

Sleep Quality and Academic Stress among Law Students at a Private University in Trujillo, Peru

Calidad del sueño y estrés académico en estudiantes de Derecho de una universidad privada de Trujillo, Perú

  Gianela Belen Aredo Benites¹
  Valeria Nicole Flores Vega¹
  Jeanpiero Adrian Guarniz Vigo²
  Jennifer Anai Llanos Moreno¹
  Jhonatan Jair Quiñones Lozada¹
  Lara Malca Doris Donatila³

¹ Escuela de Psicología, Facultad de Ciencias de la Salud, Universidad César Vallejo, Trujillo-Perú

² Escuela de Ciencias del Deporte, Facultad de Humanidades, Universidad César Vallejo, Trujillo-Perú

³ Dirección de Investigación UCV-Trujillo, Vicerrectorado de Investigación, Universidad César Vallejo, Trujillo-Perú

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Autor de correspondencia: Gianela Belen Aredo Benites

Abstract

Introduction: Sleep quality and academic stress are key factors in college students' mental health, due to their impact on well-being and academic performance. Although various studies report an association between the two, the results are not conclusive across all contexts or degree programs. **Objective:** To determine the correlation between sleep quality and academic stress among law students at a private university in Trujillo, Peru, in 2025. **Methodology:** This was a basic study with a quantitative approach, a non-experimental, cross-sectional design, and a correlational scope. The sample consisted of 51 students selected through non-probabilistic convenience sampling. The quality of sleep was assessed using the Pittsburgh Sleep Quality Index (PSQI), and the level of academic stress was assessed using the SISCO SV-21 Inventory. Descriptive analysis was performed using frequencies and percentages. Normality was assessed using the Kolmogorov-Smirnov test ($p < .05$), and the Spearman's Rho coefficient was used for the correlation analysis ($\alpha = 0.05$). **Results:** Moderate levels of sleep quality (50.0%) and academic stress (46.4%) were most common. The overall correlation was low and non-significant ($\rho = 0.223$; $p = 0.116$). Significant associations were identified between sleep quality and stress symptoms ($\rho = 0.296$; $p = 0.035$), and between daytime dysfunction and total academic stress ($\rho = 0.500$; $p < 0.001$). **Conclusions:** No significant overall correlation was found; however, associations were observed in specific dimensions, especially in the symptomatic and functional areas.

Key words: Sleep quality; Academic stress; College students; Higher education; Daytime dysfunction

Resumen

La calidad del sueño y el estrés académico son variables relevantes en la salud mental universitaria, debido a su impacto en el bienestar y el rendimiento académico. Aunque diversos estudios reportan asociación entre ambas, los resultados no son concluyentes en todos los contextos ni carreras profesionales. **Objetivo:** Determinar la correlación entre la calidad del sueño y el estrés académico en estudiantes de Derecho de una universidad privada de Trujillo, Perú, 2025. **Metodología:** Estudio de tipo básico, con enfoque cuantitativo, diseño no experimental, transversal y alcance correlacional. La muestra estuvo conformada por 51 estudiantes seleccionados mediante muestreo no probabilístico por conveniencia. La calidad del sueño se evaluó con el Pittsburgh Sleep Quality Index (PSQI) y el estrés académico con el Inventario SISCO SV-21. Se realizó análisis descriptivo mediante frecuencias y porcentajes. La normalidad se evaluó con Kolmogorov-Smirnov ($p < .05$), empleándose el coeficiente Rho de Spearman para el análisis correlacional ($\alpha = 0.05$). **Resultados:** Predominaron niveles medios de calidad del sueño (50.0 %) y estrés académico (46.4 %). La correlación global fue positiva baja y no significativa ($\rho = 0.223$; $p = 0.116$). Se identificaron asociaciones significativas entre calidad del sueño y síntomas de estrés ($\rho = 0.296$; $p = 0.035$), y entre disfunción diurna y estrés académico total ($\rho = 0.500$; $p < 0.001$). **Conclusiones:** No se evidenció correlación global significativa; sin embargo, se observaron asociaciones en dimensiones específicas, especialmente en el plano sintomático y funcional.

Palabras clave: Calidad del sueño; Estrés académico; estudiantes universitarios; educación superior; disfunción diurna

INTRODUCTION

The relationship between sleep quality and academic stress has gained increasing importance in research on mental health in higher education, as both variables are directly linked to students' psychological well-being, academic performance, and quality of life. Internationally, empirical evidence shows that academic stress is a widespread phenomenon with high prevalence across different cultural contexts. In China, more than 50% of college students reported high levels of academic stress associated with educational demands and social pressure to excel (Wang *et al.*, 2020). In Spain, it has been reported that 68% of students experience high levels of academic stress, reflecting a steady increase compared to previous data (Zafra, 2025). In Mexico, 86.3% of students reported moderate levels of stress (Silva-Ramos *et al.*, 2020), while in Ecuador, 69.62% reported intense academic stress, 26.80% reported manageable stress, and 3.58% reported mild stress, with repercussions on performance and well-being (Aguilar Bustamante *et al.*, 2024). These findings support the conclusion that academic stress is a global problem that has a cross-cutting impact on the university experience, a situation confirmed by recent systematic reviews that demonstrate a consistent association between perceived stress and deterioration in mental health indicators among students (Gardani *et al.*, 2022; Pérez-Jorge *et al.*, 2025).

In the Peruvian context, the Ministry of Health reported that approximately 30% of college students experience high levels of stress (MINSa, 2023). In Arequipa, 83% of students reported experiencing academic stress (Cassaretto *et al.*, 2021). In Lima, between 80% and 90% of college students reported moderate to high levels of stress (Luna, 2024), and in regions such as Puno and Tacna, more than half of law students (51%–55.3%) reported high levels of stress during the 2022-2 and 2023-1 semesters (Peñarrieta Bedoya *et al.*, 2025). Locally, in Trujillo, it was reported that 68% of students exhibited moderate to high levels of academic stress (Pastor, 2023), while at a private university in the same city, 72% reported moderate to high academic stress (Salazar, 2024), which increased during final exam periods (Gamboa Alayo & Rodríguez Quispe, 2024). At the Universidad Privada del Norte, 70% of students reported moderate to high levels of stress during the 2023–2024 academic year

(Castillo Castillo, 2023). Taken together, these data reinforce the notion that academic stress constitutes a persistent problem in Peruvian higher education, a phenomenon that, according to comparative Latin American studies, is frequently accompanied by emotional symptoms and changes in lifestyle habits (Zapata-López *et al.*, 2024).

At the same time, sleep quality has emerged as a key indicator of overall well-being. Various studies have documented significant disruptions in sleep patterns among the university population. In Saudi Arabia, 77% of college students reported poor sleep quality and 63.5% reported some level of psychological distress, with a direct association found between the two variables (Alotaibi *et al.*, 2020). In Ecuador, 65.3% of high school students exhibited poor sleep quality and academic distress (Tocaguano Buri & Eugenio Zumbana, 2023). In Argentina, 66% of university students were classified as poor sleepers (Buttazzoni & Casadey, 2018). Recent studies confirm this trend, reporting prevalences exceeding 60% of poor sleep quality in European and Asian university samples, as well as significant associations with perceived stress and academic workload (Angelillo *et al.*, 2024; Li *et al.*, 2025).

Nationwide, 67% of Peruvian students reported poor sleep quality (Becerra Rodríguez, 2018), 76.5% in Lima reported poor sleep quality (Pajares, 2019), and in Arequipa, 96.2% exhibited sleep problems along with high levels of academic stress (Bellido Rocha, 2022). Similarly, in Trujillo, it was found that 75.9% of students required care for sleep-related difficulties, with a significant negative correlation identified between sleep quality and psychological well-being (Reyes Rojas, 2023). This coexistence of high stress levels and sleep impairment has been supported by meta-analyses that identify a consistent relationship, albeit of varying magnitude, between perceived stress and insomnia in college students (Gardani *et al.*, 2022).

A review of recent literature reveals a consistent trend: the coexistence of high levels of academic stress and predominantly poor sleep quality among the university population. However, although numerous studies have explored the association between these two variables, the results have not always been consistent regarding the magnitude and statistical significance of the relationship. Recent studies suggest that

the interaction between sleep and stress may be mediated by intermediate psychological variables such as depression, anxiety, or life meaning, resulting in models more complex than a simple direct correlation (Huang *et al.*, 2024; Fabio *et al.*, 2025). Furthermore, most studies have been conducted in health-related fields or with heterogeneous samples, with limited evidence focused on law students, particularly in local contexts such as Trujillo.

From a theoretical perspective, sleep quality is grounded in Borbély's (1982) two-process model, which proposes that the interaction between the homeostatic process (Process S) and the circadian process (Process C) regulates the sleep-wake cycle. This model explains that sleep pressure increases during wakefulness and decreases during rest, while the circadian rhythm modulates this pressure based on internal biological patterns. Contemporary research has reaffirmed the validity of this model in explaining sleep dysregulation in contexts of high emotional activation (Borbély, 2022). Complementarily, Buysse (2014) defines sleep quality as a multidimensional construct that integrates subjective, behavioral, and functional components, introducing the concept of "sleep health" as a balance between individual and social demands. In operational terms, the Pittsburgh Sleep Quality Index (PSQI) assesses seven dimensions: subjective quality, latency, duration, habitual efficiency, disturbances, medication use, and daytime dysfunction (Buysse *et al.*, 1989; Royuela & Macías, 1997; Otero *et al.*, 2023), allowing for a comprehensive approach to the phenomenon.

Academic stress, for its part, is understood from Folkman's (2013) transactional perspective, which conceptualizes it as the result of a cognitive evaluation in which the individual perceives that environmental demands exceed their coping resources. Added to this is Karasek's (1979) demand-control model, which explains stress as a consequence of the imbalance between high demands and low levels of control or autonomy. Recent research has expanded this framework by noting that perceived stress can act as an explanatory mechanism between academic demands and sleep disturbances, particularly when there is nocturnal cognitive activation or persistent rumination (Huang *et al.*, 2024). The SISCO SV-21 Inventory operationalizes academic stress across three dimensions: stressors, symptoms, and coping strategies

(Barraza-Macías, 2018; Olivas-Ugarte *et al.*, 2021), integrating both sources of stress and emotional responses and adaptive resources.

The articulation between both theoretical frameworks suggests that increased academic demands may trigger physiological and cognitive responses that disrupt homeostatic and circadian sleep processes, causing difficulties in falling asleep, staying asleep, and achieving quality rest. Similarly, daytime dysfunction resulting from poor sleep quality could reduce the cognitive and emotional resources needed to cope with academic demands, creating a potential bidirectional cycle of impact—a hypothesis that has been explored in contemporary models that link stress, sleep, and mental health in the university population (Fabio *et al.*, 2025; Angelillo *et al.*, 2024).

In this context, the following research question arises: Is there a statistically significant relationship between sleep quality and academic stress among law students at a private university in Trujillo, Peru, in 2025? Consistent with this question, the general objective of the study was to determine the significant correlation between sleep quality and academic stress among law students at a private university in Trujillo, Peru, in 2025. Specifically, the study aimed to assess the level of sleep quality, identify the level of academic stress, and analyze the correlation between sleep quality and each of the dimensions of academic stress (stressors, symptoms, and coping strategies).

Regarding the hypotheses, the research hypothesis (H1) was formulated: there is a significant correlation between sleep quality and academic stress in law students from a private university in Trujillo, Peru, 2025; and the null hypothesis (H0): there is no significant correlation between sleep quality and academic stress in this population.

METODOLOGÍA

Study design

This study was a basic, quantitative, non-experimental, cross-sectional, correlational study. This design allows for the examination of the relationship between variables as they

occur in their natural context, without deliberate manipulation, and at a single point in time (Kerlinger, 1996). The purpose was to analyze the association between sleep quality and academic stress in law students during the year 2025.

Participants

The study population consisted of students enrolled in the law program at a private university in the city of Trujillo, Peru, during the 2025 academic year. The sample consisted of 51 students, selected through non-probabilistic convenience sampling. This type of sampling allows for the inclusion of accessible participants who meet specific study criteria, particularly in applied research in educational contexts (Hernández-Sampieri & Mendoza, 2018). The unit of analysis was each individual student.

Inclusion criteria

- To be enrolled in the sixth cycle during the 2025 school year.
- To be older than 18 years old.
- To have provided informed consent.
- To have completed the entire semester.
- To have fully completed the digital questionnaires.
- To have no prior diagnosis of sleep disorders or psychological conditions.

Exclusion criteria

- Not in the sixth cycle.
- Incomplete or inconsistent records.
- Use of medication that affects sleep or emotional state.
- Duplicate responses or responses at unusual times.

Variables and instruments

Sleep Quality

Sleep quality was assessed using the **Pittsburgh Sleep Quality Index (PSQI)**, developed by Buysse et al. (1989). This self-report instrument consists of 19 items grouped into seven components: subjective sleep quality, sleep latency, sleep duration, usual sleep efficiency, sleep disturbances, medication use, and daytime dysfunction.

The PSQI is widely used in clinical and population-based research and demonstrates adequate validity and reliability. In their original study, Buysse *et al.* (1989) reported a sensitivity of 89.6% and a specificity of 86.5%, with acceptable internal consistency. Furthermore, the Spanish version has demonstrated adequate psychometric indices in a Spanish-speaking population (Hita-Contreras *et al.*, 2014), which supports its use in Latin American university settings. The measurement scale used is ordinal.

Academic stress

Academic stress was measured using the **Systemic Cognitive Academic Stress Inventory, 21-item short form (SISCO SV-21)**, developed by Barraza-Macías (2018). The instrument uses a six-point Likert scale (0 = never to 5 = always) and assesses three dimensions: stressors, symptoms, and coping strategies.

The psychometric properties of the SISCO SV-21 have been validated in a university population, demonstrating adequate indices of structural validity through confirmatory factor analysis and high internal consistency (Olivas-Ugarte *et al.*, 2021). These results support its suitability for assessing academic stress in Peruvian students.

Procedure

The data collection took place during the 2025 academic year, following institutional approval. The students were informed of the objectives of the study and agreed to participate by providing digital informed consent.

The instruments were administered collectively via an online form. The integrity of the records was verified prior to statistical analysis, and those that did not meet the established criteria were excluded.

Statistical analysis

The descriptive analysis included frequencies and percentages to determine the distribution of variable levels and their dimensions. SPSS version 26 was used for the inferential analysis. The Kolmogorov-Smirnov normality test was applied to assess the data distribution. Since the variables did not meet the assumption of normality ($p < .05$), Spearman's rho coefficient was used, a non-parametric statistic recommended when

data have a non-normal distribution or an ordinal scale (Field, 2018; Spearman, 1904). A statistical significance level of $\alpha = 0.05$ was established.

Ethical considerations

The study was conducted in accordance with the ethical principles for research involving human subjects established by the American

Psychological Association (2016) and in compliance with the Research Ethics Code of César Vallejo University (RCU No. 0659-2024-UCV) (2024). The principles of autonomy, beneficence, non-maleficence, and justice were upheld. Participation was voluntary and revocable, and data were treated anonymously and confidentially.

RESULTS

Table 1.
Distribution and Percentage of the Sleep Quality Variable and Dimensions

Le- vels	D1 Sub- jective quality		D2 Sleep latency		D3 Sleep duration		D4 Usual sleep effi- ciency		D5 Sleep disor- ders		D6 Use of sleep medica- tion		D7 Daytime dysfunc- tion		Sleep quality variable	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
High	11	21.4	9	17.9	15	28.6	7	14.3	13	25.0	10	20.0	8	15.7	10	20.0
Midd- le	22	42.9	26	50.0	20	39.3	24	46.4	18	35.7	23	44.3	25	48.6	26	50.0
Low	18	35.7	16	32.1	16	32.1	20	39.3	20	39.3	18	35.7	18	35.7	15	30.0

Note: N=51; f=frequency; % =percentage: Data obtained from the PSQI questionnaire

With regard to the sleep quality variable (N = 51), a predominance of the middle level (50.0%) was observed, followed by the low level (30.0%) and the high level (20.0%), indicating that most students fall into an intermediate category in terms of their nightly rest. In the subjective quality dimension, 42.9% reported a middle level, 35.7% a low level, and 21.4% a high level; in sleep latency, the middle level predominated (50.0%), followed by the low level (32.1%) and the high level (17.9%). Regarding sleep duration, 39.3% were at a middle level, 32.1% at a low level, and 28.6% at a high level. Usual sleep efficiency showed a

predominance of the middle level (46.4%), with 39.3% at a low level and 14.3% at a high level. Regarding sleep disturbances, 35.7% fell into the mid-level category, 39.3% into the low-level category, and 25.0% into the high-level category. With regard to the use of sleep medication, 44.3% fell into the mid-level category, 35.7% into the low-level category, and 20.0% into the high-level category. Finally, for daytime dysfunction, the middle level predominated (48.6%), followed by the low level (35.7%) and the high level (15.7%), showing a majority concentration at intermediate levels in most of the dimensions evaluated.

Table 2.*Distribution and Percentage of the Academic Stress Variable and Dimensions*

Variables	D1 Stressors		D2 Symptoms		D3 Coping strategies		Variable: Academic Stress	
	f	%	f	%	f	%	f	%
High	12	22.9	13	25.7	11	21.4	13	25.0
Middle	25	48.6	22	42.9	25	50.0	24	46.4
Low	14	28.6	16	31.4	15	28.6	14	28.6

Note: N=51; f=frequency; % = percentage: Data obtained from the SISCO SV-21 Inventory.

With regard to the academic stress variable (N = 51), the results showed a predominance of the medium level (46.4%), followed by the low level (28.6%) and the high level (25.0%), indicating that the majority of students experience moderate levels of academic stress. In the stressors dimension, 48.6% fell into the medium level, 28.6% into the low level, and 22.9% into the high level, showing an intermediate concentration in the perception of academic

demands. In the symptoms dimension, 42.9% reported a medium level, 31.4% a low level, and 25.7% a high level, also showing a moderate predominance of emotional and physiological manifestations associated with stress. Finally, regarding coping strategies, 50.0% fell into the medium level, 28.6% into the low level, and 21.4% into the high level, indicating that most students reported an intermediate use of resources to cope with academic demands.

Table 3.*Table of Normality Tests*

	Kolmogorov-Smirnov ^a		
	Statistics	gl	Sig.
Variable 1: Sleep Quality	,363	51	,000
D1: Subjective Sleep Quality	,346	51	,000
D2: Sleep Latency	,144	51	,010
D3: Sleep Duration	,301	51	,000
D4: Usual Sleep Efficiency	,287	51	,000
D5: Sleep Disturbances	,360	51	,000
D6: Use of Sleep Medication	,449	51	,000
D7: Daytime Dysfunction	,280	51	,000
Variable 2: Academic Stress	,341	51	,000
D1: Stressors	,235	51	,000
D2: Symptoms	,216	51	,000
D3: Coping Strategies	,286	51	,000

Note: N=51; f=frequency; % = percentage: Data obtained from the SISCO SV-21 Inventory.

The Kolmogorov-Smirnov normality test indicated that the sleep quality variable had a statistic of 0.363 (df = 51; $p < 0.001$), indicating a significant deviation from the normal distribution. Similarly, all of its dimensions showed significance values below 0.05: subjective quality ($D = 0.346$; $p < 0.001$), sleep latency ($D = 0.144$; $p = 0.010$), sleep duration ($D = 0.301$; $p < 0.001$), habitual sleep efficiency ($D = 0.287$; $p < 0.001$), sleep disturbances ($D = 0.360$; $p < 0.001$), use of sleep medication ($D = 0.449$; p

< 0.001), and daytime dysfunction ($D = 0.280$; $p < 0.001$). Likewise, the academic stress variable yielded a statistic of 0.341 (df = 51; $p < 0.001$), and its dimensions also showed a lack of normality: stressors ($D = 0.235$; $p < 0.001$), symptoms ($D = 0.216$; $p < 0.001$), and coping strategies ($D = 0.286$; $p < 0.001$). Consequently, since the assumption of normality was not met for any of the variables evaluated, nonparametric statistics were chosen for the correlational analysis.

Table 4.
Correlation of variables and their dimensions (Spearman's rho)

		V2: Academic Stress	D1: Stressors	D2: Symptoms	D3: Coping strategies
V: Sleep Quality	Spearman's correlation	Coping strategies	0,185	0,296*	-0,145
	Sig (bilateral)	0,116	0,193	0,035	0,311
D1: Subjective Quality	Spearman's correlation	0,375**	0,117	0,350**	0,083
	Sig (bilateral)	0,007	0,414	0,012	0,564
D2: Sleep latency	Spearman's correlation	-0,066	-0,057	0,113	-0,418**
	Sig (bilateral)	0,644	0,689	0,431	0,002
D3: Sleep duration	Spearman's correlation	0,304*	0,114	0,322*	0,155
	Sig (bilateral)	0,030	0,424	0,021	0,277
D4: Habitual sleep efficiency	Spearman's correlation	0,143	0,130	0,077	-0,023
	Sig (bilateral)	0,315	0,365	0,590	0,873
D5: sleep disturbances	Spearman's correlation	0,051	0,081	0,240	-0,063
	Sig (bilateral)	0,724	0,572	0,090	0,662
D6: use of sleep medication	Spearman's correlation	-0,169	-0,164	0,101	-0,188
	Sig (bilateral)	0,237	0,250	0,481	0,187
D7: daytime dysfunction	Spearman's correlation	0,500**	0,423**	0,436**	0,193
	Sig (bilateral)	0,000	0,002	0,001	0,174

The correlational analysis using the Spearman's rho coefficient showed that overall sleep quality had a low positive correlation with overall academic stress ($\rho = 0.223$; $p = 0.116$), which did not reach statistical significance. Regarding its dimensions, sleep quality showed a very weak and non-significant positive correlation with

stressors ($\rho = 0.185$; $p = 0.193$), a significant positive correlation with symptoms ($\rho = 0.296$; $p = 0.035$), and a non-significant negative correlation with coping strategies ($\rho = -0.145$; $p = 0.311$). In the component analysis, subjective sleep quality showed a significant positive correlation with total academic stress ($\rho = 0.375$; $p = 0.007$) and

with symptoms ($\rho = 0.350$; $p = 0.012$), while it did not show a significant association with stressors or coping strategies. Sleep latency showed a significant negative correlation with coping strategies ($\rho = -0.418$; $p = 0.002$), with no significant associations with the other dimensions. Sleep duration showed a significant positive correlation with total academic stress ($\rho = 0.304$; $p = 0.030$) and with symptoms ($\rho = 0.322$; $p = 0.021$). In contrast, habitual sleep efficiency, sleep disturbances, and the use of sleep medication did not show statistically significant correlations with academic stress or its dimensions ($p > 0.05$). Finally, daytime dysfunction showed the strongest and most significant associations with total academic stress ($\rho = 0.500$; $p < 0.001$), with stressors ($\rho = 0.423$; $p = 0.002$), and with symptoms ($\rho = 0.436$; $p = 0.001$), while it showed no significant relationship with coping strategies ($\rho = 0.193$; $p = 0.174$).

DISCUSSION

On the whole, the correlation between sleep quality and academic stress was weak and not significant ($\rho = 0.223$; $p = 0.116$), implying that, for this sample, the hypothesis of a significant relationship is not confirmed. However, the dimensional pattern shows specific associations (for example, with symptoms and daytime dysfunction), suggesting that the relationship between the two constructs is heterogeneous, probably non-linear, and more dependent on specific components than on global indices (Folkman, 2013; Buysse, 2014).

A first key point to note is that the lack of statistical significance in the overall association should not be interpreted as the “absence” of a relationship, but rather as evidence that the phenomenon does not emerge robustly when reduced to aggregate scores. In college students, the co-occurrence of stress and sleep typically presents as an interdependent system, but one that is not necessarily captured by simple correlations when there are range restrictions, heterogeneity of subcomponents, or mediating mechanisms (Gardani *et al.*, 2022). In this vein, the non-significant overall result may be consistent with a more complex reality: stress may “connect” with sleep through specific pathways (e.g., symptomatology or functional dysfunction), rather than through the total sum of dimensions (Buysse, 2014; Gardani *et al.*, 2022).

On a descriptive level, both sleep quality and academic stress were mostly concentrated at medium levels (50.0% for sleep quality; 46.4% for academic stress), with significant proportions at low or high levels depending on the dimension. This “moderate profile” can reduce the ability of correlational analysis to detect strong associations because it decreases effective variance and produces attenuated correlations even when a real underlying link exists (Ghasemi & Zahedias, 2012). Furthermore, in samples with a predominance of medium levels, the links tend to be more clearly expressed in sensitive dimensions (e.g., symptoms) than in the overall scale, which is consistent with approaches that conceptualize sleep as a multidimensional and adaptive construct (Buysse, 2014).

Recent literature offers findings that help to critically contextualize this ambivalence. In university settings, a high prevalence of poor sleep quality, as measured by the PSQI, has been documented, along with its association with indicators of stress and emotional distress. For example, studies of university students have found that severe stress levels are related to higher PSQI scores (Angelillo *et al.*, 2024). This evidence contrasts with the lack of significance of the overall link found here, which necessitates considering alternative explanations: characteristics of the degree program (Law), specific academic calendar, forms of assessment, or even protective mechanisms (personal and cognitive resources) that mitigate the conversion of stress into overall sleep impairment (Fabio *et al.*, 2025).

From a theoretical perspective, the transactional model of stress states that stress arises from cognitive appraisal and the perception of resources available to cope with demands (Folkman, 2013). From this perspective, “having stressors” does not automatically imply “having disruptive stress”; and “having stress” does not mechanically imply “sleeping worse.” This is important for interpreting that, in the results, overall sleep quality is not significantly associated with stressors ($\rho = 0.185$; $p = 0.193$), but it is associated with symptoms ($\rho = 0.296$; $p = 0.035$). In other words, it is not the perceived demand alone, but rather the way it translates into a psychophysiological response, that appears to be linked to sleep (Folkman, 2013; Huang *et al.*, 2024).

The significant correlation between overall sleep quality and symptoms of academic stress ($\rho =$

0.296; $p = 0.035$) is particularly consistent with current research that models stress as a mediating factor between sleep and psychological distress. Among college students, it has been observed that perceived stress may mediate the impact of sleep problems on anxiety and depression, and that resources such as optimism and critical thinking can buffer this relationship (Fabio *et al.*, 2025). This suggests that the sleep–stress connection may be partially indirect and manifest more clearly in reactive dimensions (symptoms) than in situational dimensions (stressors), which aligns with its correlational pattern (Fabio *et al.*, 2025; Huang *et al.*, 2024).

Similarly, the finding that subjective sleep quality is significantly associated with total stress ($\rho = 0.375$; $p = 0.007$) and with symptoms ($\rho = 0.350$; $p = 0.012$) reinforces the idea that the “subjective” is not a minor residual but a core component of the sleep health construct. Buysse (2014) proposes that sleep health includes subjective satisfaction, duration, efficiency, and daytime alertness as adaptive dimensions. In his study, the subjective dimension appears to sensitively capture the interface between the emotional experience of stress and the overall assessment of rest, in line with research finding strong links between stress and subjective components of the PSQI (Buysse, 2014; Angelillo *et al.*, 2024).

Sleep duration also showed significant associations with total stress ($\rho = 0.304$; $p = 0.030$) and with symptoms ($\rho = 0.322$; $p = 0.021$). This result is consistent with evidence identifying academic workload and study-related stress as factors that deteriorate sleep quality (including duration) in college students, especially when there are multiple demands and exam-related stress (Li *et al.*, 2025). However, their study suggests that the impact manifests primarily at the symptomatic level: that is, the reduction or alteration in duration may be more closely related to emotional arousal (symptoms) than to the perception of stressors in the abstract (Li *et al.*, 2025; Huang *et al.*, 2024).

One finding that deserves more critical scrutiny is the significant negative correlation between sleep latency and coping strategies ($\rho = -0.418$; $p = 0.002$). In psychophysiological terms, falling asleep is typically the moment most vulnerable to rumination and cognitive arousal; therefore, coping resources—if they are adaptive—could reduce nocturnal hyperarousal and facilitate the onset of sleep (Huang *et al.*, 2024). However, it is

worth raising a methodological and psychometric issue here: the literature on the SISCO (including reviews and psychometric studies) has noted that the coping dimension tends to exhibit less robust properties than stressors and symptoms, which calls for interpretive caution (Guzmán-Castillo *et al.*, 2022). Thus, the relationship found is relevant, but it also raises the need to corroborate it with more robust models or complementary instruments (Guzmán-Castillo *et al.*, 2022; Huang *et al.*, 2024).

The strongest and most consistent finding of the study is the association between daytime dysfunction and total academic stress ($\rho = 0.500$; $p < 0.001$), as well as with stressors ($\rho = 0.423$; $p = 0.002$) and symptoms ($\rho = 0.436$; $p = 0.001$). This pattern is crucial because it shifts the focus of the analysis: the strongest relationship is not with “sleeping worse” as an overall experience, but with “functioning worse during the day,” which constitutes a direct link to academic performance and emotional exhaustion. According to the two-process model of sleep regulation, disruptions in homeostatic and circadian balance affect daytime alertness and functioning, with cognitive and emotional consequences (Borbély, 1982, 2022). Among college students, it has also been documented that daytime dysfunction and components of the PSQI are associated with fatigue and sleepiness, reinforcing the centrality of this dimension in sleep health (Shantakumari *et al.*, 2024).

This focus on daytime dysfunction can be interpreted as a more “ecological” indicator of the impact of sleep on academic life, because it translates sleep into cognitive productivity, sustained attention, and emotional regulation. On this point, the finding aligns with studies showing that students with poorer sleep quality and greater irregularities in their routines report greater daytime dysfunction, fatigue, and sleepiness—factors that interfere with academic adjustment (Shantakumari *et al.*, 2024). In parallel, studies on sleep among college students have shown that stress and other psychosocial factors are associated with higher PSQI scores and poorer functioning, reinforcing the idea that “daytime consequences” may be the most sensitive channel in the sleep–stress relationship (Angelillo *et al.*, 2024; Shantakumari *et al.*, 2024).

The lack of statistical significance in the overall correlation ($p = 0.116$) can also be problematized from a statistical and methodological perspective.

With $N = 51$ and non-normal distributions (Kolmogorov–Smirnov $p < 0.05$ for all variables/dimensions), the use of Spearman's correlation coefficient is appropriate, but correlational inferences remain sensitive to statistical power and Type II error, especially when effect sizes are small or moderate (Ghasemi & Zahediasl, 2012). Furthermore, the literature notes that “normality” in the social sciences is rarely perfect; therefore, the key is not only the test but also the magnitude of the effect and its theoretical coherence (Ghasemi & Zahediasl, 2012). In this regard, even without global significance, the internal consistency of dimensional associations (symptoms and daytime dysfunction) lends conceptual plausibility.

A particularly relevant comparison for the Latin American context is the study by Zapata-López *et al.* (2024), conducted in Mexico and Colombia using comparable instruments (the PSQI and the SISCO questionnaire), which reports high rates of sleep problems and moderate-to-severe stress symptoms, underscoring that both conditions are common among college students and that the field still requires more evidence regarding specific programs and contexts. This work reinforces its contextual contribution: although its overall correlation is not significant, its dimensional pattern reveals critical points (daytime dysfunction, symptoms) that may be key for university interventions (Zapata-López *et al.*, 2024).

Another recent line of research that helps deepen the discussion is one that models stress not as a parallel variable, but as a mechanism or mediator between sleep and mental health. Fabio *et al.* (2025) demonstrate, using SEM, that perceived stress may partially mediate the link between sleep problems and anxiety-depressive symptoms, and that personal resources can buffer this chain. This evidence suggests that, in their study, the lack of an overall correlation could be due to unmeasured mediating mechanisms (e.g., anxiety, intolerance of uncertainty, cognitive resources), while the links with “symptoms” and “daytime dysfunction” emerge as aspects more closely tied to the experience of distress (Fabio *et al.*, 2025).

Likewise, Huang *et al.* (2024) document that perceived stress affects sleep quality and explore mediating pathways (meaning in life, depression), showing that the stress–sleep relationship may be “mediated” by intermediate

psychological variables. This approach supports a critical reading of their simple correlational model: the overall association may be diluted when the actual relationship operates through psychological links, but becomes detectable in dimensions of direct impact (e.g., subjective quality, duration, daytime dysfunction). At this point, their finding is less a contradiction and more an invitation to refine the analytical model in future studies (Huang *et al.*, 2024; Buysse, 2014).

It is also relevant to present evidence on the prevalence and patterns of sleep among college students, as this provides an interpretive framework for the “normalization of poor sleep.” Recent studies of students have reported high rates of poor sleep quality as measured by the PSQI, as well as associations with stress and other psychosocial factors (Angelillo *et al.*, 2024). If poor sleep becomes highly prevalent, the PSQI may capture a “high floor” of impairment (many with similar scores), creating a scenario where correlations with total stress are attenuated due to relative homogeneity, while the functional dimensions (daytime dysfunction) retain sufficient variation to show robust relationships (Angelillo *et al.*, 2024; Buysse, 2014).

On the other hand, the fact that daily efficiency, sleep disturbances, and medication use are not significantly associated with total stress or its dimensions ($p > 0.05$) should also be interpreted with caution. Among university students, “medication use” may have a low prevalence, reducing variability and weakening associations; furthermore, medication may address chronic issues not necessarily linked to academic stress. Likewise, “sleep disturbances” may encompass heterogeneous phenomena (waking up, noise, routines), whose determinants are not exclusively academic. International evidence shows that multiple factors (digital habits, routine, mental health, lifestyles) are associated with the PSQI. Therefore, academic stress may be just one of several determinants and not necessarily the primary one for all dimensions (Li *et al.*, 2025).

Taken together, the pattern identified allows for a problematic synthesis: “academic stress” as a global construct does not automatically translate into overall “poor sleep quality,” but it is linked to sleep through specific pathways: a) the subjective component of rest, b) duration, and c) above all, daytime dysfunction. This empirical framework is consistent with the contemporary conception of sleep health as a multidimensional phenomenon

that should be assessed by its components, rather than solely by a total score (Buysse, 2014). Likewise, it aligns with evidence linking stress and sleep through intermediate psychological mechanisms and functional consequences, rather than through simple direct relationships (Fabio *et al.*, 2025; Huang *et al.*, 2024).

Finally, the study opens up concrete avenues for future research and institutional intervention: if daytime dysfunction is the strongest association, preventive strategies should prioritize habits and policies that protect daytime alertness (sleep routines, digital hygiene, workload management, psychological support), and not just “sleep more” as a generic recommendation. The literature on university students shows that psychological interventions can improve sleep and, by extension, well-being variables. Therefore, incorporating programs focused on sleep and stress on campus has empirical support (Tadros *et al.*, 2025). In the same vein, reviews on academic stress highlight that sustained academic demands impact well-being and performance, justifying multilevel interventions (Pérez-Jorge *et al.*, 2025).

Contribution to knowledge

This study provides empirical evidence that challenges the assumption of a global, direct, and necessarily significant relationship between sleep quality and academic stress, showing that the link is more clearly expressed in specific dimensions—symptoms and, especially, daytime dysfunction—rather than in aggregate indices. By aligning these findings with the conception of sleep health as a multidimensional and adaptive construct, the need for dimensional analytical approaches and models with psychological mediators is reinforced.

Limitations

The sample size ($N = 51$) limits statistical power and increases the probability of a Type II error, which may contribute to the lack of significance in the overall correlation. The cross-sectional design prevents inferring causality or directionality, and the use of self-reports may introduce perceptual biases. Furthermore, the analytical model is restricted to bivariate correlations, without exploring mediators (e.g., depression, anxiety) that the literature identifies as relevant in the stress–sleep relationship.

CONCLUSIONS

The results of this study suggest that the relationship between sleep quality and academic stress in law students is not a significant overall association, challenging the widely accepted notion that these two constructs maintain a linear and direct link across all university contexts. The failure to confirm the general hypothesis does not imply an absence of interaction, but rather reveals the need to understand this relationship from a dimensional and processual perspective. Indeed, the significant correlations found between subjective sleep quality, sleep duration, and especially daytime dysfunction with the symptoms of academic stress demonstrate that the link between these two variables is primarily activated at the level of emotional experience and the functional consequences of sleep, rather than in the mere presence of objective academic stressors. From a transactional perspective, the findings suggest that it is not the academic demands themselves that alter the sleep pattern, but rather the cognitive appraisal and psychophysiological response that these demands generate. Consistent with the two-process model and the contemporary concept of “sleep health,” the most significant impact manifests itself in impaired daytime functioning—fatigue, reduced concentration, and increased emotional vulnerability—forming a point of convergence between physiological and psychoeducational processes. Furthermore, the study provides empirical evidence that challenges reductionist approaches and supports a multidimensional understanding of the link between sleep and academic stress, emphasizing that their interaction should not be assessed exclusively through global indices, but rather through specific components that reveal the complexity of student well-being in demanding academic contexts.

Statement on the Use of Artificial Intelligence

AI tools were used exclusively for grammar, spelling, and scientific style checks, as well as for translating the title, abstract, and keywords into native English.

Authors' contribution:

Gianela Belen Aredo Benites: Conceptualization, Data curation, Formal analysis, Research, Methodology, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review and editing.

Valeria Nicole Flores Vega: Conceptualization, Research, Methodology, Resources, Supervision, Validation, Writing – original draft, Writing – revision and editing.

Jeanpiero Adrian Guarniz Vigo: Conceptualization, Research, Methodology, Resources, Software, Supervision, Writing – first draft, Writing – revision and editing.

Jennifer Anai Llanos Moreno: Conceptualization, Research, Methodology, Visualization, Writing – original draft, Writing – revision and editing.

Jhonatan Jair Quiñones Lozada: Conceptualization, Research, Methodology, Visualization, Writing – original draft, Writing – revision and editing.

Lara Malca Doris Donatila: Conceptualization, Data curation, Formal analysis, Research, Methodology, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review and editing.

Statement of Conflict of Interest

The authors declare that there are no conflicts of interest associated with the publication of this manuscript.

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