

Characteristics of the workload and academic pressure in Latin American medical students

Características de la carga horaria y de la presión académica en estudiantes de medicina latinoamericanos

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Abstract

Introduction: Medical students are particularly exposed to significant academic and psychological pressure due to the curricular characteristics of this demanding program. **Objective:** To determine the characteristics of the course load and perceived academic pressure of Latin American medical students in 2024 and 2025. **Methodology:** An observational, analytical, and cross-sectional study was conducted to medical students of both sexes attending medical schools. A telematic questionnaire was used and disseminated through the social networks of the university students of the cooperating countries. Snowball sampling was used. **Results:** 266 complete surveys were recorded. The mean age was 20 ± 5 years and the female sex predominated (66.92%). Most of the students were from Peru (55.64%) and Bolivia (20.30%), with 70.30% being first-year students. The most frequent levels of perceived academic pressure were moderate (43.61%) and high (33.08%). The main sources of academic stress were exams and practical assignments. It was found that the greater the number of hours of study per week, the higher the levels of perceived academic pressure ($p < 0.03$). **Conclusions:** Medical students mostly perceived moderate and high academic pressure. University authorities should monitor sources of academic stress and implement mitigating measures to avoid the consequences for medical students.

Keywords: Workload; psychological stress; Students from the Health Area; Faculties of Medicine

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Resumen

Introducción: los estudiantes de medicina están particularmente expuestos a mucha presión académica y psicológica debido a las características curriculares de esta exigente carrera. **Objetivo:** determinar las características de la carga horaria y de la presión académica percibida en los estudiantes de medicina latinoamericanos en 2024 y 2025. **Metodología:** se aplicó un estudio observacional, analítico y transversal a estudiantes de medicina de ambos sexos que asisten a facultades de medicina. Se utilizó un cuestionario telemático que fue difundido por las redes sociales de los universitarios de los países cooperantes. El muestreo fue en bola de nieve. **Resultados:** se registraron 266 encuestas completas. La media de edad fue 20 ± 5 años y predominó el sexo femenino (66,92%). La mayoría de los estudiantes eran de Perú (55,64%) y Bolivia (20,30%), siendo 70,30% del primer curso de la carrera. Los niveles más frecuentes de presión académica percibida fue la moderada (43,61%) y alta (33,08%). Las principales fuentes de estrés académico fueron los exámenes y los trabajos prácticos. Se detectó que, a mayor cantidad de horas de estudio por semana, aumentaban significativamente los niveles de percepción de presión académica ($p < 0,03$). **Conclusiones:** los estudiantes de medicina perciben, en su mayoría, moderada y elevada presión académica. Las autoridades universitarias deben monitorear las fuentes de estrés académico y aplicar medidas paliativas para evitar consecuencias en los estudiantes de medicina.

Palabras clave: Carga de Trabajo; Estrés Psicológico; Estudiantes del Área de la Salud; Facultades de Medicina

Introduction

The total amount of educational work to be done in medical schools is well regulated, but it is notoriously demanding, not only in academic terms, but also in terms of emotional resilience. A survey of U.S. medical deans found that >80% of them believed that student well-being would improve with the regulation of work hours, but 48% noted that it would negatively affect the development of the intended curriculum. In addition, 82% believed that students should not work more than 80 hours/week ¹.

The course load of a university degree is the total number of hours assigned for students to meet the requirements of a study plan, covering both in person or virtual classes and independent study and distance activities. In medicine, this workload varies by university, but it averages between six and seven years of training. In Paraguay, public universities have total workloads of around 7,000 hours, including years of compulsory rotations (Clinical clerkships).

The intense study load, combined with constant exposure to stressful situations and the pressure for high performance, can lead to the development of psychological disorders among medical students ². Lima J *et al.* ³ describes that the acquisition of maladaptive behaviors as a response to stress due to the overload of studies makes students more vulnerable to the development of mental disorders and, in them, the most severe is found: suicide ideation and attempts.

The academic pressure due to the demands and high expectations of successful performance in studies generates stress and anguish in university students. In this context, it is essential to understand what are the main psychological conditions that affect medical students at a given time and their possible repercussions on their future professional practice ⁴. In this sense, anxiety is one of the most common psychological disorders among medical students. In this regard, Mendes *et al.* ⁵ suggests that anxiety can be triggered by information overload, the need to make quick decisions, and the responsibility of caring for patients in critical situations. On the other hand, anxiety can be both the cause and the consequence of academic pressure and compromise the quality of the training of future doctors ⁶. Sacramento *et al.* ⁷ identified that factors related to depression, anxiety, and stress can be grouped into individual characteristics of students, family and economic issues. Other authors have identified the perception of academic trajectory, health and well-being (such as substance use, rest and leisure) and history of psychological or psychiatric treatment as risk factors for psychological stress ^{5,8}.

Considering the competitive academic environment and associated pressure, it is crucial to implement effective strategies for psychological support and promotion of emotional well-being. In this sense, some authors such as Lelis *et al.* ⁹ underscore the importance of the availability of counselling services, awareness programs and

initiatives to reduce the stigma associated with mental health, as a way to improve the academic environment and strengthen students' resilience⁴. Likewise, Lima *et al.*³ also highlight that emotional support, especially from the family, is essential to help students cope with stressors that can trigger mental problems. College students who are far from their families, particularly those who come from distant places, are at greater risk of facing emotional difficulties^{6,10}.

The estimation of academic load and its effects is a complex and dynamic problem. It includes not only the hours declared in the curricula but also the workload outside of classes¹¹. The student's perception of academic demands can be considered for a parameter of perceived load. A study carried out with the SISCO questionnaire in the pre-pandemic period at the National University of Asunción detected that 77% of university students have serious academic stress, using the aforementioned parameter¹². As a limitation, that study did not analyze the direct effect of academic load as one of the causes or determining variables of stress.

There are several questionnaires to assess the well-being and stress risk of university students, but very few assess the real workload and the feeling of academic pressure that they may experience¹³. Given that there are no current data and the relevance of this topic, it was necessary to investigate the main academic situations experienced by medical students at the university and their possible psychological consequences. The general objective of this research was to determine the characteristics of the workload and academic pressure perceived by Latin American medical students in 2024 and 2025.

Methodology

Study design and population: an observational, analytical, cross-sectional design was applied. The study population consisted of male and female medical students, who attend universities in any city in Paraguay, Bolivia, Peru, and Brazil, during 2024 and 2025. Subjects who accepted informed consent were included and incomplete surveys were excluded. Non-probabilistic snowball sampling was used. Country-stratified sampling was not applied.

Measurement instrument and variables: a questionnaire developed with the *Google Forms™* program was applied and disseminated through the social networks of Latin American students. People who accessed the questionnaire were invited to complete it after explaining the objectives and purpose of the research. Sociodemographic variables, hours spent studying, hours of sleep, physical activity, perceived academic pressure, sources of stress, and feelings of sadness were measured. This questionnaire was based on the explanatory factors of academic load proposed by Harden Diaz *et al.*². With these factors, questions were elaborated in Spanish that were subjected to construct evaluation with the opinion of 3 experts who evaluated the relevance, clarity and sufficiency of the items. The variables hours of sleep and study, physical activity per week, academic pressure, and feelings of perceived sadness were measured on an ordinal scale and described as frequencies and percentages.

To measure general satisfaction with life, the SWLS (*Satisfaction with life Scale*) questionnaire was used. This consists of 5 questions with answers measured on a Likert scale with scores from 1 to 10, where 1 was "not at all satisfied" and 10 "very satisfied", understanding that a higher score reflects greater satisfaction.

The questionnaire with demographic variables, workload and life satisfaction was disseminated by key contacts and social networks in Latin America. The questions were in Spanish.

Data management and analysis: Initially, a pilot test was with 30 university students, who were not included in the final sample. This test showed an acceptable internal consistency, with Cronbach's alpha of 0.80. The answers were transcribed to an electronic spreadsheet. At the end of the data collection process, descriptive statistics were applied with the statistical program *Epi Info 7™*. Pearson's correlation test was applied to analyze the relationship between quantitative variables and the ANOVA test for quantitative variables (perception of academic pressure) in several groups (degrees of study hours per week).

Sample size calculation: *Epi Dat 3.1*™ was used. A prevalence of at least 50% of some degree of academic pressure was expected. For an infinite population, accuracy of 6.5%, 95% CI, the minimum size calculated was 228 subjects. No sample calculation was performed for each country and stratified sampling was not applied.

Ethical aspects: the principles of Bioethics were respected. The respondents freely decided to participate in the research. No personal data such as names, telephone, email or IP were collected. There are no commercial conflicts of interest. The protocol was approved by the ethics committee of the Universidad Autónoma San Sebastián, San Lorenzo, Paraguay, with opinion No. 15/2024.

Results

A total of 266 students entered the study, 178 (66.92%) were female and 88 (33.08%) were male. The mean age of the sample was 20 ± 5 years. The origin was from Peru in 148 cases (55.64%), Bolivia in 54 (20.30%), Paraguay in 46 (17.29%) and Brazil in 18 (6.77%). The year of the degree they were studying was distributed into: 1st year (n 187 = 70.30%), 2nd year (n 38 = 14.29%), 3rd year (n 13 = 4.89%), 4th year (n 3 = 1.13%), 5th year (n 9 = 3.38%) and 6th year (n 16 = 6.02%). Most of the students lacked comorbidity (83%), although 8.27% reported obesity, 5.64% asthma, 2.26% autoimmune diseases and 3.01% other conditions. The frequency of hours spent studying, resting at night and physical activities is described in **Table 1**.

Table 1. Provision of time for studying, sleeping and exercising for medical students (n 266)

Activities	Frequency	Percentage
Hours of study/week		
Less than 10 hours	36	13.53
10 - 20 hours	86	32.33
21 - 30 hours	47	17.67
31 - 40 hours	65	24.44
More than 40 hours	32	12.03
Hours of nightly sleep		
Less than 4 hours	15	5.64
4 - 5 hours	116	43.61
6 - 7 hours	125	46.99
8 hours or more	10	3.76
Physical activity/week		
Never	45	16.92
Less than once a week	95	35.71
1 - 2 times a week	81	30.45
3 - 4 times a week	29	10.90
5 or more times per week	16	6.02

Based on the answers ordered by categories, the feeling of academic pressure was mostly perceived as moderate (43.61%). With regard to emotional well-being, feelings of anxiety or sadness were sometimes referred to by 38.35% of the respondents, according to the responses ordered by category (**Table 2**).

Table 2. Frequencies of the feeling of academic pressure and feelings of anxiety and sadness in medical students (n 266)

Academic pressure	Very low: n 3 (1.13%)	Low: n 26 (9.77%)	Moderate: n 116 (43.61%)	High: n 88 (33.08%)	Very high: n 33 (12.41%)
Feelings of anxiety or sadness	Never: n 6 (2.26%)	Rarely: n 50 (18.80%)	Sometimes: n 102 (38.35%)	Frequently: n 85 (31.95%)	Always: n 23 (8.65%)

Regarding the sources of stress in academic life, the one generated by class exams predominated. These sources are described in **Table 3**. No percentages were calculated because everyone scored at least 1 of the answer choices.

Table 3. Sources of Stress in Academic Life Medical Students

Sources of academic stress	Absolute Frequency
Class Exams	205
Practical assignment's	148
Lack of free time	124
Family Expectations	92
Intensive classes and schedules	87
Teachers' expectations	73
Economic problems	2
Extracurricular Activities	1
Research work	1
Teacher to student discrimination	1

The physical symptoms of stress experienced by the students were: difficulty sleeping or insomnia (n = 150), frequent headaches (n = 146), constant fatigue (n = 121), muscle aches (n = 113), and gastrointestinal problems (n = 89). Only 24 university students (14.45%) did not mention some of these discomforts.

General satisfaction with life was assessed in scores from 1 to 10, where 1 was "not at all satisfied" and 10 is "very satisfied", according to the explanation detailed in the Methodology section. The percentage results are described in **Figure 1**.

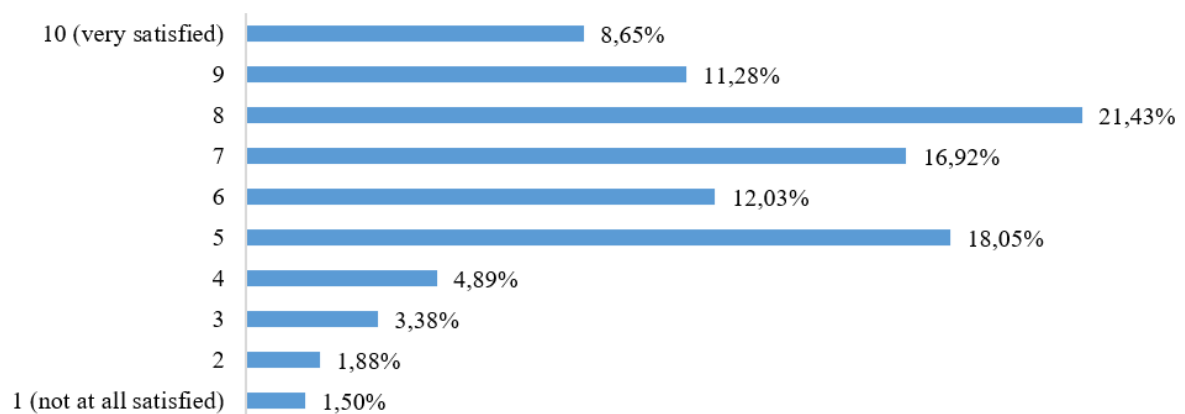


Figure 1. Percentages of perception of general satisfaction with life of medical students (n 266)

Very few students applied relaxation techniques (2.36%) and only 9.91% sought social support from friends, family or professionals when they felt overwhelmed by the academic load (**Table 4**).

Table 4. Use of relaxation techniques and social support seeking by medical students (n 266)

Variables	Frequency	Percentage
Use of relaxation techniques		
Never	68	25.56
Rarely	139	52.26
Frequently	49	18.42
Always	10	3.76
Seeking Social Support		
Never	50	18.80
Rarely	128	48.12
Frequently	60	22.56
Always	28	10.53

The correlation between life satisfaction and the perception of academic pressure was $r = -0.1$ (p-value 0.2 Pearson's correlation test). It was observed that the mean perception of academic pressure increases significantly with the hours of study per week (p 0.03 ANOVA test) (**Table 5**).

Table 5. Relationship between hours of study per week and perception of academic pressure in medical students (n 266)

Study Hours per week	Perception of academic pressure
Less than 10 hours (n 36)	3.25 ± 0.99
10 - 20 hours (n 86)	3.39 ± 0.84
21 - 30 hours (n 47)	3.29 ± 0.65
31 - 40 hours (n 65)	3.63 ± 0.91
More than 40 hours (n 32)	3.75 ± 0.91

(p = 0.03 ANOVA test)

Discussion

The results of this research provide a detailed view of the characteristics of the workload and academic pressure of Latin American medical students in 2024 and 2025, highlighting the complexity of academic demands. The predominance of female and first-year students in the sample reflects a young population, largely from Peru, that faces a competitive and demanding academic environment. This context, characterized by an intense academic workload and exposure to stressful situations, coincides with the findings of Sacramento *et al.* ⁷ and Souza *et al.* ¹⁰, who identify academic overload as a trigger for psychological disorders, including anxiety, depression, and sleep problems.

The reported hourly workload, with 24.44% of students dedicating between 31 and 40 hours per week to study and 12.03% exceeding 40 hours per week, shows the magnitude of the academic demands, which do not include the hours declared in the study plans. This perception of academic load translates into moderate (43.61%) and high (33.08%) levels of academic pressure, which reinforces the idea that the pressure perceived by students is a key indicator of their well-being ¹⁴. The main sources of stress identified, such as class exams (205 students) and practical work (148 students), are consistent with the academic stressors reported by Mendes *et al.* ⁵, who highlights information overload and excessive extracurricular or autonomous tasks. In a study of medical students

in the United States, 50% spent between 40 and 50 hours a week on curricular activities¹⁵. The existence of a discrepancy between the academic load declared in the curricula and the actual time that students actually occupy in and out of class hours must be recognized². This overload of hours is responsible for medical problems during residency in hospitals¹⁶.

Students in health careers are prone to disorders associated with high academic load such as lack of confidence, panic and group stress, insecurity in the approach to study². Our results also reveal a significant prevalence of physical symptoms attributable to stress, such as difficulty falling asleep and frequent headache, reported by 150 and 146 students, respectively. Sleep disorders are also prevalent among medical students, as noted by Neres *et al.*¹⁷. Insomnia and other sleep-related problems can be triggered by chronic stress, intense workload, and anxiety associated with medical training. Sleep deprivation can impair cognitive function, decision-making ability, and increase the likelihood of making mistakes in students, as seen during the COVID-19 pandemic¹⁰. In our study, sleep deprivation, with 43.61% of students sleeping between 4 and 5 hours per night and only 3.76% with at least 8 hours, can deteriorate cognitive function and increase poor performance and risk of errors, as could occur in future professional life. These data underscore the need to address sleep problems as an integral part of student support strategies, as proposed by Chandler *et al.*¹⁸ by emphasizing the importance of counseling services and academic stress awareness programs.

Students' perception of overall life satisfaction was also affected, with 38.35% of our respondents' reporting feelings of anxiety or sadness occasionally and frequently in 31.95%. This finding is in line with the studies of Cristo F.⁶ and Sacramento *et al.*⁷, which identify anxiety and depression as common disorders among medical students, possibly influenced by factors such as lack of free time (reported by 124 students) and family expectations (92 students). The low use of relaxation techniques (only 3.76% always apply them) and the limited search for social support (10.53% do it frequently) suggest a lack of effective coping strategies, which could exacerbate the psychological consequences described by Souza *et al.* during the COVID-19 pandemic¹⁰.

The correlation between academic pressure and life satisfaction was inverse ($r = -0.1$), although very low. This suggests that while academic pressure may influence subjective well-being, other factors, such as family support or extracurricular activities, may modulate this relationship¹⁹. This is particularly relevant for students who reside far from their families, who, according to Lima *et al.*³, face a higher risk of emotional difficulties.

The high proportion of students without comorbidities (83%) suggests that the sample studied is relatively healthy. But the infrequency with which our respondents practice sports was striking, since 16.92% never do them and 35.71% do them 1 time a week. Conelly *et al.*¹⁵ found that 41% of medical students at a U.S. university do not engage in sports activities following CDC recommendations. Lack of time was cited in 75% of cases as a reason for not exercising.

The consequences of these psychological conditions on the future practice of medicine are significant. Studies indicate that compromised mental health can affect the quality of care provided to patients. Lemos *et al.*¹⁴ and Freire's *et al.*²⁰ report that students with symptoms of depression are more likely to make medical errors and show less empathy toward patients. These findings highlight the importance of addressing and treating psychological disorders to ensure the quality of medical students' mental and physical health.

This study recognizes several limitations. Non-probability sampling can induce selection bias. The cross-sectional design prevents the analysis of the causal relationship between the variables. The number of hours worked in a typical week is a widely used indicator to measure the workload but it is not a reliable parameter due to the variability that exists between the course contents². It should be recognized that the perceived load is influenced by interrelated variables or factors, where the actual load measured in hours is not the only relevant factor to measure academic pressure since there are complex and dynamic personal and institutional elements interacting with each other. For this reason, it is recommended, for future studies, to apply a validated questionnaire such as that of Harden Diaz *et al.*² that measures both the real and perceived academic load of students in health careers using 17 items.

As strengths, the novelty of the study and the number and diversity of participating students should be mentioned. It is recommended to follow this line of research and include information regarding the quality of life and academic performance of students. Intervention strategies should also be applied that should focus on reducing sources of academic stress, promoting adequate sleep, and encouraging the use of relaxation techniques and social support, aligning with the recommendations of Lelis *et al.*⁹ and Chandler *et al.*¹⁸. In addition, the implementation of validated questionnaires can facilitate the early identification of at-risk students, allowing timely intervention to improve their quality of life and future professional practice. The SISCO-II questionnaire measures academic stress through the measurement of stressors, physical and psychological reactions, social behavioral reactions, and coping. It has been validated for diagnostic use and evaluation of interventions¹².

Conclusions

The findings of this research confirm that the workload and academic pressure of Latin American medical students in 2024 and 2025 are high and that the average perception of academic pressure increased significantly with the hours of study per week. University authorities are recommended to monitor the sources of academic stress and apply palliative measures to avoid psychophysical consequences in medical students.

Contribution from authors

Conceptualization: RERD, MMLG, SSA, RRL, NMG. Data curation: RDRE, MMJG, IBVH, GTA. Formal analysis: RDRE, MMJG, IBVH, GTA. Research: RDRE, MMJG, IBVH, GTA. Project management: RDRE. Writing, proofreading and editing: RDRE, MMJG, IBVH, GTA, MMLG, SSA, RRL, NMG.

Ethical considerations

This research respected the principles of research on human beings. Students accepted informed consent before filling out the survey. The project was approved by the ethics committee of the Universidad Autónoma San Sebastián, San Lorenzo, Paraguay, according to opinion No. 15/2024.

Conflict of interest

The authors declare that they do not present conflicts of interest.

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No artificial intelligence (AI)-assisted technologies, language models, machine learning, or similar technology were used to aid in the creation of this study.

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