






Prevalence of state, trait, generalized, and social anxiety, and well-being among undergraduate students at a university in the Dominican Republic

Laura V. Sánchez-Vincitore^{a,*} , María E. Castelló Gómez^b , Bianca Lajara^a ,
Jon Andoni Duñabeitia^c , Hugo Marte-Santana^a 

^a Universidad Iberoamericana (UNIBE), Santo Domingo, Dominican Republic

^b Instituto de Investigaciones Biológicas Clemente Estable (IIBCE), Monte Video, Uruguay

^c Universidad Nebrija, Madrid, Spain

ARTICLE INFO

Handling Editor: Dr. Leonardo Fontenelle

ABSTRACT

Anxiety is the most prevalent mental health disorder worldwide and a major concern among undergraduate students, affecting both well-being and academic performance. Despite its global relevance, mental health in Dominican university students remains understudied. This study examined the prevalence of different types of anxiety—state, trait, generalized, and social—and their association with well-being in a probabilistic sample of 376 students (mean age = 20.15, 56.92 % women) at a private university in the Dominican Republic. Participants completed the State-Trait Anxiety Inventory (STAI), the Generalized Anxiety Disorder-7 (GAD-7), the Social Interaction Anxiety Scale (SIAS), and the WHO-5 Well-Being Index. Results showed that 42.29 % had high state anxiety, 52.93 % high trait anxiety, 38.56 % moderate to severe generalized anxiety symptoms, and 21.81 % moderate to high social anxiety. In addition, 20.48 % reported very low well-being. Lower anxiety was significantly associated with better well-being. Cluster analysis revealed distinct student profiles: 41.8 % had mild anxiety and moderate well-being; 23.4 % had low anxiety and high well-being; 13.6 % had high anxiety and low well-being. More extreme profiles (e.g., severe anxiety with very low well-being) were rare (0.5 % each). Anxiety was more prevalent among women, while men reported higher well-being. These findings highlight the need to monitor mental health in Dominican universities and implement evidence-based strategies to support student well-being. The elevated anxiety levels observed may reflect the lingering psychological impact of the COVID-19 pandemic.

From an evolutionary standpoint, anxiety is a mechanism that prepares organisms to respond to potential threats, thereby increasing their chances of survival, as such, it has been preserved throughout evolution due to its adaptive value (Del Giudice, 2018). In modern human experience, anxiety is described as a common and distressing emotional state that is expressed in anticipation of potential future threats, affecting individuals at behavioral, cognitive, and physiological levels (American Psychiatric Association, 2022).

Anxiety can be understood across multiple dimensions, including state, trait, and social anxiety, depending on its domain of influence. State anxiety represents a temporary emotional response to specific stressors, while trait anxiety reflects a stable predisposition to perceive situations as threatening (Spielberger et al., 1983). In moderate levels, both forms of anxiety serve an adaptive function by enhancing vigilance and facilitating preparation for a potential challenge (Gutiérrez-García

and Contreras, 2013). However, according to the DSM-5, when either becomes excessive, persistent, or disproportionate to the stressful situation, they can impair functioning and meet the clinical threshold for anxiety disorders (American Psychiatric Association, 2022).

Emerging adulthood is marked by significant transitions, including career decisions, personal relationships, and the development of identity, which may exacerbate anxiety symptoms (LeBlanc et al., 2020). These challenges are compounded by the stressors associated with university life, such as academic pressure and social expectations (Pedrelli et al., 2015). Consequently, anxiety can impact students' well-being, coping strategies, and academic performance. Research has shown its association with maladaptive behaviors, decreased life satisfaction (Mahmoud et al., 2012), and poorer psychological health (Morales-Rodríguez et al., 2020). Among undergraduate students, anxiety has emerged as a relevant mental health concern worldwide

* Corresponding author.

E-mail address: l.sanchez1@prof.unibe.edu.do (L.V. Sánchez-Vincitore).

<https://doi.org/10.1016/j.psychom.2025.100225>

Received 26 January 2025; Received in revised form 5 August 2025; Accepted 14 August 2025

Available online 15 August 2025

2772-5987/© 2025 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

(Auerbach et al., 2018), with a median prevalence of 32 %, disproportionately affecting women compared to men, as reported in a recent umbrella review of systematic reviews (Tan et al., 2023). Furthermore, anxiety negatively influences academic success, impairing learning processes and reducing academic grades (BlackDeer et al., 2023; Russell and Topham, 2012).

Within the college student population, generalized anxiety and social anxiety are particularly impactful (Baxter et al., 2014). Students with generalized anxiety disorder, characterized by excessive and uncontrollable worry, often experience poorer sleep quality, a higher likelihood of consuming non-prescription medication, and an increased risk of suicidal behavior (Souza et al., 2022). On the other hand, students with social anxiety disorder, defined by a fear of rejection, negative feedback, or embarrassment, tend to limit their emotional experiences, which exacerbates feelings of isolation and perpetuates anxiety, hindering their ability to form meaningful relationships (Hur et al., 2020). Despite the impact of all these conditions, one of the main limitations of prevalence and review studies is their lack of coverage of the different forms of anxiety, mainly focusing on a single type or on an overarching construct of anxiety that does not allow further understanding on how different types (e.g., generalized vs. social) are represented in a given population.

These difficulties may be particularly pronounced in high-demand academic programs such as medicine. For instance, a recent study of Swiss medical students found that 33 % self-declared a psychiatric condition (including depression, anxiety disorders, ADHD, or eating disorders) and also reported significantly higher levels of depressive symptoms and insomnia, along with lower emotion regulation and social functioning scores (Regli et al., 2024a,b).

Although prevalent and impactful, anxiety research on university students in Latin America remains scarce. For instance, Cardona-Arias et al. (2015) reported a 58 % prevalence of anxiety among university students in Medellín, Colombia. Vasconcelos de Sá Alves et al. (2021) found a prevalence of 28 % for severe anxiety and 29.8 % for moderate anxiety in university students in Brazil. Cardoso Da Silva et al. (2024) found that Brazilian students are more anxious than Argentinian students. During the COVID-19 pandemic, anxiety symptoms were reported to be present in 44.8 % of Latin America (Herrera-Añazco et al., 2022). However, similar data for most countries are almost lacking, and the ones available tend to use a single instrument for anxiety, and probabilistic studies remain rare.

The Dominican Republic exemplifies this issue, with limited data on anxiety prevalence among both the general population and university students. Official estimates indicate that 5.04 % of the population experiences anxiety disorders, with a higher prevalence (6.44 %) among individuals aged 20–24 (Ritchie and Roser, 2023). Additionally, anxiety contributes significantly to disability within this age group, with Years Lived with Disability (YLD) indicators placing the Dominican Republic in the third quartile of countries in the Americas (Pan American Health Organization, 2019). Non-probabilistic studies during the COVID-19 pandemic have reported high levels of anxiety symptoms among Dominican university students (Frias Veras et al., 2022), but data outside this context remain scarce.

Given the limited research on mental health among Dominican university students, the significant impact of anxiety on well-being and academic performance, and the tendency of existing studies to focus on the prevalence of a single type of anxiety, this study seeks to address these gaps in the literature. Specifically, it aims to (1) assess the prevalence of overall anxiety (state and trait) and two clinical forms (generalized anxiety and social anxiety) alongside well-being in a probabilistic sample of Dominican undergraduate students from a private university; (2) explore the relationship between anxiety and well-being; and (3) identify distinct students profiles based on levels of generalized and social anxiety and well-being. By addressing these objectives, the study contributes to understanding mental health in lower- and middle-income countries. It provides culturally relevant

information that may be considered in interventions for university students.

Given previous international evidence and considering the context of the COVID-19 pandemic, we hypothesized a high prevalence of state, trait, generalized, and social anxiety among undergraduate students in the Dominican Republic. Specifically, we expected elevated levels of state and trait anxiety due to increased uncertainty and stress related to academic demands. Similarly, we anticipated heightened generalized anxiety disorder symptoms reflecting global patterns in post-pandemic university populations, and increased social anxiety associated with prolonged social isolation during the pandemic period. Additionally, we hypothesized negative associations between all these anxiety dimensions and subjective well-being, expecting that higher anxiety would be associated with lower well-being.

1. Method

The study has a cross-sectional, observational design to assess the prevalence of anxiety and well-being among university students enrolled at a private university in Santo Domingo, Dominican Republic. It constitutes the first phase of a broader research project aimed at investigating the neurobiological underpinnings of anxiety and its interaction with other psychological constructs, including empathy, stress, and well-being. The larger project integrates psychometric assessments with neurophysiological measurements such as electroencephalography (EEG) and electrocardiography (ECG), in order to explore how physiological markers relate to psychological symptoms and emotional processing in young adults. This initial prevalence study guided the selection of participants for subsequent experimental tasks within the broader protocol.

The target population from which a representative sample was further investigated consisted of 3996 undergraduate students (2440 women and 1556 men).

1.1. Procedure

This study was approved by the Universidad Iberoamericana's Ethics Committee (CEI2024-25). Data collection occurred in various classrooms from May to July 2024. Special precautions were taken to avoid scheduling data collection during midterms or final exams, as these periods tend to be stressful for students.

A group of 29 volunteer students from the Psychology and Medicine schools were recruited through the university's Community Engagement Unit to serve as data collectors. These volunteers participated in a 2-h virtual training session, where they were instructed on data collection protocols, including participants' selection and recruitment, survey administration, and the sensitivity required for handling mental health data. Following the training, data collectors engaged in a practical session during which they completed the questionnaires themselves to ensure they could effectively address any questions from actual participants.

Participants were randomly selected based on stratification criteria from a list of enrolled students provided by the Registrar's Office. The principal investigator and co-investigators contacted the selected participants in their respective classrooms. If they agreed to participate, they were invited to a designated evaluation classroom where they signed an informed consent form and then responded to the self-administered questionnaire for around 20–30 min. Throughout the data collection process, the principal investigator and co-investigators supervised the activities to ensure the protocol was followed correctly.

1.2. Participants

To calculate the sample size, we considered students' sex, year of study, and academic program using the formula:

$$n = \frac{(Z^2 * p * (1 - p))}{E^2}$$

where n represents the sample size, Z is the Z-value (Z-score), p is the population proportion, $1-p$ is the complement of the population proportion, and E is the margin of error. This calculation yielded an estimated sample size of 385 randomly selected participants, of whom nine did not fully complete the questionnaire. Thus, the sample consisted of 376 undergraduate students enrolled at a private university in Santo Domingo, Dominican Republic. Participants were included in the study if they were undergraduate students enrolled at the private university in Santo Domingo, were 18 years of age or older, and provided informed consent. The only exclusion criterion was the presence of a self-reported neurological condition, as this could interfere with subsequent neurophysiological assessments planned in the larger study.

1.3. Measures

The selected measures for the current study included a sociodemographic questionnaire in which participants provided information on demographic variables such as sex, year of study, and academic major; and four self-reported questionnaires, the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970); the Generalized Anxiety Disorder 7 (GAD-7; Spitzer et al., 2006); the Social Interaction Anxiety Scale (SIAS; Mattick and Clarke, 1998) and the WHO-5 Well-Being Index (Topp et al., 2015), all of which have been validated to the Spanish language and used in similar contexts.

1.3.1. State-Trait Anxiety Inventory

The STAI¹ measures two constructs of anxiety: state anxiety, which is a temporary emotional state that varies in intensity due to situational stressors; and trait anxiety, which reflects a general tendency to respond with anxiety across various situations (Spielberger et al., 1970). The instrument is a four-point Likert scale, ranging from 1 to 4 (from not at all to very much so). The STAI consists of 40 items, divided equally between the two subscales: 20 for state anxiety and 20 for trait anxiety. The STAI includes reversed items (10 for the state anxiety subscale and 9 for the trait anxiety subscale) to ensure the accuracy of responses. Scores for these items were subsequently reversed to align with the scoring method. This reversal ensures that higher scores consistently indicate higher levels of anxiety across all items. The score for each subscale is calculated by summing the responses, with each subscale having a total score ranging from 20 to 80. The instrument has demonstrated excellent internal consistency, with Cronbach's alpha values ranging from 0.92 to 0.97 in clinical and non-clinical samples, as reported by Ortuño-Sierra et al. (2016). This instrument has been validated in Spanish (Novy et al., 1995).

For state anxiety, scores lower or equal to 29 indicate low state anxiety, scores ranging from 30 to 43 indicate moderate state anxiety, and scores equal to or higher than 44 indicate high state anxiety.² State anxiety prevalence was determined by the percentage of participants whose scores fall within the high state anxiety category. For trait anxiety, scores equal to or lower than 32 indicate low trait anxiety, scores ranging from 33 to 44 indicate moderate trait anxiety, and scores equal to or higher than 45 indicate high trait anxiety. Trait anxiety prevalence was determined by the percentage of participants whose scores fell within the high trait anxiety category.

¹ Copyright © 1968, 1977 by Charles D. Spielberger. All rights reserved in all media. Published by Mind Garden, Inc. www.mindgarden.com.

² Cut-off points were determined using Dominican norms for the general population established by García Batista et al. (2019). García Batista et al. (2019) used a scale from 0 to 3, while the present study used 1–4. Therefore, cut-off points were transformed to account for the difference in Likert scales between studies.

1.3.2. Generalized anxiety disorder 7

The GAD-7 is a brief, self-reported, unidimensional instrument designed as an initial screener for symptoms of generalized anxiety (Spitzer et al., 2006). This 7-item instrument uses a 4-point Likert scale ranging from 0 to 3 (from not at all to nearly every day), with the total score ranging from 0 to 21. The items ask participants how often, over the last two weeks, they have been bothered by specific anxiety symptoms. The total score is calculated by summing the responses. The GAD-7 scale includes cut-off scores that indicate the severity of anxiety symptoms. Scores between 0 and 4 correspond to minimal anxiety, 5 to 9 for mild anxiety, 10 to 14 for moderate anxiety, and 15 to 21 for severe anxiety. Generalized anxiety prevalence was determined by the percentage of participants whose scores fell within the moderate or high anxiety categories. Psychometrically, the GAD-7 has demonstrated excellent reliability with a Cronbach's alpha of 0.92 as reported by Spitzer et al. (2006). This instrument has been validated in Spanish (García-Campayo et al., 2010).

1.3.3. Social Interaction Anxiety Scale (SIAS)

The SIAS measures social interaction anxiety, which is defined as the distress experienced during social interactions (Mattick and Clarke, 1998). This unidimensional self-reported questionnaire consists of 20 items, rated on a Likert scale ranging from 1 to 4 (from not at all to extremely true of me). The total score is calculated by summing the Likert scale responses. The scale includes cut-off scores that categorize the severity of social anxiety. A total score from 20 to 45 indicates low social anxiety, a score from 46 to 53 indicates moderate social anxiety, and a score equal to or above 54 indicates high social anxiety. In this study, social anxiety prevalence was determined by the percentage of participants whose scores fell within the moderate or high social anxiety categories. Psychometric properties of the SIAS are robust, with a Cronbach's alpha for internal consistency of 0.91 (Sipka et al., 2023). This instrument has been validated in Spanish (Brown et al., 1997).

1.3.4. WHO-5 Well-Being Index

This unidimensional instrument is designed to measure subjective well-being, defined as the overall assessment of an individual's mental and emotional state, focusing on the positive aspects of mental health (Topp et al., 2015). This tool comprises five items scored on a 5-point Likert scale ranging from 1 to 5 (from never to often), yielding a total score between 5 and 25, where higher scores indicate higher well-being. The total score is calculated by summing the responses. Scores below or equal to 11 indicate very low well-being, 12 to 15 suggest moderate well-being, and scores above 16 reflect adequate well-being. Well-being prevalence was determined by the percentage of participants whose scores fell within the proper well-being category.³ The instrument had good internal consistency, as evidenced by Cronbach's alpha of 0.85 (Topp et al., 2015). This instrument has been validated in Spanish (Bonnín et al., 2018).

1.4. Data analysis plan

The data were collected using printed forms generated on PaperSurvey.io (PaperSurvey.io, 2023), a platform that allows the creation of surveys in printed format, with each form having a unique QR code. These questionnaires were scanned, identified by the QR code, and automatically transcribed to match the corresponding entries in a centralized database. The data were then pre-processed using RStudio (Posit Software PBC, 2022) to address missing data, reverse selected item scores, and calculate total scores for scales and subscales. We

³ Originally, the instrument used a 6-point scale ranging from 0 to 5. However, for the purpose of this study, we have adapted the scale to a 5-point format (1–5). Consequently, the cut-off points have been adjusted to match the revised scale.

employed raw mean imputation to handle missing data, calculating the mean within each participant’s responses on the scale or subscale where the missing data occurred. This allowed the accurate reflection of each participant’s data in the final analysis. Additionally, participants were categorized according to each scale’s cut-off points.

We conducted an a priori power analysis using G*Power to determine the minimum sample size required for our chi-square analyses. Assuming a medium effect size ($w = 0.3$), a significance level of $\alpha = 0.05$, a desired power of $1 - \beta = 0.95$, and 6 degrees of freedom, the analysis indicated a required sample size of 232 participants. As our study included 376 participants, the sample size was more than sufficient to detect a medium effect size with a power of 95 %.

We used JASP (JASP Team, 2024) to analyze the data. We conducted the following analyses to fulfill the study’s objectives: (1) descriptive statistics and normality analysis with Shapiro-Wilk test; (2) a frequency analysis to determine the prevalence of anxiety and well-being; (3) a chi-square analysis to examine the association between anxiety and well-being; and (4) a hierarchical clustering analysis to identify student profiles based on self-reported measures of anxiety (state, trait, social, and generalized) and well-being.

2. Results

2.1. Characterization of the sample

Participants had a sex distribution of 56.92 % women and 43.08 % men. Participants’ ages ranged from 17 to 30 years ($M = 20.15$, $SD = 2.01$). The distribution of participants across various academic programs was as follows: Medicine (18.89 %), Business Management (9.31 %), Dentistry (9.31 %), IT Engineering (7.71 %), Psychology (7.18 %), Architecture (6.92 %), Industrial Engineering (6.65 %), Communication (6.38 %), Law (6.12 %), Marketing (5.85 %), Civil Engineering (5.86 %), Business Administration (3.46 %), Interior Design (2.13 %), Tourism Management (2.13 %), Liberal Studies (1.33 %), and Early Childhood Education (0.80 %). The distribution of students across years of study was as follows: Year 1 (39.36 %), Year 2 (33.51 %), Year 3 (21.81 %), Year 4 (5.05 %), and Year 5 (0.27 %). The smaller sample size in years 4 and 5 is due to most academic programs lasting 3 years.

Before addressing the purposes of this study, we present descriptive statistics of the participants’ total scores for each variable (mean and median). As shown in Table 1, participants’ scores fell within the cut-off classifications for moderate levels of social, state, and trait anxiety on SIAS and STAI, respectively, and mild anxiety on the GAD-7. Additionally, the score for well-being fell within the moderate well-being category. The table also shows that the instruments had adequate psychometric properties, with Cronbach’s α values ranging from 0.83 to 0.93. We ran a Shapiro-Wilk test to evaluate normality and found that the variables were not normally distributed ($p < .05$). Fig. 1 shows the distribution of the scores within each variable.

We conducted a Spearman correlation analysis to examine the relationship between the different forms of anxiety measured in this study (state, trait, generalized, and social). This analysis assessed the convergence between the anxiety variables, helping to clarify how they

relate to each other and their potential impact on student well-being. We used Spearman correlation, given that the data were not normally distributed and participant responses were ordinal, derived from Likert scales. We used the categorization of small ($\rho \approx 0.10$), moderate ($\rho \approx 0.30$), and large ($\rho \geq 0.50$) to interpret the effect sizes (Cohen, 1998). In the present study, all correlations between the different types of anxiety were statistically significant and ranged from moderate to large in magnitude.

As seen in Table 2, all anxiety scores correlated positively. These correlation results were categorized based on the strength of the relationships. In this study, the strongest correlation was between state anxiety and trait anxiety ($r_s = 0.71$, $p < .001$), indicating a close relationship between these two forms of anxiety. Moderate correlations were observed between state anxiety and generalized anxiety ($r_s = 0.63$, $p < .001$), trait anxiety and social anxiety ($r_s = 0.60$, $p < .001$), and trait anxiety and generalized anxiety ($r_s = 0.59$, $p < .001$). Additionally, a moderate but significant correlation was found between state anxiety and social anxiety ($r_s = 0.44$, $p < .001$) and between social anxiety and generalized anxiety ($r_s = 0.36$, $p < .001$).

2.2. Prevalence of anxiety and well-being

To determine the prevalence of anxiety and well-being, we categorized participants based on the cut-off points of each instrument. For each scale, we considered prevalence to reflect the percentage of participants in the categories indicating higher severity. Specifically, for GAD-7, this includes participants classified with moderate and severe anxiety; for SIAS, those with moderate or high social anxiety; and for WHO-5, those in the very low well-being category.

The prevalence of state anxiety was 42.29 %, including participants from the high state anxiety category on the STAI. Trait anxiety prevalence was 52.93 %, corresponding to those participants in the high trait anxiety category on the TRAIT. The prevalence of generalized anxiety symptoms was 38.56 %, which includes participants within the moderate and severe anxiety categories on the GAD-7. Social anxiety prevalence was 21.81 %, encompassing those in the moderate and high social anxiety categories on the SIAS. The prevalence for very low well-being was 20.48. Additional data on the frequency and percentage of each instrument’s categories can be found in Table 3.

2.2.1. Gender differences in anxiety and well-being levels

Given the well-documented differences in anxiety between men and women, we conducted exploratory analyses to investigate variations in the measured variables across sexes. Specifically, a series of chi-square tests were conducted to examine the association between sex (women vs. men) and meeting the criteria for anxiety (generalized anxiety, social anxiety, state anxiety, trait anxiety) and well-being. The results indicated a small, significant association between sex and state anxiety, $\chi^2(2, N = 376) = 8.55$, $p = .014$, $V = 0.15$, with more women meeting the criteria for high state anxiety (48.13 % vs. 34.57 %). A small, significant association was also found for trait anxiety, $\chi^2(2, N = 376) = 12.90$, $p = .002$, $V = 0.19$, with a higher proportion of women showing high trait anxiety compared to men (58.88 % vs. 45.06 %). Additionally, there was

Table 1
Descriptive statistics of each subscale (N = 376).

Scale	Min	Max	\bar{X}	SD	Med	25th pct	50th pct	75th pct	Cut-off classification	Cronbach’s α
STATE	20	80	41.90	12.61	41	32	41	51	Moderate state anxiety	0.93
TRAIT	21	75	45.78	11.02	45	38	45	54	Moderate trait anxiety	0.88
GAD 7	0	21	8.63	4.78	8	5	8	12	Mild generalized anxiety symptoms	0.84
SIAS	20	75	37.89	10.93	36	29	36	44	Moderate social anxiety	0.89
WHO-5	6	25	14.92	4.05	15	12	15	18	Moderate well-being	0.83

Note: Min = Minimum total score; Max = Maximum total score; \bar{X} = mean; SD = standard deviation; Med = median; GAD-7 = Generalized Anxiety Disorder 7; SIAS = Social Interaction Anxiety Scale; STATE = State Anxiety Subscale from STAI; TRAIT = Trait Anxiety Subscale from STAI; WHO-5 = Well-Being Index.

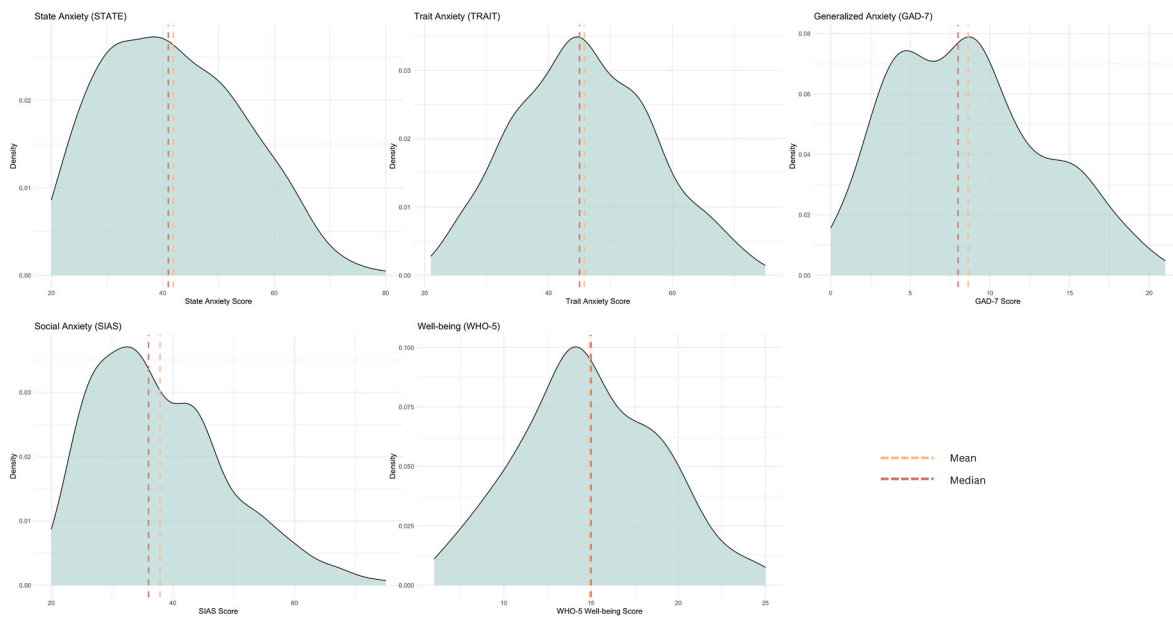


Fig. 1. Density distribution of anxiety and well-being scores.

Note: In each plot, the orange dashed line represents the mean, and the red dashed line indicates the median. The X-axis shows the scores for each specific scale, while the Y-axis represents the probability density, showing the scores' distribution within the sample.

Table 2
Spearman Correlations between different types of anxiety (N = 376).

	STATE	TRAIT	SIAS	GAD
STATE	—			
TRAIT	0.71 ***	—		
SIAS	0.44 ***	0.60 ***	—	
GAD	0.63 ***	0.59 ***	0.36 ***	—

*p < .05, **p < .01, ***p < .001.

Note: GAD-7 = Generalized Anxiety Disorder 7; SIAS = Social Interaction Anxiety Scale; STATE = State Anxiety Subscale from STAI; TRAIT = Trait Anxiety Subscale from STAI.

Table 3
Prevalence of subtypes of anxiety and very low well-being (N = 376).

Scales and cut-off points	n	Percent per category	Prevalence (%)
STATE			42.29
Low state anxiety	69	18.35	
Moderate state anxiety	148	39.36	
High state anxiety	159	42.29	
TRAIT			52.93
Low trait anxiety	44	11.7	
Moderate trait anxiety	133	35.37	
High trait anxiety	199	52.93	
GAD 7			38.56
Minimal anxiety	86	22.87	
Mild anxiety	145	38.56	
Moderate anxiety	89	23.67	
Severe anxiety	56	14.89	
SIAS			21.81
Low social anxiety	294	78.19	
Moderate social anxiety	40	10.64	
High social anxiety	42	11.17	
WHO-5			20.48
Adequate well-being	157	41.76	
Moderate well-being	142	37.77	
Very low well-being	77	20.48	

Note: Prevalence of STATE = high state anxiety category; Prevalence of TRAIT = high trait anxiety category; Prevalence of GAD 7 = moderate anxiety category + severe anxiety category; Prevalence of SIAS = moderate social anxiety category + high social anxiety category; Prevalence of WHO-5 = very low well-being category.

a moderate significant association between sex and generalized anxiety, $\chi^2(3, N = 376) = 27.84, p < .001, V = 0.27$, with a higher proportion of women meeting the criteria for moderate and severe anxiety compared to men (e.g., severe anxiety: 20.56 % of women vs. 7.41 % of men). However, no significant association was found between sex and social anxiety, $\chi^2(2, N = 376) = 4.49, p = .106$. Lastly, there was a small significant association between sex and well-being, $\chi^2(2, N = 376) = 10.41, p = .005, V = 0.17$, with a higher proportion of men showing adequate well-being (50.00 %) compared to women (35.51 %).

A summary of the total prevalence and prevalence disaggregated by sex is presented in Table 4.

2.3. Association between anxiety and well-being

We conducted chi-square tests to examine the association between anxiety levels (state, trait, generalized, and social) and well-being. This non-parametric test was appropriate due to the categorical and ordinal nature of the variables, as it does not require a normal distribution. We found significant moderate associations between well-being and state anxiety ($\chi^2(4, N = 376) = 122.469, p < .001, V = 0.40$); well-being and trait anxiety ($\chi^2(4, N = 376) = 96.727, p < .001, V = 0.36$); well-being and generalized anxiety symptoms ($\chi^2(6, N = 376) = 85.74, p < .001, V = 0.34$); and well-being and social anxiety ($\chi^2(4, N = 376) = 36.746, p < .001, V = 0.23$).

Fig. 2 contains a graphic representation of these associations. As seen in Fig. 2A. Participants with high state anxiety were predominantly in the very low well-being category (81.82 %), with a decline in representation in moderate (51.41 %) and adequate well-being (14.65 %). Those with moderate state anxiety showed a more balanced distribution, with 15.58 % in very low well-being, 41.55 % in moderate well-being,

Table 4
Prevalence of anxiety and very low well-being in women, men, and total sample.

Measurement	Women (%)	Men (%)	Total (%)
State Anxiety (STATE)	48.1	34.6	42.29
Trait Anxiety (TRAIT)	58.9	45.1	52.93
Generalized Anxiety (GAD)	47.2	27.2	38.56
Social Anxiety (SIAS)	25.2	17.3	21.81
Very low well-being (WB)	25.2	14.2	20.48

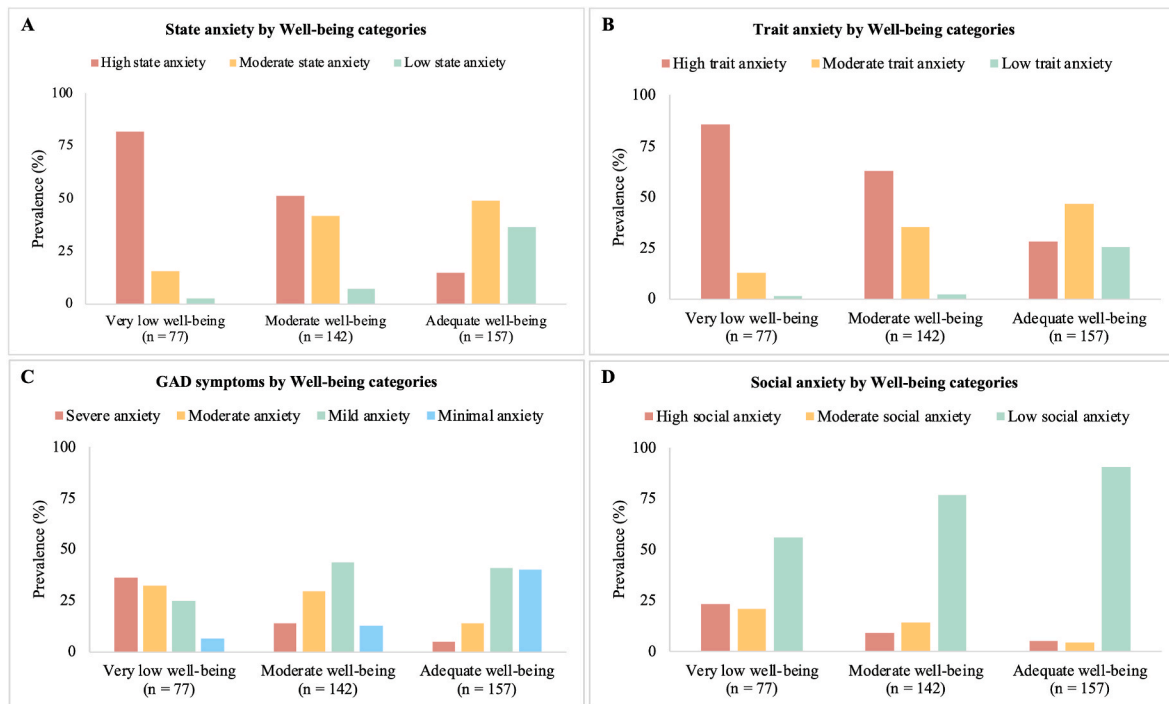


Fig. 2. Distribution of well-being categories across anxiety dimensions. *Note:* The categories of well-being (very low, moderate, and adequate) are shown on the x-axis, while the percentage of participants within each anxiety level is displayed on the y-axis. Each graph highlights the relationship between anxiety and well-being, showcasing variations across the different anxiety dimensions.

and 49.05 % in adequate well-being. In contrast, participants with low state anxiety were concentrated in the adequate well-being category (36.31 %), with minimal representation in very low well-being (2.60 %).

Fig. 2B shows that high trait anxiety was mainly present in the very low well-being category (85.71 %), with its prevalence decreasing as well-being increased (62.68 % in moderate and 28.03 % in adequate well-being). Moderate trait anxiety was more evenly distributed, with 12.99 % in very low well-being, 35.21 % in moderate well-being, and 46.50 % in adequate well-being. Participants with low trait anxiety were almost absent in very low well-being (1.30 %) but more prominent in adequate well-being (25.48 %).

As seen in Fig. 2C, generalized anxiety disorder symptoms were most common in the very low well-being category (36.36 %) and decreased substantially in moderate (14.09 %) and adequate well-being (5.10 %). Moderate generalized anxiety disorder symptoms showed a broader distribution, with 32.47 % in very low well-being, 29.58 % in moderate well-being, and 14.01 % in adequate well-being. Participants with mild and minimal GAD symptoms were more frequently found in the higher well-being categories, with 40.76 % and 40.13 %, respectively, in the adequate well-being category.

Social anxiety was more prevalent in students with very low well-being (23.38 %) and became less frequent in moderate (9.16 %) and adequate well-being (5.10 %), as shown in Fig. 2D. Moderate social anxiety followed a similar pattern, with 20.78 % in students with very low well-being, 14.09 % in moderate well-being, and only 4.46 % in adequate well-being. Conversely, low social anxiety was strongly associated with higher well-being, with 90.45 % in adequate well-being and 76.76 % in moderate well-being, but only 55.84 % in very low well-being.

2.4. Profiles of anxiety and well-being

To identify distinct students' profiles, we performed a hierarchical cluster analysis on the total scores of each instrument, including measures of state, trait, social, and generalized anxiety symptoms, as well as

well-being. The analysis resulted in an 8-cluster solution, based on the Bayesian Information Criterion (BIC) with a BIC value of 920.90 ($R^2 = 0.635$; Silhouette score = 0.170). This model explained 63.5 % of the variance ($R^2 = 0.635$), indicating a moderate separation among clusters.

The largest cluster (41.8 %) included individuals with slightly below-average anxiety across all measures and fair well-being, indicating mild anxiety symptoms with positive well-being. The next largest group (23.4 %) showed low anxiety scores and the highest well-being levels, likely representing individuals with allegedly good mental health. In a smaller group (6.4 %), students experienced high generalized symptoms and state anxiety but moderate social and trait anxiety, coupled with a slight decrease in well-being, suggesting situational anxiety with a minor impact on their overall well-being. Another cluster (13.6 %) was characterized by high scores across all anxiety dimensions and the lowest well-being, indicating pervasive anxiety with significant well-being reduction. Participants in the following group (12.8 %) displayed moderate to high social and trait anxiety with moderately low well-being, highlighting a profile centered on social anxiety with some well-being impact. A very small subset (0.5 %) exhibited very high generalized anxiety symptoms and state anxiety paired with low well-being, reflecting intense anxiety with lowered well-being. Another minor cluster (1.1 %) had high social anxiety traits with moderate trait anxiety but surprisingly high well-being, suggesting resilience despite social anxiety. Finally, the smallest cluster (0.5 %) stands out with the highest anxiety across all measures and severely diminished well-being, pointing to severe anxiety with significant negative effects on well-being. Table 5 presents standardized means for each cluster.

3. Discussion

This study aimed to assess the prevalence of different forms of anxiety (state, trait, generalized, and social) and well-being among university students in the Dominican Republic and to explore potential associations between these variables. The results showed high levels of anxiety across the sample, with state anxiety affecting 42.29 %, trait

Table 5
Hierarchical cluster characteristics and prevalence (N = 376).

Cluster	Prevalence (%)	GAD	SIAS	STATE	TRAIT	WHO-5	Description
1	41.8	-0.16	-0.18	-0.18	-0.20	0.05	Mild anxiety, moderate well-being
2	23.4	-0.93	-0.85	-1.02	-1.11	1.14	Low anxiety, high well-being
3	6.4	1.18	-0.62	1.05	0.58	-0.50	Situational anxiety, slightly low well-being
4	13.6	1.26	1.09	1.37	1.44	-1.20	High anxiety, low well-being
5	12.8	0.15	1.02	0.32	0.68	-0.68	Social anxiety traits, moderate low well-being
6	0.5	2.38	-0.22	2.63	1.34	-1.96	High GAD and State anxiety, low well-being
7	1.1	-0.39	2.00	-0.41	0.50	1.38	High social anxiety traits, high well-being
8	0.5	2.06	3.03	2.31	2.34	-1.96	Severe anxiety, very low well-being

Note: The score for each instrument represents standardized means.

anxiety 52.93 %, generalized anxiety symptoms 38.56 %, and social anxiety 21.81 %. Additionally, 20.48 % of students reported very low well-being. The study also found a significant association between all forms of anxiety and well-being. These results align with findings from Tan et al. (2023), as the anxiety levels observed in this study fall within the range reported in their umbrella analysis of anxiety in undergraduate students (7.40 %–55 %, with a median of 32 %). However, the prevalence in the present study was at the higher end of the spectrum for state and trait anxiety, and generalized anxiety fell above the median.

The combination of contextual and methodological factors may explain the high prevalence rates of anxiety observed in this study. Although data collection was conducted in 2024 (after the official end of the COVID-19 health emergency) university students continued to experience the pandemic aftermath, including lingering academic disruptions, increased performance pressure, and changes in social dynamics. These residual effects may have contributed to elevated anxiety levels, even among students from a private university with relatively higher socioeconomic status. Persistent psychological disorders following the COVID-19 pandemic may explain the high prevalence rates observed in this work, as reported by Li et al. (2021). Our findings also align with those of Rodrigues et al. (2025), who reported that university students from four public universities in Brazil exhibited symptoms of anxiety, depression, and stress, with anxiety reaching severe levels. Their results suggest that emotional vulnerability among students persists well beyond the acute phase of the pandemic and is influenced by sociodemographic and psychosocial factors such as gender, race, socioeconomic hardship, and access to psychological support. Compared to the general population, university students are at a developmental stage characterized by heightened vulnerability to mental health difficulties.

While Ritchie and Roser (2023) report an anxiety prevalence of 5.04 % in the general population and 6.44 % among individuals aged 20–24, it is also the case that these estimates may not accurately reflect the actual prevalence within the Dominican population. This is due to limited access to specialized mental health assessments in the country and the absence of a strong national mental health monitoring system within the Ministry of Public Health. Furthermore, the data reported by Ritchie and Roser (2023) were obtained from the Our World in Data website, which is not an official source affiliated with the Dominican Republic's Ministry of Public Health. Therefore, if we were to extrapolate our findings (considering the Dominican social context and the fact that our study was conducted using a probabilistic sample within a private university) it is likely that anxiety levels in the general population are substantially higher than those reported by Ritchie and Roser (2023). This may help explain the discrepancies between our findings and those reported by Ritchie and Roser (2023) regarding prevalence rates in both the general population and the university student population.

An important contribution of this study is its consideration of multiple forms of anxiety, including temporary (state anxiety), dispositional (trait anxiety), and clinical forms (generalized anxiety symptoms and social anxiety). Prevalence studies often focus on a single type of anxiety, typically a pathological form, which limits understanding of the

broader spectrum of anxiety experiences (Baxter et al., 2014; Tan et al., 2023). The inclusion of state and trait anxiety in this study, similar to Martínez Valera et al. (2024), provides a broader understanding of anxiety experiences among university students. These forms of anxiety can be adaptive in certain contexts, such as preparing for exams or responding to challenges. However, persistently high levels of state or trait anxiety could indicate vulnerability to clinical conditions, particularly when combined with other risk factors (Knowles and Olatunji, 2020). In this study, the highest prevalence was observed for trait anxiety, reflecting its nature as a stable personality trait characterized by a general propensity to worry across various life situations. This was followed by state anxiety, which is situational and varies depending on immediate stressors. The higher levels of state and trait anxiety observed are consistent with their non-pathological nature, as these types of anxiety are common and expected in university settings (Martínez Valera et al., 2024). However, it is noteworthy that clinically relevant forms of anxiety, such as generalized anxiety symptoms and social anxiety, were also present at high levels. Specifically, 38.56 % of participants reported moderate to severe symptoms of generalized anxiety.

The present study also found that all types of anxiety, except for social anxiety, were more prevalent in women than in men. This finding is consistent with previously reported higher rates of anxiety in women compared to men (Baxter et al., 2014; García-Batista et al., 2014; Li et al., 2022), but contradicts Martínez Valera et al. (2024) who found no significant differences in state anxiety and trait anxiety by sex. While the explanations for this disparity are beyond the scope of this study, a systematic review by Farhane-Medina et al. (2022) argues that these differences arise from a complex interaction between biological and psychosocial factors related to gender roles and socialization. The review explains that traditional femininity has been associated with a higher risk of anxiety through mechanisms such as rumination, emotional sensitivity, and unequal social conditions, whereas masculine norms may suppress emotional expression and contribute to the underdiagnosis of anxiety in men.

An interesting exception was observed with social anxiety, where no significant associations with sex were found in the present study. Although this result contradicts the broader literature, which indicates that women are more likely to experience social anxiety than men (Asher et al., 2017), it is important to note that the significance level in this analysis was close to 0.05 but did not meet the significance threshold. This finding suggests that, while general patterns align with established research, unique contextual or sample-specific factors may influence the results in this study. Future research could further explore these results.

The present study also found a significant association between anxiety levels and well-being, with lower levels of anxiety being associated with higher well-being. This finding is consistent with previous research showing a correlation between these two variables (Mahmoud et al., 2012; Morales-Rodríguez et al., 2020; Russell and Topham, 2012). Moreover, the 8-cluster hierarchical model revealed nuanced profiles of this relationship, underscoring the complexity of how anxiety and well-being interact. For example, while clusters with high anxiety and low well-being followed expected patterns, other clusters highlighted

unexpected combinations, such as moderate anxiety with fair well-being or high social anxiety with adequate well-being. These findings suggest that specific individuals may rely on other mechanisms to buffer the effects of anxiety on well-being, which emphasizes the need for tailored interventions and more research on coping mechanisms. Nonetheless, due to the intrinsic relationship between anxiety and well-being and the complexity of the underlying mechanisms driving them, establishing causation is neither feasible nor appropriate.

This study has some limitations that should be considered when interpreting the results. Although it is a probabilistic study, the sample is drawn from a single private university in the Dominican Republic, comprising students from middle and high socioeconomic positions, which may limit the generalizability of the findings to other universities in the country and the region. Additionally, all data were collected through self-reported instruments, introducing potential bias due to social desirability. The study's cross-sectional design also prevents evaluating the time course of anxiety and well-being. Future research should include a nationwide probabilistic sample and adopt a longitudinal design to enable the analysis of the time course and risk factors associated with anxiety among Dominican students.

An important methodological limitation of this study was the absence of measures assessing comorbid conditions such as depression, stress, and insomnia. Including these variables could have helped to better explain the differences in the prevalence of the various types of anxiety (state, trait, and social), as interactions may exist—for example—between depression and specific forms of anxiety (Kircanski et al., 2017). This, in turn, could have contributed to a more comprehensive understanding of the dynamics of anxiety within this population. Future research should aim to explore these associations in order to gain a deeper understanding of the interactions between anxiety and related psychological factors.

Despite these limitations, this project offers valuable insights into the mental health of university students in the Dominican Republic. It underscores the need for targeted interventions to address high levels of anxiety and promote well-being within this population. Additionally, it emphasizes the importance of higher education systems monitoring student anxiety levels to make timely, evidence-based decisions regarding interventions that support student well-being.

CRedit authorship contribution statement

Laura V. Sánchez-Vincitore: Writing – review & editing, Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **María E. Castelló Gómez:** Writing – review & editing, Validation, Funding acquisition, Formal analysis, Conceptualization. **Bianca Lajara:** Writing – review & editing, Validation, Project administration, Investigation. **Jon Andoni Duñabeitia:** Writing – review & editing, Validation, Funding acquisition, Conceptualization. **Hugo Marte-Santana:** Writing – review & editing, Validation, Project administration, Methodology, Investigation.

Use of AI statement

During the preparation of this work, the author(s) used OpenAI's ChatGPT in order to refine the English language and to improve readability. After using this tool/service, the authors reviewed and edited the content as needed and takes full responsibility for the content of the publication.

Funding information

This study was funded by the International Brain Research Organization and the Wellcome Trust (IW-6594875598).

Declaration of competing interest

The authors have nothing to declare.

Acknowledgments

We would like to extend our gratitude to the data collectors: Asbel Acosta, Annie Ileska Linares, Daimi Lorenzo, Carla Beatriz Peralta Sousa, David Vázquez, Elaine Isabel Patricio Mota, Florandy Sánchez, Fernando María, Flavia Cristina Pierret Aguilar, Filgia Pimentel, Ingrid Tezanos Lara, Jorge Báez, Jonathan Jiménez, Laura Guerrero, María Vázquez, Marieliza Castillo Herrera, María Villegas Llopart, Nathali Contreras, Nadime Hasbun, Osleidy de la Rosa, Lidia Holguin, Rachel Ruiz Hernández, Ramón Rosario Díaz, Sebastian Herrera Lopez, Sara Rojas Meyer, Victoria De La Mota, Verónica Rodríguez Sousa, Yanelly Dominic Lanfranco Gil, and Yanira Núñez. We are especially thankful to Andrea Guaidó for coordinating part of the data collection and to Agustín Ibáñez for his valuable feedback and revision of this manuscript.

References

- American Psychiatric Association, 2022. Diagnostic and Statistical Manual of Mental Disorders, fifth ed. American Psychiatric Association. <https://doi.org/10.1176/appi.books.9780890425596>.
- Asher, M., Asnaani, A., Aderka, I.M., 2017. Gender differences in social anxiety disorder: a review. *Clin. Psychol. Rev.* 56, 1–12. <https://doi.org/10.1016/j.cpr.2017.05.004>.
- Auerbach, R.P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D.D., Green, J.G., Hasking, P., Murray, E., Nock, M.K., Pinder-Amaker, S., Sampson, N.A., Stein, D.J., Vilagut, G., Zaslavsky, A.M., Kessler, R.C., 2018. WHO world mental health surveys international college student project: prevalence and distribution of mental disorders. *J. Abnorm. Psychol.* 127 (7), 623–638. <https://doi.org/10.1037/abn0000362>.
- Baxter, A.J., Vos, T., Scott, K.M., Norman, R.E., Flaxman, A.D., Blore, J., Whiteford, H.A., 2014. The regional distribution of anxiety disorders: implications for the global burden of disease study, 2010. *Int. J. Methods Psychiatr. Res.* 23 (4), 422–438. <https://doi.org/10.1002/mpr.1444>.
- BlackDeer, A.A., Patterson Silver Wolf, D.A., Maguin, E., Beeler-Stinn, S., 2023. Depression and anxiety among college students: understanding the impact on grade average and differences in gender and ethnicity. *J. Am. Coll. Health* 71 (4), 1091–1102. <https://doi.org/10.1080/07448481.2021.1920954>.
- Bonnín, C.M., Yatham, L.N., Michalak, E.E., Martínez-Arán, A., Dhanoa, T., Torres, I., Santos-Pascual, C., Valls, E., Carvalho, A.F., Sánchez-Moreno, J., Valentí, M., Grande, I., Hidalgo-Mazzei, D., Vieta, E., Reinares, M., 2018. Psychometric properties of the well-being index (WHO-5) Spanish version in a sample of euthymic patients with bipolar disorder. *J. Affect. Disord.* 228, 153–159. <https://doi.org/10.1016/j.jad.2017.12.006>.
- Brown, E.J., Turovsky, J., Heimberg, R.G., Brown, T.A., Barlow, D.H., 1997. Validation of the social interaction anxiety scale and the social phobia scale across the anxiety disorders. *Psychol. Assess.* 9 (1), 21–27.
- Cardona-Arias, J.A., Pérez-Restrepo, D., Rivera-Ocampo, S., Gómez-Martínez, J., Reyes, Á., 2015. Prevalencia de ansiedad en estudiantes universitarios. *Diversitas: Perspect. Psicol.* 11 (1), 79–89.
- Cardoso Da Silva, D.J., Dias Lopes, L.F., Amaral, L., Bortoluzzi Balconi, S., Ramser, C.A., Pereira Da Veiga, C., Vieira Da Silva, W., Vieira Da Silva, L.S.C., 2024. Concern over anxiety disorder among young students in Latin America. *Int. J. Health Promot. Educ.* 62 (6), 608–630. <https://doi.org/10.1080/14635240.2022.2086897>.
- Cohen, J., 1998. *Statistical Power Analysis for the Behavioral Sciences*, second ed. Lawrence Erlbaum Associates.
- Del Giudice, M., 2018. *Evolutionary Psychopathology: a Unified Approach*. Oxford University Press.
- Farhane-Medina, N.Z., Luque, B., Taberner, C., Castillo-Mayén, R., 2022. Factors associated with gender and sex differences in anxiety prevalence and comorbidity: a systematic review. *Sci. Prog.* 105 (4), 00368504221135469. <https://doi.org/10.1177/00368504221135469>.
- Frías Veras, M., Guzmán Lazala, T. del C., Sánchez Vincitore, L.V., 2022. Sintomatología ansiosa en estudiantes de universidades dominicanas durante COVID-19. *Ciencia y Educación* 6 (2), 5–15.
- García-Batista, Z.E., Cano-Vindel, A., Herrera-Martínez, S.X., 2014. Estudio comparativo de ansiedad entre muestras de estudiantes dominicanos y españoles. *Escritos de Psicología/Psychol. Writ.* 7 (3), 25–32. <https://doi.org/10.5231/psy.writ.2014.1310>.
- García-Campayo, J., Zamorano, E., Ruiz, M.A., Pardo, A., Perez-Paramo, M., Lopez-Gomez, V., Freire, O., Rejas, J., 2010. Cultural adaptation into Spanish of the generalized anxiety disorder-7 (GAD-7) scale as a screening tool. *Health Qual. Life Outcome* 8 (1), 8. <https://doi.org/10.1186/1477-7525-8-8>.
- Gutiérrez-García, A.G., Contreras, C.M., 2013. Anxiety: an adaptive emotion. In: *New Insights into Anxiety Disorders*. InTech, pp. 21–37. <https://doi.org/10.5772/53223>.
- Herrera-Añazo, P., Urrunaga-Pastor, D., Benites-Zapata, V.A., Bendezu-Quispe, G., Toro-Huamanchumo, C.J., Hernandez, A.V., 2022. Gender differences in depressive and anxiety symptoms during the first stage of the COVID-19 pandemic: a cross-sectional

- study in Latin America and the Caribbean. *Front. Psychiatr.* 13. <https://doi.org/10.3389/fpsy.2022.727034>.
- Hur, J., DeYoung, K.A., Islam, S., Anderson, A.S., Barstead, M.G., Shackman, A.J., 2020. Social context and the real-world consequences of social anxiety. *Psychol. Med.* 50 (12), 1989–2000. <https://doi.org/10.1017/S0033291719002022>.
- JASP Team, 2024. JASP.
- Kircanski, K., LeMoult, J., Ordaz, S., Gotlib, I.H., 2017. Investigating the nature of co-occurring depression and anxiety: comparing diagnostic and dimensional research approaches. *J. Affect. Disord.* 216, 123–135. <https://doi.org/10.1016/j.jad.2016.08.006>.
- Knowles, K.A., Olatunji, B.O., 2020. Specificity of trait anxiety in anxiety and depression: meta-analysis of the state-trait anxiety inventory. *Clin. Psychol. Rev.* 82. <https://doi.org/10.1016/j.cpr.2020.101928>, 101928–101928.
- LeBlanc, N.J., Brown, M., Henin, A., 2020. Anxiety disorders in emerging adulthood. In: Bui, E., Charney, M., Baker, A. (Eds.), *Clinical Handbook of Anxiety Disorders*. Current Clinical Psychiatry. Humana, Cham, pp. 157–173. https://doi.org/10.1007/978-3-030-30687-8_8.
- Li, Y., Wang, A., Wu, Y., Han, N., Huang, H., 2021. Impact of the COVID-19 pandemic on the mental health of college students: a systematic review and meta-analysis. *Front. Psychol.* 12, 669119.
- Li, W., Zhao, Z., Chen, D., Peng, Y., Lu, Z., 2022. Prevalence and associated factors of depression and anxiety symptoms among college students: a systematic review and meta-analysis. *J. Child Psychol. Psychiatry Allied Discip.* 63 (11), 1222–1230. <https://doi.org/10.1111/jcpp.13606>.
- Mahmoud, J.S.R., Staten, R.T., Hall, L.A., Lennie, T.A., 2012. The relationship among young adult college students' depression, anxiety, stress, demographics, life satisfaction, and coping styles. *Issues Ment. Health Nurs.* 33 (3), 149–156. <https://doi.org/10.3109/01612840.2011.632708>.
- Martínez Valera, P.E., Bouroncle, M.R., Gallegos, A., Aliaga Bravo, V.D.C., Valencia, J., 2024. State anxiety and trait anxiety associated with social anxiety in university students. *Cogent Soc. Sci.* 10 (1), 2356055.
- Mattick, R.P., Clarke, J.C., 1998. Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behav. Res. Ther.* 36 (4), 455–470. [https://doi.org/10.1016/S0005-7967\(97\)10031-6](https://doi.org/10.1016/S0005-7967(97)10031-6).
- Morales-Rodríguez, F.M., Espigares-López, I., Brown, T., Pérez-Mármol, J.M., 2020. The relationship between psychological well-being and psychosocial factors in university students. *Int. J. Environ. Res. Publ. Health* 17 (13), 1–21. <https://doi.org/10.3390/ijerph17134778>.
- Novy, D.M., Nelson, D.V., Smith, K.G., Rogers, P.A., Rowzee, R.D., 1995. Psychometric comparability of the English-and spanish-language versions of the state-trait anxiety inventory. *Hisp. J. Behav. Sci.* 17 (2), 209–224. <https://doi.org/10.1177/07399863950172005>.
- Ortuño-Sierra, J., García-Velasco, L., Inchausti, F., Debbané, M., Fonseca-Pedrero, E., 2016. New approaches on the study of the psychometric properties of the STAI. *Actas Esp. Psiquiatr.* 44 (3), 83–92.
- Pan American Health Organization, 2019. Burden of mental disorders: country profile—Dominican republic. PAHO Data Visualiz. Platform. <https://www.paho.org/en/enlace/burden-mental-disorders>.
- PaperSurvey.io, 2023. PaperSurvey.io [Survey software]. <https://papersurvey.io>.
- Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., Wilens, T., 2015. College students: mental health problems and treatment considerations. *Acad. Psychiatry* 39 (5), 503–511. <https://doi.org/10.1007/s40596-014-0205-9>.
- Posit Software PBC, 2022. Rstudio.
- Regli, J., Sadeghi-Bahmani, D., Rigotti, V., Stanga, Z., Ülgür, I.I., Fichter, C., Lang, U.E., Brühl, A.B., Brand, S., 2024a. Psychiatric characteristics, symptoms of insomnia and depression, emotion regulation, and social activity among Swiss medical students. *J. Clin. Med.* 13 (15).
- Ritchie, H., Roser, M., 2023. Anxiety disorders prevalence by age. Our world in data. <https://ourworldindata.org/grapher/anxiety-disorders-prevalence-by-age?tab=chart&country=-DOM>.
- Regli, J., Sadeghi-Bahmani, D., Rigotti, V., Stanga, Z., Ülgür, I.I., Fichter, C., Lang, U.E., Brühl, A.B., Brand, S., 2024b. Psychiatric characteristics, symptoms of insomnia and depression, emotion regulation, and social activity among Swiss medical students. *J. Clin. Med.* 13 (15), 4372. <https://doi.org/10.3390/jcm13154372>.
- Rodrigues, Y.M., Alves, B.O., Santana, M.C.V., Lourenço, B.G., Chaves, E.C.L., Chianca, T. C.M., et al., 2025. Depression, anxiety and stress in university students and their relationship with sociodemographic and psychosocial factors post-COVID-19. *Cogitare Enferm.* 30, e98437. <https://doi.org/10.1590/ce.v30i0.98437>.
- Russell, G., Topham, P., 2012. The impact of social anxiety on student learning and well-being in higher education. *J. Ment. Health* 21 (4), 375–385. <https://doi.org/10.3109/09638237.2012.694505>.
- Šipka, D., Brodbeck, J., Schulz, A., Stolz, T., Berger, T., 2023. Factor structure of the social phobia scale (SPS) and the social interaction anxiety scale (SIAS) in a clinical sample recruited from the community. *BMC Psychiatry* 23 (1). <https://doi.org/10.1186/s12888-023-05142-8>.
- Souza, J.P.D.A.E., Demenech, L.M., Dumith, S.C., Neiva-Silva, L., 2022. Sintomas de ansiedade generalizada entre estudantes de graduação: Prevalência, fatores associados e possíveis consequências. *J. Bras. Psiquiatr.* 71 (3), 193–203. <https://doi.org/10.1590/0047-2085000000381>.
- Spielberger, C.D., Gorsuch, R.L., Lushene, R.E., 1970. *Manual for the State-Trait Anxiety Inventory (Self-Evaluation Questionnaire)*. Consulting Psychologists Press.
- Spielberger, C.D., Gorsuch, R.L., Lushene, R., Vagg, P.R., Jacobs, G.A., 1983. *Manual for the State-Trait Anxiety Inventory*. Consulting Psychologists Press.
- Spitzer, R.L., Kroenke, K., Williams, J.B.W., Löwe, B., 2006. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch. Intern. Med.* 166 (10), 1092–1097.
- Tan, G.X.D., Soh, X.C., Hartanto, A., Goh, A.Y.H., Majeed, N.M., 2023. Prevalence of anxiety in college and university students: an umbrella review. *J. Affect. Disord. Rep.* 14. <https://doi.org/10.1016/j.jadr.2023.100658>, 100658–100658.
- Topp, C.W., Østergaard, S.D., Søndergaard, S., Bech, P., 2015. The WHO-5 well-being index: a systematic review of the literature. *Psychother. Psychosom.* 84 (3), 167–176. <https://doi.org/10.1159/000376585>.
- Vasconcelos de Sá Alves, J., de Paula, W., Ribeiro Rezende Netto, P., Godman, B., Rezende Macedo do Nascimento, R.C., Coura-Vital, W., 2021. Prevalence and factors associated with anxiety among university students of health sciences in Brazil: findings and implications. *J. Bras. Psiquiatr.* 70, 99–107. <https://doi.org/10.1590/0047-2085000000322>.