes include social support, recovery, coping or adaptation, self-determination, and positive outlook (Caldeira; Timmins, 2016). Furthermore, social support is one of the most cited protective mechanisms as a component factor of resilience (Bule; Ruliati; Benu, 2021; Sabouripour; Roslan, 2015). Bohlken et al. (2020) found that resilience and social support play roles as mediating variables in the process of coping with stress, depression, and anxiety by health professionals. Given this context, evaluating the effect of social support on students with academic burnout and characteristics that may play a mediating role in this process can help alleviate the negative effects and ensure the quality and maintenance of health care during the academic journey. Therefore, this study aimed to evaluate the mediating role of resilience in the effect of social support and its relationship with academic burnout in university students.

METHODOLOGICAL PROCEDURES

This is an epidemiological, quantitative, observational, individual, and cross-sectional study, which is part of the research project entitled “GraduaUEL: Analysis of the Health and Lifestyle Habits of Undergraduate Students at the State University of Londrina”. The research was conducted with university students enrolled in undergraduate courses at the State University of Londrina (UEL) in 2019. At the time of the research, UEL had 50 in-person undergraduate courses and one distance learning course. All students aged 18 or over and actively enrolled in undergraduate courses in 2019 were included. No sampling process was carried out for the study population, and all 12,536 eligible students were invited to participate in the research.

The data collection instrument used was a structured questionnaire available electronically and online to participants through the Google Forms® platform. It was divided into the following contents: general and academic characterization, lifestyle habits and sleep quality, medication consumption, violence, social support and resilience, mental health and body satisfaction. The instrument was evaluated by experts in epidemiological studies to validate it for application in the study population. A pre-test was carried out in an undergraduate health course at a private institution located in the city of Londrina-PR. Participants were instructed to answer the questionnaire and point out any questions they had to the evaluator to identify difficulties in completing the instrument. A pilot study was conducted at a federal university near the city of Londrina, where the questionnaire was administered during a health promotion event held by the institution. The clarity of the questions and the logistics of data production (response time and performance of the digital platform) were verified.

Data collection took place between April 29 and June 27, 2019. To access the questionnaire, a two-dimensional barcode (QR Code) and a shortened link for direct typing in the browser were generated, and a hyperlink located on the UEL Postgraduate Program in Public Health page. The researchers carried out the survey's in-person dissemination in all UEL undergraduate classes. There was also wide dissemination on social media, in the local press and through mass emails sent to the university community. The questionnaire was answered anonymously, and filling in the registration number for individual feedback was optional.

The dependent variable of this study was academic burnout, measured using the Copenhagen Burnout Inventory (CBI-S) questionnaire, adapted for students and validated in Brazil (Campos; Carlotto; Marôco, 2013). This questionnaire consists of 25 questions divided into four domains: personal burnout (6 items), burnout related to studies (7 items), burnout related to colleagues (6 items) and burnout related

to professors (6 items). For each question, the possible answers were “never”, “rarely”, “sometimes”, “frequently” and “always”, scored from 1 to 5, respectively.

The independent variable used was social support, measured using the Social Support Scale (MOS-SSS), developed for the Medical Outcomes Study (MOS-SSS) by Sherbourne and Stewart (1991) and adapted for the Brazilian population (Griep et al., 2005). The instrument consists of 19 questions that the participant must answer based on an initial instruction: “If you need help, how often do you count on someone?”, indicating one of the five response options according to a five-point Likert scale: 0 (“never”); 1 (“rarely”); 2 (“sometimes”); 3 (“frequently”); and 4 (“always”). Although there are no standardization studies for the Brazilian population, it is assumed that higher indices in the total score of the respective factors indicate greater perception of the type of support (Zanini; Peixoto; Nakano, 2018; Zanini; Peixoto, 2016; Zanini; Verolla-Moura; Queiroz, 2009).

The mediating variable was resilience, measured using a scale adapted for Brazil by Lopes and Martins (2011), based on the CD-RISC-10 scale by Connor and Davidson (2003), originally published in 2003 in the United States. The instrument consists of 10 questions that assess individuals’ perception of their ability to adapt to change, overcome obstacles, and recover from illness, injury, or other difficulties (Campbell-Sills; Stein, 2007). The instrument is self-administered, and participants record their responses on a scale from 0 (“never true”) to 4 (“always true”). The results are calculated by adding the scores indicated by participants for each item, ranging from zero to forty points, with high scores indicating high resilience (Lopes; Martins, 2011).

The following were used as covariates: age, gender, marital status, paid work, source of income, residence, physical activity, self-perception of sleep quality, study series, satisfaction with the course, satisfaction with performance and medical diagnosis of depression.

The data spreadsheet was generated by the digital platform used for data production and exported to Microsoft Excel®. The research team manually checked and excluded questionnaires that presented inconsistencies or duplicate or triplicate responses, keeping only the first one completed. Data processing and analysis were performed using IBM Statistical Package for the Social Sciences (SPSS), version 19.0 for Windows®. A descriptive analysis of the variables was performed using the distribution of absolute and relative frequencies, mean and standard deviation. The Kolmogorov-Smirnov test was used to assess the distribution of data for the independent, mediating and dependent variables. In these cases, for the dependent variable (burnout), the total score of this variable was considered, without using its domains. In these analyses, it was found that all variables of interest presented nonparametric distribution.

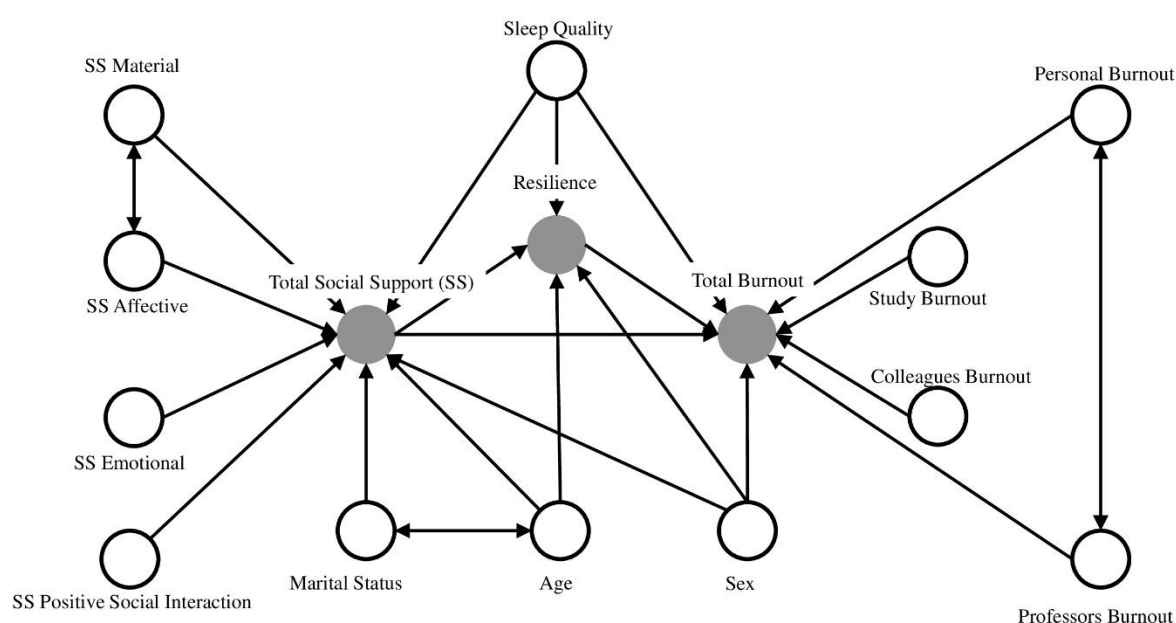
To compare the mean total burnout and the covariate categories, the Mann-Whitney test was applied, due to the nonparametric distribution of the data. To compare covariates that presented more than two categories, the nonparametric Kruskal-Wallis test was chosen. Tests with a statistical significance of 5% or $p\text{-value} < 0.05$ were considered significant. The reliability of the resilience scale was analyzed by Cronbach's alpha coefficient, which presented a value of 0.888.

The correlations between the independent, mediating and dependent variables and their domains were examined using Spearman's correlation analysis, used for nonparametric variables. Confirmatory Factor Analysis (CFA) was performed on the models proposed in the previous step, using the weighted least squares mean and variance adjustment (WLSMV) estimator, with a polychoric correlation matrix. The parameters estimated by the models proposed in the CFA included standardized loadings with their respective 95% confidence intervals (95%CI), standard error (SE) and correlations

between factors. Factor loadings greater than 0.40 were considered satisfactory. To analyze the fit of the models tested in the CFA, four indices were used: the root mean square error of approximation (RMSEA; ideal < 0.08 and acceptable < 0.10), the comparative fit index (CFI; adequate > 0.95) and the Tucker-Lewis Index (TLI; adequate > 0.90). Residual analysis was performed. From a conceptual model, configurations were made aiming at improving the adjustment indices and residuals, until the model with the best results was obtained (Figure 1). Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were performed in the Mplus software.

The research project “GraduaUEL: Analysis of the Health and Lifestyle Habits of Undergraduate Students at the State University of Londrina” was approved by the Research Ethics Committee of the State University of Londrina, in Londrina-PR (CAAE nº 04456818.0.0000.5231).

Figure 1 – Final theoretical model representing the relationship between social support and burnout mediated by resilience and covariates.

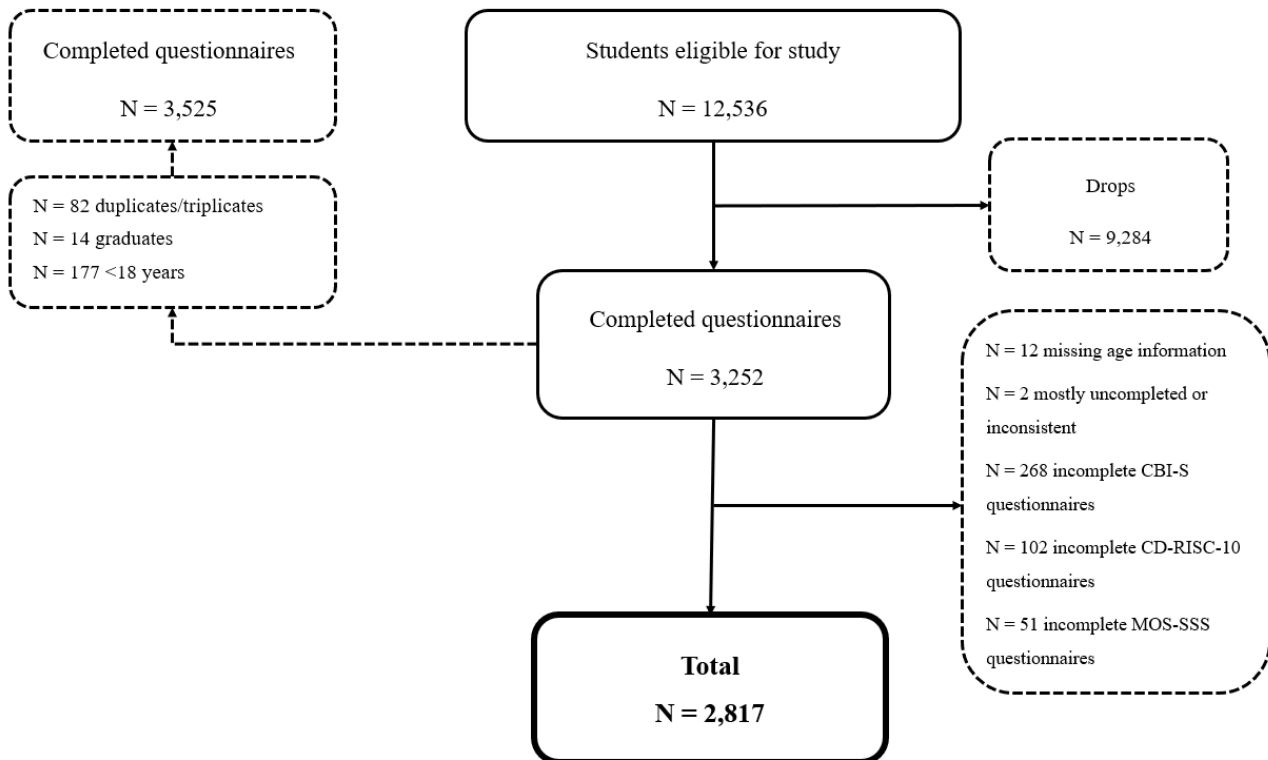


Source: the authors.

RESULTS

Among the 12,536 individuals eligible to participate in the study, 3,525 responded to the survey and, considering the losses (82 duplicate/triplicate questionnaires, 14 from postgraduate students, 177 from students under 18 years old, 12 due to lack of information on age, 2 due to inconsistencies and 421 for not responding to the variables evaluated), the analysis population consisted of 2,817 individuals (response rate of 22.5%) (Figure 2).

Figure 2 – Flowchart of the population participating in the GraduaUEL study, 2019, Londrina-PR.



Source: the authors.

The students had a mean age of 21.9 ± 4.5 years, with the majority (45.1%) in the age range of 18 to 20 years, female (67.9%), single (94.4%) and living with family members (67.1%) (Table 1).

In the analysis of the mean total burnout in the covariates, higher scores were identified in students aged 21 to 23 years, female, divorced/separated, who did not practice physical activity, with worse sleep quality, more advanced study years, less satisfied with the course and academic performance, and with a medical diagnosis of depression (Table 1).

Spearman's correlation analysis showed that the four dimensions of burnout were directly correlated with total burnout ($p < 0.001$). Furthermore, the results showed that all four dimensions of social support also correlated with total burnout ($p < 0.001$). Resilience was directly correlated with social support in all its dimensions ($p < 0.001$) and inversely correlated with total burnout and all its dimensions ($p < 0.001$). No correlation was detected only between the burnout dimension related to studies and social support positive social interaction.

Table 1 – Descriptive characteristics of the study sample, GraduaUEL according to Total Burnout average, 2019. (N=2,817).

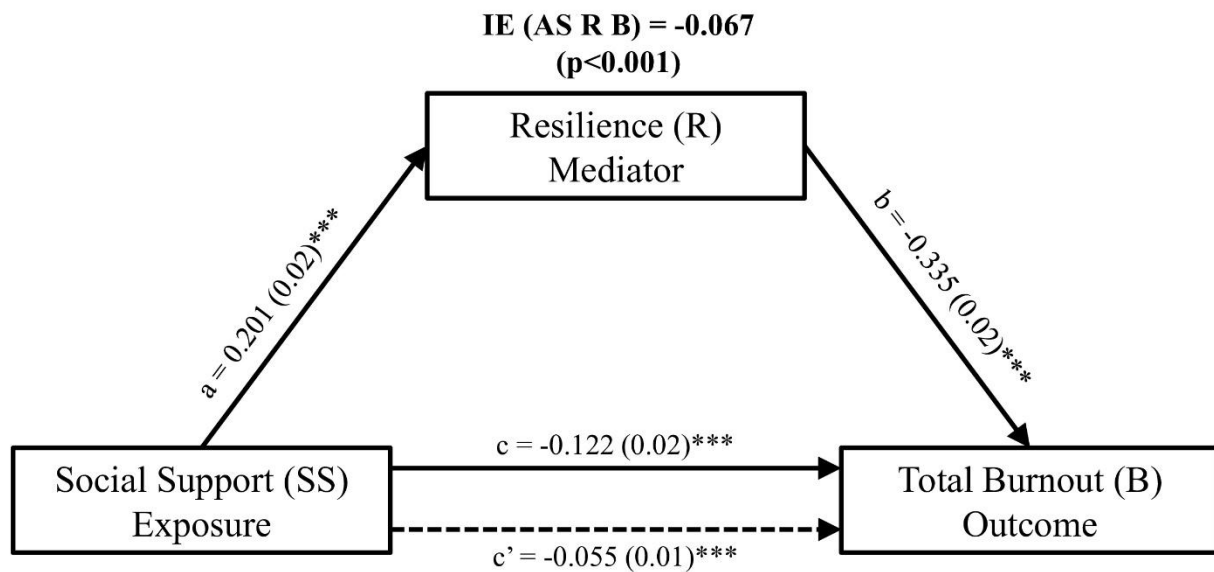
Variables	n (%)	Total Burnout	
		Mean (SD)	p-value*
Age (years old)			<0.001
18 to 20 years old	1,271 (45.1)	78.27 (19.29)	
21 to 23 years old	969 (34.4)	82.06 (19.09)	
24 years old or more	577 (20.5)	78.70 (20.27)	
Gender			<0.001
Female	1,913 (67.9)	82.89 (18.45)	
Male	904 (32.1)	72.84 (19.91)	
Marital Status			0.031
Single, without boyfriend/girlfriend	1,479 (52.5)	79.14 (19.48)	
Single, with boyfriend/girlfriend	1,179 (41.9)	80.71 (19.40)	
Married/common-law marriage	142 (5.0)	76.19 (19.44)	
Divorced/separated	17 (0.6)	82.12 (24.84)	
Paid work			0.926
No	1,825 (64.8)	79.57 (19.64)	
Yes	992 (35.2)	79.83 (19.26)	
Source of income			0.296
Entirely with own resources	343 (12.2)	78.80 (20.45)	
Fully funded by family/friends/others	1,437 (51.0)	80.12 (19.83)	
With own resources and those of family/friends/others	1,037 (36.8)	79.31 (18.70)	
Residence			0.803
Alone	350 (12.4)	80.29 (20.44)	
Friends/colleagues	472 (16.8)	80.07 (18.69)	
Family members	1,890 (67.1)	79.39 (19.53)	
Others	105 (3.7)	80.67 (19.48)	
Practice of physical activity			0.009
Not practicing	1,450 (51.4)	85.54 (18.79)	
Once a week	448 (15.9)	77.40 (17.98)	
Two to three times a week	582 (20.7)	77.77 (20.90)	
Four or more times a week	337 (12.0)	73.54 (19.81)	
Self-perception of sleep quality			<0.001
Very good	177 (6.3)	63.57 (18.62)	
Good	1,344 (47.7)	74.53 (18.58)	
Bad	1,065 (37.8)	85.53 (17.13)	
Very bad	231 (8.2)	94.79 (16.56)	
Study semester			<0.001
1st semester	618 (22.0)	70.82 (19.10)	
2nd semester	672 (23.9)	80.73 (18.37)	
3rd semester	617 (22.0)	81.33 (18.97)	
4th semester	650 (23.2)	83.07 (19.03)	
5th semester	228 (8.1)	85.84 (19.10)	
6th semester	21 (0.7)	88.67 (16.75)	
Satisfaction with the course			<0.001
Very satisfied	667 (23.7)	71.67 (19.40)	
Satisfied	1,383 (49.1)	78.21 (18.28)	
Neither satisfied nor dissatisfied	584 (20.8)	87.07 (17.48)	
Dissatisfied	141 (5.0)	95.70 (15.80)	
Very dissatisfied	39 (1.4)	101.00 (17.89)	

Performance satisfaction		<0.001
Very satisfied	158 (5.6)	66.32 (19.33)
Satisfied	1,026 (36.4)	73.56 (18.75)
Neither satisfied nor dissatisfied	943 (33.5)	81.16 (18.24)
Dissatisfied	563 (20.0)	88.31 (17.09)
Very dissatisfied	125 (4.4)	96.46 (14.78)
Medical diagnosis of depression		<0.001
No	2,507 (89.0)	78.24 (19.31)
Yes	310 (11.0)	91.15 (17.11)

* Mann-Whitney and Kruskal-Wallis test.

Total social support significantly and positively affected resilience ($a = 0.201$, $SE = 0.018$, $p < 0.001$). This result shows that resilience increases as the social support score increases (path a). Resilience, on the other hand, had a significantly negative effect on burnout ($b = -0.335$, $SE 0.02$, $p < 0.001$), since burnout decreased as resilience increased (path b). It was observed that the direct effect of social support on burnout (path c') was significant ($c' = -0.055$, $SE 0.001$, $p < 0.001$). In the final step, the indirect effect of social support on burnout through resilience was examined (ab) as significant ($b = -0.067$, $p < 0.001$). Thus, it was observed that resilience mediates the relationship between social support and burnout by approximately 54.9% (Figure 3).

Figure 3 – Visual representation of the structural model: mediating role of resilience in the effect of material social support on total burnout.



a=Exposure-Mediator (path a); b=Mediator-Outcome (path b); c=Total effect; c'= direct effect; IE=Indirect effect ($a*b$); ***= $p < 0.001$

Source: the authors.

DISCUSSION

In this study, we investigated whether resilience plays a mediating role in the effect of social support on academic burnout. According to the results, burnout decreases as the level of social support and resilience increases. Previous studies have shown that social support has a protective role in burnout and reduces its negative effects (Alves et al., 2022; Chunming et al., 2017; Kilic et al., 2021; Ye; Huang;

Liu, 2021). A study with 342 medical students found that social support was a protective factor for all levels of academic burnout (Bule; Ruliati; Benu, 2021; Sabouripour; Roslan, 2015). These results are in line with those of this study, which found that social support had a protective effect on academic burnout.

Social support promotes health because it facilitates healthier behaviors, such as exercise and proper nutrition, and improves adherence to medical regimens. Socially integrated individuals (those with more social ties) live longer, have better mental health outcomes, and are more resilient to a variety of somatic diseases (Uchino, 2006). Thus, it has been suggested that lack of social support constitutes an important risk factor for health.

Research in this area has identified that the presence or absence of social support can alter neural and endocrine systems that affect disease, such as the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis. Having or perceiving people close who can provide help or care, particularly in times of stress, can buffer the negative impact of stressors, reducing physiological responses to stress, which has implications for health. Thus, social support, whether received or perceived, can reduce neural activity in regions that respond to basic survival threats, benefiting health through the activation of neural regions that respond to safety and inhibiting the neural and physiological response related to threat (Eisenberger, 2013).

Social support can be provided by family, teachers, and friends, and this positive social contact contributes to students' emotional balance (Kilic et al., 2021; Kim et al., 2018; Ye; Huang; Liu, 2021). These relationships provide not only a sense of belonging to a group but also support in times of difficulty (Oliveira; Dias, 2014). Thus, it can be understood that students' attitudes towards the course, their bond with colleagues, teachers, and the academic environment are related to academic adaptation and contribute to students' permanence in their courses, facilitating the coping with difficulties during this transition phase and helping to reduce the stressful effects directly related to academic burnout (Oliveira; Santos; Dias, 2016; Kilic et al., 2021).

Moretti and Hübner (2017) found that most students perceive the university routine as a significant stress factor, related to the overload of activities and lack of time. Students consider the teaching model to be severe and demotivating, with anxiety and impatience as characteristics that aggravate stress. The research also highlights the importance of the teacher-student relationship and suggests that educators reflect on their practices to improve learning. Furthermore, studies highlight the role of educators in preventing burnout syndrome, suggesting that strengthening the emotional relationship between teachers and students can act as a protective measure against the development of this syndrome. It was also identified that students' perception of the emotional support offered by teachers is a protective factor against academic burnout. Finally, it is recommended to carry out curricular restructuring, implement psychosocial support programs and adapt to contemporary demands for a more flexible and modern education, aspects that can be influenced by the perception and performance of teachers (Moretti; Hübner, 2017; Romano et al., 2021; Câmara; Carlotto, 2024).

The academic environment can promote a network of supportive relationships to promote well-being and assist students in their adaptation (Oliveira; Santos; Dias, 2016; Sahão; Kienen, 2021). In this sense, social support and resilience are important tools for this adaptation, helping to minimize the negative impacts that this phase can have on students (Hughes et al., 2021). Studies indicate that university students with higher levels of social support had higher levels of resilience than those with lower levels of social support (Liu; Cao, 2022; Ozsaban; Turan; Kaya, 2019).

Resilience factors can be internal (mental stability) or external (peer support) (Ozsaban; Turan; Kaya, 2019; Perry et al., 2023). Also, social support is one of the most cited protective mechanisms in the field of resilience (Bule; Ruliati; Benu, 2021; Caldeira; Timmins, 2016; Sabouripour; Roslan, 2015). A higher level of social support leads to stronger resilience (Bule; Ruliati; Benu, 2021), which can reduce academic burnout, important for coping with stress, depression, and anxiety (Bohlken et al., 2020).

A study carried out with nurses during the pandemic showed that professionals value the social support received during this period of stress and that this support was positively correlated with the maintenance of their resilience, suggesting that social support makes professionals more resilient (Abdalmohdi, 2024).

Troy et al. (2023) propose that the learning environment, social support, and sense of belonging can influence students' success differently, depending on their life paths and experiences. Therefore, individual resilience, resulting from each student's social determinants, will be expressed more robustly in programs that best support them, considering social learning environments and high levels of inclusion. In this context, coping strategies play a crucial role in preventing and managing academic burnout. Promoting an educational environment that favors open communication and social support can mitigate the effects of academic stress, improving the mental health of all involved (Oliveira; Dias, 2014). Studies indicate that institutional interventions, such as teacher training programs, can be effective in promoting teaching practices that prioritize mental and emotional health. Thus, by investing in teacher training and building a positive school environment, institutions can not only benefit teachers' well-being but also improve students' academic experience, reducing the risk of burnout in both groups (Oliveira; Dias, 2014; Moretti; Hübner, 2017; Romano et al., 2021; Câmara; Carlotto, 2024).

Additionally, resilience has a preventive effect on burnout because it can reduce the perception of stress (Farquhar et al., 2018). A systematic review found that resilience is negatively related to student burnout (Gong et al., 2021), corroborating the present results. Based on this finding, academic and family support is needed to improve social support and, consequently, resilience, which can favor the reduction of burnout symptoms during the academic journey.

Thomas and Revell (2016) found that the most successful teaching strategies for promoting resilience involve encouraging students' investigation and understanding of adversity and conflict, providing supportive feedback to help them identify and transform demands and challenges into opportunities, and promoting positive guidance that favors coping with adversity.

The association between social support, resilience, and academic burnout is consistent with other studies (Karadaş; Duran, 2022; Woo et al., 2020), as well as the evidence that resilience mediates the relationship between social support and burnout (Klinoff et al., 2018; Shang; Yang, 2021). These findings are important for understanding how social support affects academic burnout.

A study conducted with medical students during remote learning during the COVID-19 pandemic found that resilience fully mediated the relationship between social support and academic burnout (Liu; Cao, 2022), a relationship also evidenced by the outcome of psychological problems (Abdalmohdi, 2024; Nitschke et al., 2021; Ye et al., 2020; Zhao et al., 2018). Thus, this investigation extends the findings of previous research showing that resilience is a mediator in the relationships between perceived social support and burnout (Ye et al., 2020; Zhang, X. et al., 2021; Zhang, Y. et al. 2023; Zhao et al., 2018).

Individuals with higher levels of resilience are highly adaptable when faced with adversities and pressures related to their academic journey, and also demonstrate the ability to make more favorable

decisions in the current situation, which improves subjective well-being and quality of life (Aburn; Gott; Hoare, 2016; Caldeira; Timmins, 2016; Hughes et al., 2021). As a way to stimulate psychological resilience, there are combinations of internal and external factors, with social support being an external factor able to directly affect it (Troy et al., 2023). Furthermore, the environment in which the individual is inserted is also capable of acting on this process, proposing that it is possible to improve an individual's resilience levels within an organization by addressing organizational-level issues (Karadaş; Duran, 2022; Perry et al., 2023). This suggests that strengthening social support improves resilience and helps alleviate symptoms of student burnout, making it an important strategy for tackling academic burnout in universities.

This study has some limitations. First, the self-reported nature of the study may be a source of information bias. Second, the cross-sectional design does not allow for robust conclusions about the temporality of events, and reverse causality should be considered in future studies on the same topic. Therefore, prospective studies are still needed to explore causality and better delineate the effects of social support for burnout, as well as to confirm the possible mediating role of resilience in this relationship. Among the positive points, we can highlight the high reliability observed in the resilience scale since the study population addresses different areas of knowledge, encompassing the entire university, with the mediation analysis adjusted for numerous possible confounding variables.

CONCLUSIONS

This study determined that social support and resilience influence academic burnout. Thus, university students' exhaustion can be reduced by increasing social support and resilience. Also, resilience acts as a mediator of the impact of social support on academic burnout. This study provides relevant and instructive information for university administrators about strategies that can strengthen students' resilience. In addition, the results contribute to expanding knowledge about possible paths to be taken through the provision of social support in the academic environment, which favors the development of resilience. The study also highlights the importance of the role of teachers in preventing academic burnout, emphasizing that strengthening the affective relationship between educators and students is essential to protect against the development of the syndrome.

The emotional support perceived by students from professors is identified as a significant protective factor, contributing to stress reduction. It is recommended that actions be implemented to improve interpersonal relationships in the academic environment, both between professors and students and among students, as a way to minimize academic exhaustion. It is also suggested that curricular restructuring be done to alleviate the burden on students, highlighting the influence that professors' performance can have on this process.

Given the increasing prevalence of burnout, and despite public health policies and initiatives aimed at its prevention, it is necessary to improve students' sources of social support and resilience. Effective teaching support and a positive educational environment, with investments in training and support programs, are essential to promote mental health and well-being in the university context throughout the academic journey, as a measure to help reduce the negative effects of academic burnout.

Finally, it is recommended that qualitative studies be developed to deepen the understanding of the role of social support and resilience in the development of burnout, as well as in the identification of coping strategies adopted by institutions, students and professors to minimize burnout and its consequences on the mental health of university students.

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Author 1 – Conceptualization, data curation, formal analysis, investigation, validation, visualization, and writing – original draft.

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Author 3 – Conceptualization, methodology, project administration, supervision, visualization, and writing – review and editing.

Author 4 – Conceptualization, data curation, methodology, project administration, supervision, visualization, and writing – original draft.

CONFLICT OF INTEREST DECLARATION

The authors declare that there is no conflict of interest with this article.

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