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Academic burnout and engagement among technical-professional students in the Colombian Caribbean during the COVID-19 pandemic.

Burnout académico y engagement en estudiantes técnico-profesionales del Caribe colombiano durante la pandemia de COVID-19.

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Summary

Introducción: Durante el COVID-19 se reportaron altas prevalencia de malestar psicológico entre los estudiantes, lo que sugiere que pueden estar en mayor riesgo que la población general de desarrollar trastornos psicológicos en situaciones de confinamiento**. Objetivo:** Evaluar la presencia y gravedad de síntomas afectivos, así como el desgaste y grado de compromiso académico, en estudiantes del nivel técnico profesional del Caribe colombiano durante la pandemia COVID-19 y sus factores relacionados. **Métodos:** Se realizó un estudio analítico transversal mediante un cuestionario en línea que indagó sobre variables demográficas, ansiedad, depresión, miedo al COVID, desgaste y compromiso académico. **Resultados:** Respondieron 251 estudiantes entre 19 a 44 años (M=20; RIC=4), el 69% de ellos mujeres. El 41% presentó síntomas depresivos y el 27% síntomas ansiosos. El agotamiento emocional se encontró relacionado con los síntomas depresivos, el cinismo con los síntomas ansiosos y la eficacia académica con la percepción del estado de salud, la edad y la gravedad de los síntomas depresivos. A su vez, el cinismo y la eficacia se encontraron relacionados con el compromiso académico. El miedo al COVID no se encontró relacionado con ninguna de las variables de interés**. Conclusiones:** Se encontró una interrelación entre los síntomas afectivos, la percepción del estado de salud, la edad, el desgaste y el compromiso académico. Se requieren nuevos estudios que aborden este problema en la población de interés y permitan aclarar relaciones de causalidad.

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Palabras clave: síntomas afectivos; desgaste; compromiso; estudiantes técnicos.

Abstract

Introduction: During COVID-19, a high prevalence of psychological distress was reported among students, which suggests that they may be at greater risk than the general population of developing psychological disorders in confinement situations. Objective: To evaluate the presence and severity of affective symptoms and burnout and the degree of academic commitment in students at the professional technical level of the Colombian Caribbean during the COVID-19 pandemic and its related factors. Methods: A cross-sectional analytical study was conducted using an online questionnaire about demographic variables, anxiety, depression, fear of COVID-19, burnout, and academic commitment. Results: 251 students between 19 and 44 years old responded (M=20; IQR=4), 69% of them women. 41% presented depressive symptoms, and 27% showed anxious symptoms. Emotional exhaustion was related to depressive symptoms, cynicism to anxious symptoms, and academic efficacy to perceived health status, age, and severity of depressive symptoms. In turn, cynicism and efficacy were related to academic engagement. Fear of COVID was not related to any of the variables of interest. Conclusions: An interrelation was found between affective symptoms, perception of health status, age, burnout, and academic commitment. New studies are required to address this problem in the population of interest and clarify causal relationships.

Keywords: Affective symptoms; Burnout; Engagement; Technical students.

Introduction

During the COVID-19 pandemic, high prevalences of psychological distress were reported worldwide (Jiménez-Villamizar, 2025). The World Health Organization (2021) reported increases in anxiety by 26% and depression by 28% during the first year. One of the most affected sectors was academia, with closures in approximately 190 countries and 90% of enrolled students (Fundación Carolina, 2021).

During the pandemic, students faced the closure of educational centers, which generated changes in their daily routines and forced them to adapt to virtual and distance learning. Although the challenges of teaching and learning online were successful, the growing need for attention to the health and comprehensive well-being of students was also demonstrated (Gamage et al., 2020; Jiménez-Villamizar et al., 2023; Mateo-Canedo et al., 2023; Sahu, 2020). This population group is considered a vulnerable group (Jimenez-Villamizar, 2023; Zapata-Ospina et al., 2021) due to the new experiences they face in the transition from youth to adulthood, generating anxiety regarding their future life, social experiences, and sometimes economic pressures that influence as possible predictors of their academic performance and therefore their mental health (Campbell et al., 2022).

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Academic demands derived from expectations and areas of knowledge can generate diverse effects on students' psychological well-being, both negative (burnout) and positive (engagement). Burnout is considered an experience of deterioration related to studies and is often accompanied by symptoms of depression and stress in students (Pérez-Leiva, 2021; Domínguez et al., 2010). Although affective symptoms can coexist and even be confused with burnout, the former are related to multiple biological, psychological, and socio-environmental factors (Calderaro et al., 2021), while burnout is exclusively determined by inadequate conditions in the academic context that limit the student from adequately performing their work (Caballero-Domínguez et al., 2015).

The prevalence of burnout in university students during COVID-19 reported figures of 31% with high levels and 12% at risk of suffering from it (Seperak-Viera et al., 2021). In university students from Lima, Peru, it was found that 75% present a moderate to high level of academic engagement and approximately 22% present high to very high levels of academic burnout syndrome (Vallejos, 2021). In health sciences students, 64.4% prevalence of academic burnout and 35.5% with high emotional exhaustion are reported (Tlili et al., 2020), as well as 63.6% in students from different professional careers (Kristanto et al., 2016).

In contrast, engagement is a state of psychological well-being characterized by high vitality and a desire to strive (vigor), comfort with and focus on the tasks performed (absorption), and enthusiasm and inspiration faced by challenges (dedication). This is accompanied by improved mental health and psychological well-being in the individual, as well as a commitment to studying (Medina et al., 2020). Caballero-Domínguez et al. (2015) demonstrated that engagement is related to lower levels of psychological distress and greater academic effectiveness. Martínez and Salanova (2003) propose an opposition between the dimensions of burnout and engagement: vigor is related to greater energy and is opposed to exhaustion; the will to perform a task is associated with cynicism; and a high level of concentration and a lack of disengagement from work is associated with academic ineffectiveness (Klimenko et al., 2025).

Multiple studies carried out during the pandemic showed an increasing prevalence of anxious and depressive symptoms, although of varying severity (Chang et al., 2021; Wang et al., 2021; Aloufi et al., 2021; Li et al., 2022), with anxiety rates between 29% and 47% and depression rates between 27% and 37% (Restrepo et al., 2022; Jiménez-Villamizar et al., 2023). If we add to this various challenges that affect their satisfaction, well-being and academic performance, inadequate coping can trigger feelings of disinterest (cynicism), exhaustion, perception of inability to carry out a task (academic inefficacy) and, in general, manifestations of academic burnout (Barreto-Osma & Salazar-Blanco, 2021; Suárez-Colorado et al., 2019; Jiménez-Villamizar & Caballero-Domínguez, 2021).

The relationship between affective symptoms and burnout has been documented over the past 10 years. In Korean university students, anxious students were found to have higher levels of

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cynicism and lower academic efficacy (Lui et al., 2010). Meanwhile, exhaustion in burnout is also associated with anxious symptoms (Biondi & Benuzzi, 2021) and depression (Caballero, 2012).

In this context, it is necessary to investigate the particular nature of the severity of affective symptoms in academic burnout and commitment in the Caribbean context, especially given that information on students in vocational training is scarce.

Materials and methods

Type of research

An observational, analytical, and cross-sectional study was conducted, approved by an ethics committee of a public higher education institution at the technical-professional level in a city in the Colombian Caribbean region.

Participants

The sample consisted of students from the Humberto Velásquez García National Institute of Technical and Vocational Training (Ciénaga, Colombia). Participants were from the first to fourth semesters of the technical and vocational programs in Occupational Health and Safety, Port Operations, Accounting, and Agricultural Production. Of the 312 subjects who completed the online questionnaire, 251 were ultimately included after eliminating duplicates who were minors.

Tools

PHQ-9 (Patient Health Questionnaire-9). This measure assesses depressive symptoms over the past two weeks according to DSM-IV criteria. It consists of nine items with four response options (0–3): “not at all,” “several days,” “half the days,” and “almost every day.” In this study, a score ≥7 was considered the cutoff point for depression risk. Internal consistency in the present sample was $\alpha = .85$.

GAD-7 (Generalized Anxiety Disorder-7). It assesses anxiety symptoms in the past two weeks using seven items with responses ranging from 0 to 3 ("none days" to "almost every day"). A score ≥ 10 indicates the presence of anxiety symptoms (Camargo et al., 2021; García-Campayo et al., 2012). Previous studies have reported an $\alpha \approx .92$ (Camargo et al., 2021). In the present study, $\alpha = .88$.

Fear of COVID-5. It assesses fear of COVID-19 with 5 items (0–3: “never” to “always”); the higher the score, the greater the fear. In Colombia, a unidimensional structure and high internal consistency were reported (Cassiani-Miranda et al., 2022). In this study, $\alpha = .87$.

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MBI-SS (Maslach Burnout Inventory–Student Survey). Assesses academic burnout in students: Emotional Exhaustion (5 items), Cynicism (4), and Efficacy (6). Previous studies have reported adequate coefficients per dimension (α ≈ .75–.79). In this sample: Exhaustion α = .75, Cynicism α = .70, Efficacy α = .69.

UWES-S (Utrecht Work Engagement Scale–Student). Student version of 17 items measuring Vigor (6 items), Dedication (5), and Absorption (6) on a Likert-type scale ranging from 0 ("never") to 7 ("always") (Schaufeli et al., 2002). In this study, total α = .80; by subscale: Vigor α = .70, Dedication α = .70, and Absorption α = .44.

Procedure

At the end of the 2021-2 semester, an invitation was sent by email to students from a technical-professional education institute residing in Magdalena. Data collection took place from November 24 to 29, 2021. A minimum participation of n = 100 was expected, acceptable for nonparametric comparisons (Sakpal, 2010).

Subsequently, the database was designed, the questionnaires were systematized, and the analyses were performed in IBM SPSS Statistics v25 (Windows). Qualitative variables were reported as absolute and relative frequencies (%). Since the quantitative variables presented a non-normal distribution (Kolmogorov-Smirnov), they were described using medians and interquartile ranges (IQR). For bivariate analysis, the chi-square (χ^2) test was used for categorical variables; and for continuous variables, the Mann-Whitney (U) or Kruskal-Wallis (H) test, in addition to Spearman's correlation (ρ) test. Multivariate linear regression models (MRLM) were estimated for each Burnout subscale and for the total Commitment score, controlling for explanatory variables with a significant association in the bivariate analysis and with low collinearity (VIF between 1 and 5). A $p < .05$ level of significance was set.

Ethical considerations

The study complied with the Declaration of Helsinki (1975, as amended) and Resolution 8430 of 1993 of the Colombian Ministry of Health. All participants provided virtual informed consent, with a guarantee of confidentiality and the exclusive use of the information for scientific and academic purposes.

Results

Of the 251 participants, the majority were women (n=173; 68.9%), single (n=217; 86.5%), students of the Professional Technical (TP) program in Occupational Health and Safety (n=174; 69.3%), second semester (n=156; 62.2%), low socioeconomic status (n=199; 79.3%), and a median age of 20 years (IQR=4). The sociodemographic characteristics of the sample studied are shown in Table 1.

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Board1. Sociodemographic characteristics of the sample

Variable	Category	n	%
Sex	Women	173	68.9
	Man	78	31.1
Marital status	Without a partner	217	86.5
	With a partner	34	13.5
Career	TP Safety and Health at Work	174	69.3
	TP Accounting	32	12.7
	TP Port Operations	34	13.5
	TP Agricultural Production	11	4.4
Semester	1	64	25.5
	2	156	62.2
	3	12	4.8
	4	19	7.6
Socioeconomic Stratum	Low	199	79.3
	Medium-Low	52	20.7
Variable	**Category**	**Me**	**RIC**
Age	(dwarves)	20	4

Me, Median; IQR, Interquartile Range; TP, Professional Technician

The clinical characteristics of the participants are shown in Table 2. Among other aspects, the majority perceived their own health as "good" (n=148; 59%), and only 4% had a history of chronic illnesses (n=10).

Board2. Clinical characteristics of the sample

Variable	Category	N	%
Perception of health status	Bad or average	44	17.5
	Well	148	59.0
	Excellent	59	23.5
History of chronic diseases	No	241	96.0
	Yeah	10	4.0
Risk of depression (PHQ-9 >7)	No	149	59.4
	Yeah	102	40.6
Risk for anxiety (GAD-7 >10)	No	182	72.5
	Yeah	69	27.5
Variable	**Category**	**Me**	**RIC**
Wear	Emotional exhaustion	10	8
	Cynicism	0	3
	Academic effectiveness	29	6

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Academic commitment	Vigor	5	1.8
	Dedication	4.5	1
	Absorption	3.83	1
	Total score	4.41	1
PHQ-9	Total score	5	7
GAD-7	Total score	6	7
Fear of COVID	Total score	2	5

Me, Median; IQR, Interquartile Range

40.6% of participants presented clinically relevant depressive symptoms (n=102), symptoms that were significantly related to female gender (x2= 4.57; p=0.033), worse perception of health status (x2=28.99; p<0.001) and younger age (r=-0.13; p=0.035), but not with the intensity of fear of COVID-19 (r=-0.02; p=0.816). On the other hand, 27.5% of participants showed clinically relevant anxious symptoms (n=69), symptoms that were also significantly related to female gender (x2= 10.18; p=0.001) and worse perception of health status (x2=19.55; p<0.001); These anxiety symptoms were not found to be related to age (r=-0.11; p=0.084) but were related to the intensity of fear of COVID-19 (r=0.13; p=0.039). As expected, anxiety and depressive symptoms were found to be directly correlated with each other (r=0.74; p<0.001).

Burnout was assessed using three subscales. First, the severity of emotional exhaustion was found to be significantly related to poorer self-reported health status (KW's H=16.972; p<0.001) and the severity of depressive and anxiety symptoms (r=0.509; p<0.001 and r=0.418; p<0.001, respectively). Cynicism, on the other hand, was found to be significantly related to poorer self-reported health status (KW's H=6.491; p=0.039), younger age (r=-0.187; p=0.003), and the severity of depressive and anxiety symptoms (r=0.372; p<0.001 and r=0.333; p<0.001, respectively). Finally, higher academic efficacy was significantly associated with better self-reported health (KW's H=11.357; p=0.003), older age (r=0.128; p=0.042), and lower severity of depressive and anxiety symptoms (r=-0.269; p<0.001 and r=-0.218; p<0.001, respectively). COVID-19 fear intensity was not associated with any of the burnout subscales: emotional exhaustion (r=-0.006; p=0.926), cynicism (r=-0.07; p=0.269), and academic efficacy (r=0.033; p=0.598).

Table 3. Multivariate linear regression models for the total score of each of the Academic Burnout subscales and for the Academic Engagement scale

Scale	**Subscale**	**Variables**	**B**	**HE**	**p**	**VIF**	**F**	**GL**	**R2**	**p**
Academic burnout	Emotional Exhaustion	Constant	7,525	1,273	<0.001	--	31,492	3	0.277	<0.001
		Perception of health status	-0.351	0.502	0.485	1,148				

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		Depressive symptoms	0.413	0.079	<0.001*	2,426			
		Anxiety symptoms	0.086	0.083	0.297	2,343			
	Cynicism	Constant	1,150	1,330	0.388	--	8,275	4	0.119	<0.001
		Perception of health status	0.280	0.342	0.413	1,149				
		Age	-0.052	0.047	0.267	1,020				
		Depressive symptoms	0.082	0.054	0.126	2,429				
		Anxiety symptoms	0.136	0.056	0.016*	2,349				
	Academic Effectiveness	Constant	24,028	2,105	<0.001	--	6,567	4	0.096	<0.001
		Perception of health status	1,085	0.541	0.046*	1,149				
		Age	0.155	0.074	0.037*	1,020				
		Depressive symptoms	-0.179	0.085	0.036*	2,429				
		Anxiety symptoms	0.009	0.089	0.916	2,349				
		Perception of health status	0.070	0.077	0.363	1,046				
		Wear and tear: Cynicism	-0.009	0.015	0.564	1,102				
		Burnout: Academic Effectiveness	0.075	0.010	<0.001*	1,146				
Academic commitment	Total Score	Constant	1,784	0.307	<0.001	--	29,151	7	0.456	<0.001
		Perception of health status	0.099	0.062	0.111	1,179				
		Age	0.010	0.008	0.239	1,040				

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Burnout: Emotional exhaustion	-0.005	0.008	0.515	1,418
Wear and tear: Cynicism	-0.027	0.012	0.026*	1,235
Burnout: Academic Effectiveness	0.082	0.007	<0.001*	1,182
Depressive symptoms	-0.007	0.010	0.484	2,728
Anxiety symptoms	0.001	0.010	0.907	2,415

DF, Degrees of Freedom; SE, Standard Error; VIF, Variance Inflation Factor

The MRLM for each of the subscales showed that the following variables were the only ones that maintained a statistically significant relationship: depressive symptoms with emotional exhaustion (B=0.413; p<0.001; F=31.492; R2=0.277), anxious symptoms with cynicism (B=0.136; p=0.016; F=8.275; R2=0.119) and perception of health status, age and severity of depressive symptoms with academic efficacy (B=1.085; p=0.046, B=0.155; p=0.037 and B=-0.179; p=0.036, respectively; F=6.567; R2=0.096) (Table 3).
Academic engagement was found to be significantly related to better self-reported health (KW's H=19.37; p<0.001), older age (r=0.152; p=0.016), lower scores on the emotional exhaustion and burnout cynicism subscales (r=-0.253; p<0.001 and r=-0.336; p<0.001, respectively), and higher academic efficacy on the same scale (r=0.652; p<0.001), as well as lower severity of depressive and anxious symptoms (r=-0.266; p<0.001 and r=-0.2; p=0.001, respectively). The MRLM showed that the only scores that were statistically significantly related to academic engagement were the cynicism and efficacy scores on the academic burnout scale (B=-0.027;

Discussion

There are few or almost no studies on technical or technological level students, so we compared the data with students from professional programs. The findings of the present study coincide with those that have reported higher levels of depression than anxiety (Gao et al., 2020; Orellana & Orellana, 2020; Sandín et al., 2020), and a greater impact on women during the pandemic (Jiménez-Villamizar et al., 2023). This can be explained by gender roles and social norms such as the responsibility for homeschooling, social isolation, greater concern for family members, and work commitments (Saddik et al., 2021; Sun et al., 2019).

Previous studies also show that the most affected population are students between the ages of 18 and 24 (Becerra Canales & Campos Martínez, 2021; Caro et al., 2019). Poorer health

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perception is also related to greater severity of affective symptoms in various studies on students, partly explained by the fact that a fair or poor self-perception of health generates physical and psychological discomfort, affecting the individual's ability to cope with everyday situations (Gutiérrez Pastor et al., 2021).

Depression was not found to be related to the intensity of fear of COVID-19, data that differ from those found by Chacaltana-Hernández et al. (2022), who found that those who suffer from fear of COVID were more likely to develop depression. On the contrary, anxiety was correlated with the intensity of fear of COVID-19, similar to what has been previously reported (Caballero-Domínguez et al., 2015; Chacaltana-Hernández et al., 2022). This can be understood from the novelty and uncertainty generated by the pandemic, the lethality of the virus, the collapse of the healthcare system, and the fear of death (Sun et al., 2019).

In any case, this study was conducted at the height of the pandemic, more than a year into the pandemic, so it is likely that strengthening individual and community resilience may have influenced the discrepancy between the severity of depressive symptoms and fear of COVID-19.

Burnout dimensions such as emotional exhaustion and cynicism were associated with poorer perceived health, which could be explained by discomfort related to perceived health, referring to a feeling of poor well-being experienced, accompanied by negative thoughts and emotions about one's own state and functioning, both physically, mentally, and socially. These results are related to previous studies confirming that a negative perception of physical and mental health leads to increased burnout (Sandín et al., 2020).

Perceived academic efficacy was associated with better health perceptions and lower levels of depression and anxiety severity. Self-efficacy promotes physical and psychological well-being, lower stress levels, and better interpretations of new situations, while low efficacy favors the development of depression and anxiety symptoms (Domínguez et al., 2010; Klimenko et al., 2024).

Previous studies have found a relationship between burnout and fear of COVID-19 (Chacaltana-Hernández et al., 2022), which differs from the results found in the present study, which could also be explained by the time at which the data was collected (late 2021), when in addition to a lower number of infections, most countries had started the vaccination schedule and there was better knowledge about the disease (Cortés et al., 2020; Jiménez-Villamizar et al., 2025b).

Regarding engagement, it was associated with positive aspects in participating students: better perception of their health status, lower scores on the burnout and cynicism subscales, and greater academic efficacy. Indeed, greater development can allow for true individual commitment and advancement in academic activities (López Cánovas & Chiclana, 2018), as well as lower levels of depression and anxiety. These data corroborate the role of engagement

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in individual psychological well-being, a positive psychology construct with components of energy, persistence, activation, and goal-directed effort (Suárez Colorado & Mendoza Mendoza, 2014).

Engagement was also associated with older age and a higher level of absorption given that students face additional responsibilities in addition to their studies, such as housework and employment to support themselves financially, among other aspects (Eidman et al., 2021).

Several limitations must be taken into account in this study. First, it is a cross-sectional study, which does not allow for establishing temporal or causal relationships between the variables analyzed. Thus, it is not possible to determine the direction of the relationship between the variables studied or, in other words, whether the presence of burnout or affective symptoms leads to lower academic engagement or vice versa. Furthermore, the R2 values suggest the need to consider new variables that allow for a more in-depth study of the problem and define its potential predictive value. Although the research was conducted with validated instruments used in Colombia and internationally, the non-probability sampling may affect the validity of the results. Therefore, future research is encouraged to implement interviews to enrich the collected data. However, among its strengths, it is one of the few studies involving technical-professional students in the Caribbean region, a population group that tends to be made up of young people from low socioeconomic strata and whose psychosocial issues require further exploration.

Conclusions

We can conclude from the results that technical-level students showed high rates of depression and anxiety during the pandemic and at levels similar to those of students in professional programs. The dimensions of burnout they experience are related to negative affective symptoms, and their academic engagement is associated with lower levels of negative symptoms. Fear of COVID-19 was only related to the presence of anxiety symptoms. In this sense, the results contribute to our understanding of the long-term effects of pandemics, as well as the importance of taking detection and prevention measures in student settings, especially those directed at young women in the first semesters of their studies.

Conflicts of Interest

The authors declare that there is no conflict of interest.

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