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COMPARATIVE ANALYSIS OF STRESS LEVEL IN UNIVERSITY STUDENTS

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Abstract: This study aims to compare the levels of academic stress among first semester and higher semesters students in a public university, considering variables such as gender, job and career. A sample of 72 students was surveyed using the Perceived Stress Scale (PSS), with stress levels categorized as low, medium, or high. The results show that first semester students present higher levels of stress, which coincides with previous research pointing to difficulties in adapting to the university environment. In addition, students who work reported higher levels of stress than those who do not work, reflecting the challenge of balancing academic and work responsibilities. It was also observed that female students were found to experience higher levels of stress compared to their male counterparts. These findings suggest the need to consider the contextual factors that affect academic stress in different groups of university students.

Keywords: academic stress, college students, first semester, work, gender, career.

INTRODUCTION

Academic stress is a prevalent issue among university students, impacting both their academic performance and psychological well--being. This phenomenon has been studied extensively due to the increase in stress levels in recent years, especially after the effects of confinement due to the COVID-19 pandemic (Santana Campas et al., 2022). Previous research has shown that university students tend to experience stress due to academic demands, workload, evaluations, and limited time to accomplish tasks (García-Ros et al., 2012).

Academic stress may vary depending on the academic cycle in which students are in. González Cabanach et al. (2017) observed that students in first semesters usually present higher levels of stress due to the transition from school to university environment. In contrast, students in higher semesters also face stress, but this may be more related to accumulated academic responsibilities and, in many cases, work responsibilities (Galván Corral et al., 2019). Other studies have shown that students who work present higher levels of stress compared to those who do not work (Galván Corral et al., 2019; Pascoe et al., 2020).

During the COVID-19 pandemic, significant effects on students' mental health were observed due to confinement and abrupt migration to online modes of instruction (Xiao et al., 2020). These changes generated an increase in stress, anxiety and other psychological problems, affecting academic performance and increasing the risk of dropping out of school (Weems et al., 2020). In this context, it is essential to understand how the level of stress varies among students in different semesters, and how factors such as work, or gender can influence it.

The present study aims to determine the level of stress, as well as to analyze and compare stress levels in first semester and higher semesters students, based on the results of the Perceived Stress Scale (PSS). In addition, it seeks to answer the following research questions:

> 1. Is there a significant difference in the level of stress between first- semester and upper-semester students?
>
> 2. Is the level of stress related to factors such as gender, degree program or working?
>
> 3. What strategies could be implemented to reduce academic stress, particularly in first-time students?

The main hypothesis of this study is that first semester students present higher levels of stress compared to students in higher semesters, due to adaptation to a new academic environment. In addition, students who work are expected to face higher levels of stress compared to those who do not work.

This research is important because it will allow identifying the factors that influence academic stress and proposing intervention strategies, such as stress management workshops and time management techniques, that can be implemented by educational institutions. Academic stress is a problem that, if not properly managed, can have long-term negative consequences, such as low performance, school dropout and mental health problems (Silva-Ramos et al., 2020). Therefore, understanding its origin and how it varies in different groups of students is fundamental for the development of support programs that improve the quality of life of university students.

METHODS AND MATERIALS

APPROACH

This study employs a quantitative, descriptive, and correlational methodology to assess and compare perceived stress levels between first-semester and upper-semester university students. The approach allows for the measurement of stress levels across various demographic variables, including gender, degree program, and employment status. By adopting a cross-sectional design, the study captures stress levels at a single point in time, facilitating a direct comparison between the two student groups and enabling the identification of significant patterns and relationships between stress and contextual factors.

The research design is cross-sectional, since the data were collected at a single point in time, which allows a diagnosis of the level of stress according to the academic stage in which the students are. This design facilitates comparison between the two groups studied and the identification of common patterns.

INSTRUMENT

The Perceived Stress Scale (PSS), developed by Cohen et al. (1983), was employed in this study to measure academic stress levels. This instrument is widely recognized and frequently used in academic stress research due to its simplicity and effectiveness. The scale consists of 10 items designed to evaluate students' perceptions of stressors experienced over the past month. Responses are captured using a Likert-type scale, where each item is scored from 0 (never) to 4 (always), with a total possible score ranging from 0 to 40.

Stress levels were categorized into three distinct groups based on the total score:

- Low stress: 0 to 17 points
- Medium stress: 18 to 24 points
- High stress: 25 to 40 points

The PSS has demonstrated strong psychometric properties across various contexts and populations. In this study, the internal consistency of the instrument, as measured by Cronbach's Alpha, was 0.70 for first-semester students and 0.82 for upper-semester students, indicating an acceptable level of reliability for both groups (Campo-Arias et al., 2014).

CONTEXT

The study was conducted at a public university in Jalisco, Mexico, within the context of higher education. The sample consisted of 72 students, of which 37 were first-semester students and 35 were from upper semesters, representing a range of degree programs including Public Accounting, Financial Administration, Human Resources, and Information Technology, among others.

Data collection occurred following the 2022A academic cycle, a period during which most teaching was conducted in person, with some courses offered in blended or virtual formats, reflecting the adjustments made

in response to the COVID-19 pandemic. This context may have influenced the stress levels of students, as the gradual return to in-person learning required a new adaptation to traditional academic dynamics.

LIMITATIONS

Although the study provides valuable results, certain limitations must be acknowledged:

1. Non-probability sampling: convenience sampling was employed, meaning the students who participated in the survey were those directly enrolled in the classes being taught. This methodology does not ensure full representativeness of the university population.

2. Sample size: the sample of 72 students, while sufficient for an exploratory analysis, is limited for making broader generalizations about the university population. The findings should be interpreted with caution, and future research should aim for larger and more diverse samples.

3. Cross-sectional design: as a cross-sectional study, stress levels were measured at a single point in time, which prevents the observation of changes over time. For a more comprehensive understanding, longitudinal studies monitoring stress levels at various points during the academic cycle would be beneficial.

4. Post-pandemic context: the effects of the COVID-19 pandemic and the return to in-person teaching may have influenced stress levels, introducing a potential contextual bias. This situation should be considered when interpreting the results, as stress related to the transition between teaching modalities may not reflect typical conditions.

Despite these limitations, the study offers important insights into stress levels among university students and lays the groundwork for future research and the implementation of institutional strategies for managing academic stress.

This study not only aims to identify the levels of academic stress in university students but also to examine the correlations between stress levels and various contextual variables such as age, gender, academic program, and preference for class modality (face-to-face, virtual, or blended). For this purpose, Cramer's V was used as a measure to evaluate the strength of association between two categorical variables. Cramer V was used to measure the strength of the association between two categorical variables.

Cramer V is particularly useful in this analysis as it allows for the measurement of the relationship between stress levels—categorized as low, medium, and high—and the contextual variables, which are also categorical. Since the goal is to determine whether these contextual factors significantly influence student perceptions of stress, Cramer V provides a clear method to quantify these associations, offering a more comprehensive understanding of the phenomenon.

RESULTS AND DISCUSSION

The stress level for first semester and higher semesters can be seen in Table 1. The results indicate that stress levels are predominantly moderate for both first-year and upper-semester students.

Stress level (rank)	First semester		Superior Semesters	
	Frequency	Percentage	Frequency	Percentage
Low (0-17)	7	18.91	9	26.47
Medium (18-24)	25	67.56	20	58.82
High (25-40)	5	13.51	5	14.71

Table 1. Comparison of stress level between first semester and upper semester.

Own source.

First-semester students show a higher percentage in the medium stress category (67.57%) compared to upper-semester students (58.82%), suggesting that first-year students experience greater challenges in adapting to academic demands. The percentage of students with low stress levels is higher among upper-semester students (26.47%) than in first-semester students (18.92%), which could reflect the greater experience and adaptability of more advanced students. The percentages of students reporting high stress are similar in both groups, with 13.51% in first-semester and 14.71% in upper-semesters, indicating that stress remains a significant issue at advanced stages as well.

A comparison of the means and variances of stress levels between first-semester and upper-semester students indicates that first-semester students show a significantly higher mean (21.26) and variance (22.78) compared to upper-semester students (10.53 and 12.64, respectively). These findings are consistent with those reported by González Cabanach et al. (2017), who found that first-year students tend to experience elevated stress levels due to the transition to the university environment and new academic expectations. Additionally, these students display greater variability in their responses.

In contrast, upper-semester students, despite showing a reduction in overall stress levels, still report significant stress related to the accumulation of academic responsibilities and preparation for professional life (García-Ros et al., 2012).

Figure 1 illustrates the relationship between demographic variables (age, sex, academic program, and preferred learning modality) and stress levels, with first-semester students (Semester 1) shown in blue and upper-semester students (Semesters 2+) in green.
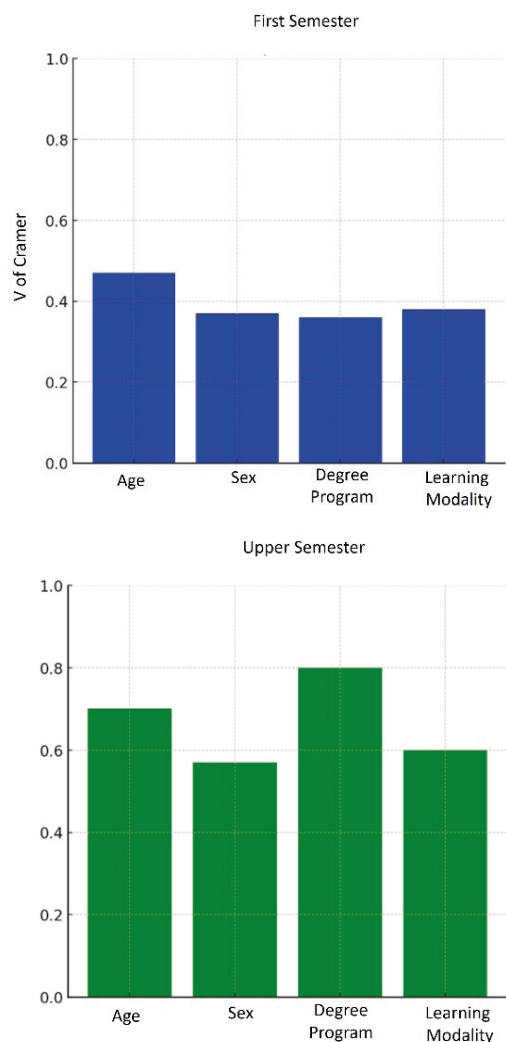

Figure 1. V of Cramer for variables Age, Sex, Degree Program and Learning Modality of first semester and upper semester. Own source.

Cramer V values for first-semester students show moderate correlations:

- Age (0.47): age has a moderate correlation with stress levels, suggesting that younger or older students may experience varying degrees of stress. This aligns with the notion that students entering college undergo different levels of adjustment and anxiety, potentially influenced by their maturity or readiness.

- Gender (0.37) and Degree Program (0.36): Both gender and degree program show moderate correlations with stress, although these are weaker than the correlation with age. This may indicate that, while gender and chosen academic field influence the perceptions of stress, they are not the primary factors.

- Preferred Learning Modality (0.38): The preferred learning modality (face-to-face, blended, or virtual) also shows a moderate correlation with stress. This may reflect that certain students benefit from flexible learning options, potentially lowering their stress by better adapting to individual needs. Face-to-face is the most preferred learning modality (48.65%), followed by blended (43.24%) and virtual (8.11%).

For students in higher semesters, Cramer V values indicate stronger correlations:

- Degree Program (0.80): degree program choice has a significant impact on stress levels in higher semesters. This suggests that as students advance, the specific demands of their academic program strongly influence their stress levels.

- Age (0.70): age remains strongly correlated with stress levels, indicating that older students may experience different stress levels as they progress in their studies.

- Sex (0.57) and Preferred Learning Modality (0.60): In upper semesters, the correlation between both sex and preferred learning modality with stress is stronger than in the first semester, possibly due to students becoming more attuned to personal preferences and sex-related factors as they handle academic pressures. In this group, the blended learning modality is most preferred (58.82%), followed by face-to-face (29.41%) and virtual (11.76%).

Figure 2 illustrates the distribution of stress levels by sex. The results indicate that, although both men and women predominantly present medium stress, women show a higher prevalence of high stress compared to men. These findings align with previous studies suggesting that women are more likely to experience academic stress, influenced by factors such as workload and pressure to meet high standards (García-Ros et al., 2012; Santana Campas et al., 2022).

Stress levels are medium for both working and non-working students, followed by low and then high. In higher semesters, a larger proportion of students work (35.29%) compared to those who do not. It is possible that this fact is related, in the case of those who work, to balancing their academic and work responsibilities.

This finding aligns with the study by Galván Corral et al. (2019), which also reported that working students tend to experience increased stress due to time demands and task overload. In contrast, some studies (Pascoe et al., 2020) suggest that work can sometimes act as a distraction, helping to reduce stress in certain students.

Figure 3 illustrates the distribution of stress levels by degree program, highlighting those fields with the highest stress levels, due to significant variability. Although the correlation between degree program and stress level was
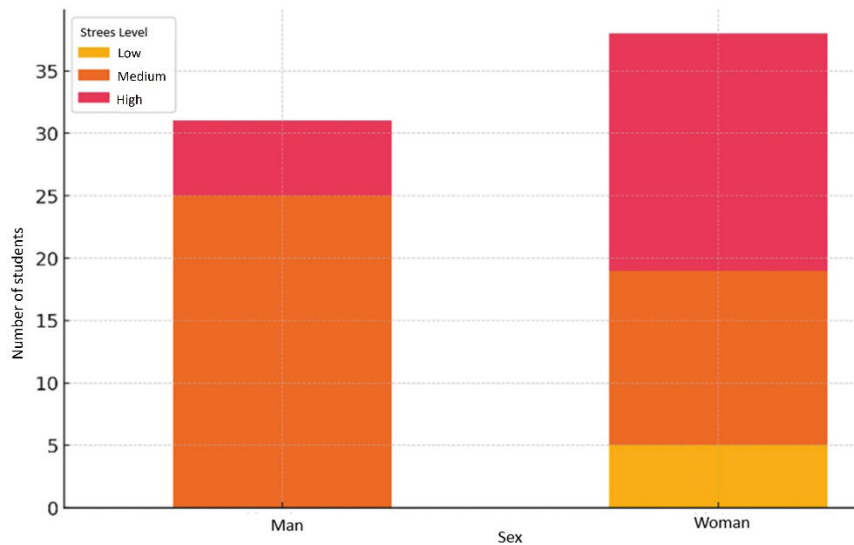
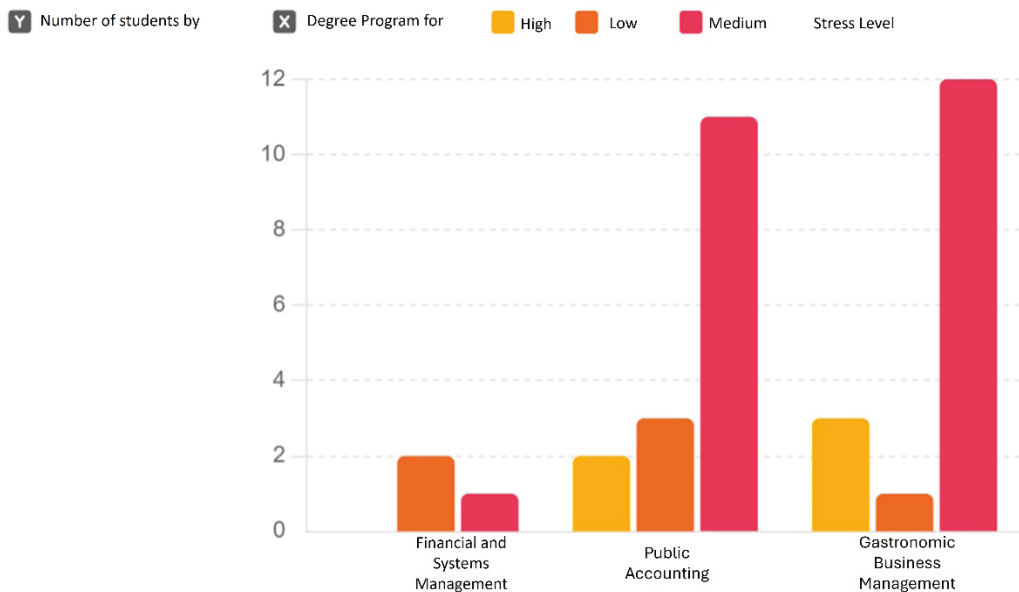Figure 2. Distribution of stress level for Men and Women.

Figure 3. Distribution of stress level by Degree Program.

not significant for first-semester students, it was significant for those in upper semesters. Previous studies suggest that the choice of degree program may influence stress levels, especially in disciplines with higher academic demands (García-Ros et al., 2012).

The findings of this study are largely consistent with existing literature. Results indicate that first-semester students tend to present higher levels of stress, a phenomenon well-documented in studies such as González Cabanach et al. (2017). Additionally, correlations between stress and factors such as sex and employment status align with prior findings (Santana Campas et al., 2022; Galván Corral et al., 2019). However, it is important to note certain differences from previous research. For instance, Pascoe et al. (2020) reported that in specific contexts, work may reduce academic stress —a trend not observed in this sample of students.

In this study, first-semester students presented a significantly higher mean stress level compared to those in upper semesters. This result is consistent with recent studies, such as that of Aristovnik et al. (2020), which found that the uncertainty arising from the COVID-19 pandemic and changes in teaching modalities increased academic stress among university students. As in this study, first-year students reported greater difficulties in adapting to new academic demands.

Comparing stress levels by sex, it was found that female students tended to report higher stress levels than male students. This observation is consistent with studies such as Ma et al. (2021), which found that female students reported greater symptoms of anxiety and stress during the pandemic, possibly due to heightened social and academic pressures. These findings suggest that sex remains an important factor in the perception of academic stress, both pre- and post-pandemic.

The analysis also revealed that students who work present higher stress levels compared to those who do not work. This result aligns with findings by Besser et al. (2020), who observed that the challenges of adapting to online learning combined with work responsibilities elevated stress levels among students. The difficulty in balancing work and academic obligations in a changing environment was a key factor in the high stress levels recorded in this study.

Given that recent studies, such as those by Aristovnik et al. (2020) and Ma et al. (2021), emphasize the importance of effective coping strategies, it is recommended that universities implement support programs specifically designed for first-semester students and those balancing work with studies. Programs such as time management workshops and personalized counseling could play a significant role in mitigating the stress levels observed in these groups.

CONCLUSIONS

The present comparative study on academic stress levels between first-semester and upper-semester students reveals several important findings. First, first-semester students presented significantly higher stress levels, consistent with prior research indicating that adapting to the university environment represents a considerable challenge for new students. The findings suggest that unfamiliarity with academic demands and shifts in educational dynamics contribute to elevated stress in this group.

In addition, students who work experience higher levels of stress compared to those who do not, highlighting the difficulties involved in balancing academic responsibilities with work obligations. This observation aligns with recent studies indicating that work can serve as an additional stressor within the academic lives of students (Besser et al., 2020).

Analysis by sex revealed that females generally report higher levels of stress than males, consistent with previous findings suggesting that females may face greater exposure to social and academic expectations, thereby increasing their perception of stress (Ma et al., 2021).

In view of these findings, it is essential for educational institutions to implement academic and emotional support programs tailored to first-year students and those who combine work with studies. Such interventions could include time management workshops, academic counseling programs, and psychological support services. Given the strong association between academic stress and mental health issues, including anxiety and depression (Aristovnik et al., 2020), addressing this challenge is crucial for enhancing the well-being and academic performance of students.

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In conclusion, this study underscores the importance of recognizing and addressing the factors contributing to academic stress among diverse groups of university students. Implementing targeted intervention strategies may help reduce stress levels and enhance the overall educational experience.

REFERENCES

Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability, 12*(20), 8438.

Besser, A., Flett, G. L., & Zeigler-Hill, V. (2020). Adaptability to a sudden transition to online learning during the COVID-19 pandemic: Understanding the challenges for students. *Scholarship of Teaching and Learning in Psychology*.

Campo-Arias, A., Oviedo, H. C., & Herazo, E. (2014). Escala de Estrés Percibido-10: Desempeño psicométrico en estudiantes de medicina de Bucaramanga, Colombia. *Revista de la Facultad de Medicina, 62*(3), 1-24.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385-396.

Galván Corral, A., Acosta Mellado, E. I., Murillo Félix, C. A., Bojórquez Díaz, C. I., & Quiroz Campas, C. Y. (2019). Estrés académico en estudiantes universitarios de Economía y Finanzas. *Congreso Internacional de Investigación Academia Journals, 11*(6), 684-690.

García-Ros, R., Pérez-González, F., Pérez-Blasco, J., & Natividad, L. A. (2012). Evaluación del estrés académico en estudiantes de nueva incorporación a la universidad. *Revista Latinoamericana de Psicología, 44*(2), 143-154.

González Cabanach, R., Souto-Gestal, A., & Fernández Cervantes, R. (2017). Perfiles de regulación emocional y estrés académico en estudiantes de fisioterapia. *European Journal of Education and Psychology, 10*(2), 57-67.

Ma, Z., Zhao, H., Wang, Z., Zhang, Y., Chen, Z., Wang, T., & Zhang, J. (2021). Prevalence of anxiety and depression symptoms and their association with resilience and stress in Chinese high school students during the COVID-19 pandemic. *Frontiers in Psychiatry, 12*, 644909.

Pascoe, M. C., Hetrick, S. E., & Parker, A. G. (2020). The impact of stress on students in secondary school and higher education. *International Journal of Adolescence and Youth, 25*(1), 104-112. https://doi.org/10.1080/02673843.2019.1596823

Santana Campas, M. A., et al. (2022). Estrés y afrontamiento ante las clases virtuales en estudiantes universitarios durante la contingencia sanitaria por COVID-19. *Diálogos sobre educación, 13*(25), 1-13.

Silva-Ramos, M. F., López-Cocotle, J. J., & Meza-Zamora, M. E. C. (2020). Estrés académico en estudiantes universitarios. *Investigación y Ciencia, 28*(79), 75-83.

Weems, C. F., Carrion, V. G., McCurdy, B. H., & Scozzafava, M. D. (2020). Increased risk of suicide due to economic and social impacts of social distancing measures during COVID-19. *ResearchGate Preprint*. https://doi.org/10.13140/RG.2.2.21601.45926

Xiao, H., Zhang, Y., Kong, D., Li, S., & Yang, N. (2020). Social capital and sleep quality in individuals who self-isolated during the COVID-19 outbreak. *Medical Science Monitor, 26*, e923921. https://doi.org/10.12659/MSM.923921