



Mental health, well-being and associated factors in LGBTQ+ university students in Spain

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Abstract

LGBTQ+ university students are vulnerable to psychological distress compared with cisgender heterosexual (CH) peers. This study examined differences in mental health, life satisfaction, and well-being between LGBTQ+ and CH university students in Spain, as well as the prevalence of psychological and neurodevelopmental conditions across groups. Stress, life satisfaction, well-being, and ADHD symptoms were expected to predict anxiety and depression among LGBTQ+ students. A total of 7080 students ($n_{\text{LGBTQ+}} = 3560$; $n_{\text{CH}} = 3520$) from the Catalonia University System completed an online assessment. LGBTQ+ students reported higher symptoms of depression, anxiety, ADHD, eating disorders (ED), stress and negative burnout than their CH peers. Prevalence ratios for mental health symptoms ranged from 1.35 to 1.58, while ratios for past or current mental health diagnoses ranged from 1.70 to 1.98. LGBTQ+ self-identification emerged as a small-to-moderate predictor of mental health problems and lower life satisfaction and well-being. Within the LGBTQ+ group, life satisfaction and well-being were significant predictors of depression and anxiety symptoms. LGBTQ+ students were also younger on average and more likely to be enrolled in arts, humanities, and science degrees. These findings are consistent with the existing literature. Despite increasing social acceptance and legal protections, LGBTQ+ individuals continue to face an elevated risk of mental health disorders. In this context, inclusive university policies and practices play a crucial role in promoting mental health and well-being among LGBTQ+ students.

Keywords LGBTQ+ · Cisgender · Heterosexual · Discrimination · Higher education · Mental health

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Introduction

According to previous research, university students experience psychological distress and are at increased risk for mental health problems (Auerbach et al., 2018; Sharp & Theiler, 2018). In particular, evidence suggests that students belonging to sexual and gender minorities, including those identifying as lesbian, gay, bisexual, transgender, questioning/queer, and other identities such as gender fluid or nonbinary (LGBTQ+), exhibit increased levels and diverse patterns of mental health distress (Plöderl & Tremblay, 2015; Russell et al., 2023). Recent research by Mason et al. (2025), involving first-year university students from 18 countries, found that students who reported their sexual orientation as gay or lesbian, bisexual, asexual, not sure, or other exhibited the highest prevalence of nearly all assessed mental disorders compared with other demographic groups. Indeed, LGBTQ+ students may be at greater risk of experiencing mental health disparities than their cisgender heterosexual

(CH) counterparts, due to specific minority-related stressors such as misgendering, negative attitudes, name-calling, and stigma, among others (Campbell et al., 2022; Rentería et al., 2025). In this regard, Minority Stress Theory (Meyer, 2003) offers a conceptual basis for understanding mental health disparities among sexual and gender minorities, attributing them to chronic and specific social stressors, such as prejudice, rejection, and discrimination, that significantly impact the mental health outcomes of LGBTQ+ individuals. It is important to note that the LGBTQ+ community is not a homogeneous group but rather comprises multiple distinct communities, each characterized by specific mental health inequalities (Rees et al., 2021). Accordingly, a growing body of research has highlighted significant mental health disparities and substantial heterogeneity in therapeutic experiences within LGBTQ+ populations in clinical contexts (Mezzalana et al., 2025; Price-Feeney et al., 2020; Wittgens et al., 2022). More specifically, Wittgens et al.'s (2022) meta-analysis found that lesbian and gay individuals were twice as likely, and bisexual individuals 2.7 times more likely, to experience mental health disorders compared to CH individuals. In addition, Price-Feeney et al. (2020), using a large national sample of LGBTQ youth, reported that transgender and nonbinary youth exhibited more than double the risk of depressed mood compared with cisgender lesbian, gay, bisexual, and questioning peers, even after accounting for discrimination and victimization. Klinger et al. (2024) conducted a systematic review and meta-analysis of 21 studies including 16,114 non-binary youth and 11,925 transgender peers, and found that, compared with transgender youth, non-binary individuals exhibit significantly poorer overall mental health outcomes but lower rates of suicidality.

Among the most frequently reported mental health concerns in studies involving LGBTQ+ students are elevated levels of anxiety and depression, as well as significantly higher rates of suicide attempts and completed suicides compared to their heterosexual counterparts (Borgogna et al., 2019; Gnan et al., 2019; Plöderl & Tremblay, 2015). Specifically, some studies have reported that the risks for depression and anxiety are 1.5 to 2.6 times higher in lesbian, gay, and bisexual (LGB) individuals compared to heterosexual individuals (King et al., 2008). Transgender and nonbinary individuals are particularly vulnerable, experiencing higher rates of mental health disorder diagnoses and symptoms, such as depression, anxiety and stress, compared to their CH counterparts (Borgogna et al., 2019; Downing & Przedworski, 2018; Reisner et al., 2016). Nonbinary and genderqueer students are also more likely to report significantly higher rates of stress, psychological distress, self-harm, and suicidality (Lefevor et al., 2019; Marx et al., 2024). Similarly, gay and lesbian individuals reported significantly higher rates

of anxiety symptoms and suicide attempts compared to heterosexual individuals (Oswalt & Wyatt, 2011). Evidence from large student samples demonstrates that transgender and gender-nonconforming individuals exhibit greater depression and anxiety symptom severity than cisgender peers. Moreover, individuals in emerging sexual and gender minority categories (pansexual, demisexual, asexual, queer, and questioning identities), report higher levels of depression and anxiety symptoms than cisgender gay and lesbian individuals (Borgogna et al., 2019).

On the other hand, positive associations have been reported between LGBTQ+ self-identification and eating disorders (ED; Matthews-Ewald et al., 2014; Plöderl & Tremblay, 2015). For instance, transgender students, compared to CH women, show higher odds of being diagnosed with ED (OR: 4.62) and using and displaying compensatory behaviors, such as vomiting or laxatives (OR: 2.46; Diemer et al., 2015). Symptoms of bulimia and anorexia are more prevalent among gay and bisexual men, less so among bisexual women, and not significantly among lesbian women (Plöderl & Tremblay, 2015). Additionally, individuals who identify as LGB report using weight-loss diets more often than their heterosexual counterparts (Matthews-Ewald et al., 2014). Gay men exhibited notably higher levels of desire for thinness and body-related anxiety compared to their straight men (Carper et al., 2010). On the other hand, a systematic review by Goetz and Adams (2024) documented an increased prevalence of attention-deficit/hyperactivity disorder (ADHD) symptoms among transgender and/or gender-diverse individuals. Supporting this evidence, studies have shown that sexual and gender minority individuals are more likely to be diagnosed with ADHD at younger ages, with reported prevalence rates reaching approximately 20.4% (Dawson et al., 2017; Hartung et al., 2025). Consistent with this body of evidence, Bretherton et al. (2021), in a study of 928 self-identified transgender participants, including gender-diverse and non-binary people, reported elevated rates of ADHD, with 11% of participants indicating an ADHD diagnosis. Finally, research examining ADHD symptoms among cisgender heterosexual individuals and sex, gender, and sexual minority (SGM) participants showed that binary analyses based solely on sex or gender revealed no differences in ADHD symptoms. However, when SGM individuals were analyzed as a distinct group, significantly higher levels of ADHD symptoms emerged. (Hartung et al., 2025).

It is also important to note that LGB students exhibit significantly lower levels of psychological well-being and receive less social support compared to heterosexual students (Christie, 2021). Additionally, transgender and gender nonconforming college students are also more likely to have higher odds of poor quality of life (Downing & Przedworski,

2018). Related to above, compared to heterosexual students, LGB students may have more than eight times the likelihood of experiencing burnout symptoms due to high levels of perceived mistreatment specific to their sexual orientation (Samuels et al., 2021). Furthermore, a substantial body of research indicating worse physical health (Cunningham et al., 2018), traumatic events (Marchi et al., 2023) and victimization/microaggressions among LGBTQ+ university students (Lefevor et al., 2019; Seelman et al., 2017). Additionally, students experiencing mental health challenges also exhibit poorer academic success, lower motivation and a diminished sense of belonging (Campbell et al., 2022).

In summary, although the LGBTQ+ community is very heterogeneous, the evidence, primarily from Western countries, shows that LGBTQ+ communities as a whole experience poor mental health and low well-being than heterosexuals, with gender-minority people experiencing worse mental health inequalities than cisgender, both in the general population and among university students.

Research on the mental health and psychological distress of LGBTQ+ communities in university settings has been predominantly carried out in Anglo-Germanic countries (e.g., Mason et al., 2025; Renteria et al., 2025). By contrast, countries such as Spain exhibit a notable scarcity of research in this area, underscoring a significant gap in population-based studies addressing the mental health issues in this community of university students. In line with the above, Miranda-Mendizabal et al. (2024), through a 12-month follow-up of online surveys conducted among Spanish LGB first-year university students aged 18 to 24, identified increasing rates of suicidal ideation, mood disorders (major depressive and bipolar disorders), and alcohol/substance use disorders. On the other hand, a study conducted by Dueñas et al. (2021) examining violence against LGBTI+ individuals among university students in Catalan universities reported increasing rates of psychological violence within the university context.

Considering the above and given the limited availability of data on the Spanish population, this study seeks to build upon existing findings and address the gap in prior research concerning the mental health of LGBTQ+ university students. Specifically, it examines differences in mental health, life satisfaction, and well-being between LGBTQ+ and non-LGBTQ+ students, as well as the prevalence of psychological and neurodevelopmental conditions. Accordingly, we hypothesized that: (1) Self-identified LGBTQ+ university students would report poor mental health outcomes and lower life satisfaction, and well-being compared with their CH peers; (2) LGBTQ+ university students would be more likely than CH peers to meet clinical cut-off criteria indicating mental health risk on standardized psychopathology measures; (3) Self-identified LGBTQ+ university students

would report higher rates of current or previous formal diagnoses of anxiety, depression, ED, and ADHD compared with their CH peers; and (4) given that depression and anxiety consistently emerge as the most prevalent mental health conditions across sexual and gender minority groups, we hypothesized that stress, life satisfaction, well-being, and ADHD symptoms would be significant predictors of anxiety and depression symptoms among LGBTQ+ individuals.

Methods

Participants

This research is part of the Study on Mental Health in the University System of Catalonia (<https://eureka.bibliotecadigital.gencat.cat/handle/20.500.14344/461>, Generalitat de Catalunya. Departament de Recerca i Universitats, 2023) focused on evaluating the mental health and well-being of students, and technical, management, administration services, teaching and research staff.

The survey was answered by 19,001 students (8.31% of the 228,717 students at the Catalan universities, IDESCAT, 2022); 16,525 questionnaires were completed (86.23%). For the aim of the study, only students who self-identified as belonging to the LGBTQ+ community were included ($n=3,520$, 21.3% of the total sample). In the original survey, LGBTQ+ identity was assessed using a single self-report item asking participants whether they identified as part of the LGBTQ+ community (yes/no). No further distinctions were made regarding specific dimensions such as sexual orientation or gender identity. Only participants who responded affirmatively to this item were included in the LGBTQ+ group. While this approach does not allow for differentiation within sexual and gender minority subgroups, it was considered appropriate for the exploratory scope of the present study. Besides, for comparison purposes, a random sample of the students who answered not belonging to the LGBTQ+ community also were extracted from the study dataset ($n=3560$). Thus, the sample included consisted of a total of 7080 participants. The inclusion criteria required participants to be enrolled in any year of a Catalan universities and to have completed, either partially or fully, the online survey measures. Clinical diagnoses were self-reported in a specially designed section of the survey.

Data collection

The data were collected through an online questionnaire administered using Qualtrics software. The questionnaire was distributed between March and May 2023 through institutional email distribution lists from all twelve universities

which constitute the Catalan university system. Participants read a brief instruction describing the research and agreed to engage before answering the survey. Participation in the research was anonymous and voluntary, and we asked about “consent to participate”. The exclusion criteria for participants were based on the responses to the questionnaire: incomplete questionnaires and straight-line answering patterns. All procedures performed in this study were in accordance with the Declaration of Helsinki (World Medical Association, 1964) and its later amendments or comparable ethical standards. The study was approved by the ethics committees of all participating Catalan universities, and the same procedure was applied across institutions. Specifically, approval was granted by: Comisi n de  tica en la Experimentaci n Animal y Humana (CEEAH), Universitat Aut noma de Barcelona (Code: CEEAH 6139); Comit   tic d’Investigaci n en Persones, Societat i Medi Ambient (CEIPSA), Universitat Rovira i Virgili (Code: CEIPSA-2022-PR-0022); Comit  d’ tica i Bioseguritat de la Recerca (CEBRUdG), Universitat de Girona (Code: CEBRU0029-22); Comit  de  tica de la Investigaci n (UAO CEU), Universitat Abat Oliba (Code: 008); Comit  d’ tica de la Recerca, Universitat de Vic-Central de Catalunya (Code: 253/2023); Comiss  de Bio tica, Universitat de Barcelona (CBUB) (Institutional Review Board IRB00003099); Comiss  Institucional de Revisi   tica de Projectes (CIREP), Universitat Pompeu Fabra (Code: 290); Comit  de  tica de Investigaci n y Transferencia (CERT), Universidad de Lleida (Code: CERT1), and endorsed by Comit  d’ tica, Universitat Polit cnica de Catalunya (CEUPC/authorization without registration number); Comit  d’ tica, Universitat Oberta de Catalunya (UOC/authorization without registration number); Comit  d’ tica de la Recerca, Universitat Ramon Llull (CER URL); and Comit   tico de investigaci n (CER), Universitat Internacional de Catalunya (CER-UIC).

Instruments

Ad hoc sociodemographic, academic and mental health questionnaire

The personal, social, and academic variables assessed included age, gender, marital status, community, education level, and mental health diagnoses, and the presence of past or current mental health diagnosis. LGBTQ+ identity was assessed via a single self-report item asking participants whether they identified as part of the LGBTQ+ community (yes/no). As described in the Participants section, this self-identification was used to construct the main grouping variable in the study. Participants who did not identify as part of the LGBTQ+ community are referred to throughout the

manuscript as the “cisgender heterosexual (CH)” group for simplicity. However, it should be noted that this label is used as a shorthand and does not represent a strict classification based on gender identity, sexual orientation, or sex assigned at birth, none of which were directly assessed in this study. Consequently, some degree of heterogeneity may exist within this group. Regarding mental health, in this study, the categories for mental health diagnoses were defined as follows: No (“*never having been diagnosed of mental health disorder*”), Current (“*current diagnosis of mental disorder and symptoms present during the past weeks or 3 months*”), Past (“*past diagnosis of mental disorder but currently recovered and no symptoms present*”) and Past/Current (“*past diagnosis of mental disorder and still present*”).

Measures of psychopathological symptoms

Patient Health Questionnaire (PHQ-9, Diez-Quevedo et al., 2001). The PHQ-9 includes 9 items designed to screen for depression symptoms based in DSM-IV criteria for depressive disorders. Each item is rated on a 4-point Likert scale (*none to almost every day*) with total scores ranging from 0 to 27. Higher scores indicate more depressive symptoms. A raw score of 10 or higher is the cut-off point for clinically significant depression. In this study ($n=7080$), the Cronbach’s alpha indicated a good reliability ($\alpha=0.89$).

Generalized Anxiety Disorder (GAD-7, Mart nez-V zquez et al., 2022; Spitzer et al., 2006). The GAD-7 is a 7-item self-report scale designed to assess anxiety symptoms. Each item is rated on a 4-point Likert scale (not at all to nearly every day), with total scores ranging from 0 to 21. Higher scores indicate more anxiety symptoms. A raw score of 10 or higher is the cut-off point for clinically significant anxiety disorder. In this study ($n=7,080$), the Cronbach’s alpha indicated an excellent reliability ($\alpha=0.91$).

Sick, Control, One, Fat and Food (SCOFF, Morgan et al., 1999; Muro-Sans et al., 2008). The SCOFF is a 5-item self-report questionnaire to assess core features of ED. Each item is rated on a dichotomous answer (“yes”/“no”), with two or more affirmative responses indicating potential risk factors for an ED. In this study ($n=7080$), the Cronbach’s alpha indicated a questionable reliability ($\alpha=0.62$).

Adult ADHD self-report scale v1.1 (ASRS) screener (Kessler et al., 2005, 2007; Richarte et al., 2017). The ASRS screener is a 6-item self-report that assessed symptoms of ADHD based on the DSM-IV symptom criteria. Each item was rated on a 5-point Likert scale (*never to very often*), with total scores ranging from 0 to 24. High scores indicate the possible presence of ADHD. Four or more items with answers in the often or very often categories, is a cut-off of ADHD. In this study ($n=7080$), the Cronbach’s alpha indicated an acceptable reliability ($\alpha=0.73$).

Perceived Stress Scale (PSS-4; Cohen et al., 1983). It is a shortened version of the PSS-10 self-report questionnaire to assess stress. Each item is rated on a 5-point Likert scale (*never* to *very often*). In this study ($n=7080$), the Cronbach's alpha indicated a good reliability ($\alpha=0.82$).

Burnout scale (MBI, Maslach Burnout Inventory; Pérez-Fuentes et al., 2020; Yavuz & Dogan, 2014). It consists of 15 items scored on a Likert-type scale with seven response alternatives from (*never* to *every day*) that assesses burnout in three dimensions: emotional exhaustion, depersonalization and personal accomplishment. In this study ($n=7080$), the Cronbach's alpha indicated an excellent-good reliability for emotional exhaustion ($\alpha=0.78$), depersonalization ($\alpha=0.91$), and personal accomplishment ($\alpha=0.82$).

Life satisfaction and well-being

Life satisfaction (SWLS; Diener et al., 1985; Vázquez et al., 2013). It is a global life satisfaction scale rated on a 7-point Likert scale, ranging from 1 (*Strongly disagree* to *Strongly agree*). The total score ranges from 5 to 35. In this study ($n=7080$), the Cronbach's alpha indicated a good reliability ($\alpha=0.89$).

Five Well-Being Index (WHO-5; Bech, 2004). The WHO-5 is a 5-item self-report questionnaire to assess a person's mental well-being. Each item is rated on a 5-point Likert scale (*At no time* to *all of the time*). The total score ranges from 0 to 25, which is then multiplied by 4 to obtain a score from 0 to 100, with higher scores indicating better well-being. A score of 50 or below indicates low well-being and may be associated with depression. In this study ($n=7080$), the Cronbach's alpha indicated an excellent reliability ($\alpha=0.90$).

Statistical analysis

Student's t-tests were used to examine age differences between communities. Chi-square (χ^2) tests were applied in qualitative variables, with Cramer's V used to estimate effect sizes. Likewise, prevalence ratios (PRs) with 95% confidence intervals were calculated, adopting the prevalence of the CH group as the reference, for dichotomous variables (i.e., prevalence according to cut-off points and formal mental health diagnoses). Analyses of covariance (ANCOVAs) were conducted to assess differences between groups (LGBTQ+ vs. CH) on the scores of the PHQ-9, GAD-7, SCOFF, ASRS, PSS-4, SWLS, and WHO-5. Since significant differences in age were observed between the compared groups, age was included as a covariate in the ANCOVA models to control for its potential confounding effect. Given the conceptual relatedness of the psychological outcomes assessed, a multivariate approach (e.g., MANCOVA) could be considered. However, separate ANCOVA models were conducted to allow for a more

precise interpretation of each mental health construct, which are commonly examined independently in the literature. In addition, given the large sample size, emphasis was placed on effect sizes rather than solely on statistical significance. The consistency of results across outcomes was also considered to mitigate the potential inflation of Type I error associated with multiple comparisons. When significant effects were found, post-hoc analyses were performed using Scheffé's multiple comparison correction. For ANOVAs, omega squared (ω^2) effect size thresholds were: 0.01 (small), 0.06 (medium), and ≥ 0.14 (large). For post-hoc comparisons, Cohen's d thresholds were 0.20 (small), 0.50 (medium), and ≥ 0.80 (large). Correlational analyses were conducted for both groups separately to explore relationships among psychological variables. Given the high correlations observed among variables, two exploratory multiple linear regression analyses were conducted exclusively within the LGBTQ+ sample to identify the strongest predictors of depression and anxiety symptoms, key mental health indicators in this population. The criterion variables were the respective scores on the PHQ-9 and GAD-7. Predictors were selected based on both theoretical relevance and their observed associations with the outcome variables, including stress, life satisfaction, well-being, and ADHD symptoms. A stepwise procedure was used to examine the relative contribution of each predictor, and results were interpreted with caution.

To further examine whether the associations between psychological predictors and mental health outcomes differed between LGBTQ+ and CH students, additional multiple linear regression models were estimated in the full sample. These models included group membership, the same psychological predictors (stress, life satisfaction, well-being, and ADHD symptoms), and their interaction terms with group. All predictors were mean-centred prior to analysis to reduce multicollinearity and facilitate the interpretation of interaction effects. These analyses allowed us to test whether the relationships between predictors and depression and anxiety symptoms varied as a function of group membership.

Results

Sociodemographic and academic profile of LGBTQ+ versus CH communities

Table 1 presents a contingency table for group (LGBTQ+ vs. CH), discipline and degree for each community. Regarding group, a significant effect was found between both communities ($\chi^2=26$; $df=5$, $p<.001$) with a low effect size ($V_{Cramer}=0.19$). As we can see, the female – male categories were very similar among categories, but the categories nonbinary, others and *I prefer not to answer* were higher in the LGBTQ+

Table 1 Contingency table for community and gender, discipline and degree

Gender	Cisgender Heterosexual	LGBTQ+
Female	2422	2379
Male	1107	844
Non-binary	9	223
Others	8	14
I prefer not to answer	14	60
Total	3560	3520
Discipline		
Arts and humanities	593	902
Sciences	315	404
Social sciences	1250	1005
Health sciences	778	763
Engineering and Architecture	620	446
Total	3560	3520
Degree		
Bachelor's degree	2818	3029
Master's/Postgraduate degree	663	442
Doctoral degree	79	49
Total	3560	3520

community. In relation to discipline, a significant effect was found between both communities ($\chi^2=1.31$; $df=4$, $p<.001$) with a low effect size ($V_{Cramer} = 0.14$). The proportion of people studying Health sciences is very similar in both communities. However, there are more students LGBTQ+ in Arts and Humanities and Sciences, while less students that perform degrees related with Social Sciences or Engineering and Architecture. Regarding the degree, a significant effect was found between both communities ($\chi^2 = 58.5$; $df=2$, $p<.001$) with a very low effect size ($V_{Cramer} = 0.09$); the proportion of people studying bachelor's degree was higher in LGBTQ+ community, while students of CH community studying more master's, postgraduate or doctoral degrees.

Finally, there were significant differences between communities in age ($t=23.8$; $df=7045$; $p<.001$, Cohen's $d=0.57$) with a high effect size, indicating higher age in the CH community ($\bar{x}_{age\ LGTBQ+} = 24.1$, $SD_{LGBTQ+} = 6.9$ and $\bar{x}_{age\ H/C} = 29.3$, $SD_{CH} = 10.8$).

Differences between LGBTQ+ status identities in mental health assessment

Psychopathological symptoms

Table 2 summarizes the ANCOVA analysis controlling for age of scores in the different measures of mental health instruments, and Fig. 1 summarizes the different boxplots.

There were significant differences between both communities in the scores of PHQ-9 ($t=15.6$; $df=6665$; $p_{scheff\acute{e}} < 0.001$, Cohen's $d=0.40$) with a small medium effect size.

Table 2 ANCOVA of mental health and well-being variables controlling for age

		<i>F</i>	<i>p</i>	ω^2
PHQ-9	Age	349	<0.001	0.05
	LGBTQ+			
GAD	Age	244	<0.001	0.03
	LGBTQ+	281	<0.001	0.04
SCOFF	Age	139	<0.001	0.02
	LGBTQ+	41.5	<0.001	0.01
ASRS	Age	78.0	<0.001	0.01
	LGBTQ+	293	<0.001	0.04
PSS-4	Age	143	<0.001	0.02
	LGBTQ+	324	<0.001	0.04
Burnout: (EE)	Age	147	<0.001	0.02
	LGBTQ+	639.9	<0.001	0.08
Burnout (PA)	Age	69.5	<0.001	0.01
	LGBTQ+	166.2	<0.001	0.02
Burnout: (DP)	Age	31.2	<0.001	0.00
	LGBTQ+	138.1	<0.001	0.01
SWLS Life Satisfaction	Age	38.3	<0.001	0.01
	LGBTQ+	53.5	<0.001	0.01
WHO-5 well-being	Age	119.5	<0.001	0.02
	LGBTQ+	144	<0.001	0.02
		133	<0.001	0.02

PHQ-9 Patient Health Questionnaire, GAD-7 Generalized Anxiety Disorder, SCOFF eating disorders questionnaire, ASRS Adult ADHD Self-Report Scale, PSS-4 Perceived Stress Scale, Burnout EEMBI's Burnout Emotional Exhaustion Subscale, Burnout PAMBI's Burnout Personal Accomplishment Subscale, Burnout DPMBI's Burnout Emotional Depersonalization Subscale, SWLS Satisfaction With Life Scale, WHO-5 WHO well-being index

The LGBTQ+ community has higher scores on depression in ($\bar{x}_{PHQ-9\ LGTBQ+} = 12.4$, $SD_{PHQ-9\ LGTBQ+} = 6.5$ and $\bar{x}_{PHQ-9\ CH} = 9.1$, $SD_{PHQ-9\ CH} = 6.0$).

In the GAD-7, significant differences were found between both communities ($t=11.8$; $df=6614$; $p_{scheff\acute{e}} < 0.001$, Cohen's $d=0.30$) with a small effect size. The LGBTQ+ community scored higher in anxiety ($\bar{x}_{GAD-7\ LGTBQ+} = 10.7$, $SD_{GAD-7\ LGTBQ+} = 5.7$ and $\bar{x}_{GAD-7\ CH} = 8.3$, $SD_{GAD-7\ CH} = 5.7$).

Significant differences were found in the SCOFF scores between both communities ($t=8.83$; $df=6588$; $p_{scheff\acute{e}} < 0.001$, Cohen's $d=0.23$) with a small effect size. The LGBTQ+ community has higher scores than CH community ($\bar{x}_{SCOFF\ LGTBQ+} = 1.1$, $SD_{SCOFF\ LGTBQ+} = 1.2$ and $\bar{x}_{SCOFF\ CH} = 0.7$, $SD_{SCOFF\ CH} = 1.1$).

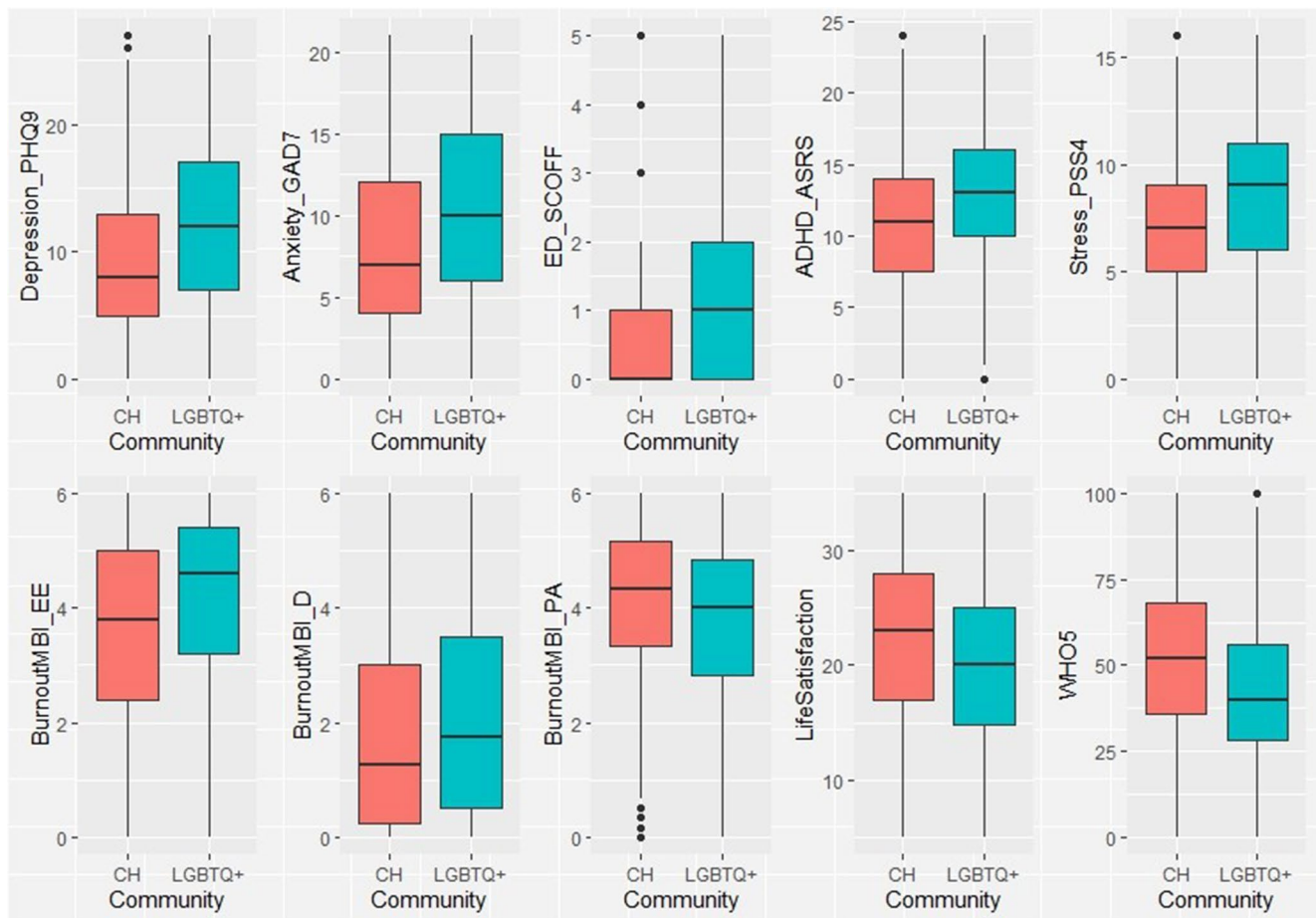


Fig. 1 Boxplots of age and the different test scores for mental health differentiating for communities LGBTQ+ and cisgender heterosexual students

Regarding the ASRS, significant differences were found between both communities ($t=11.9$; $df=6527$; $p_{\text{scheffé}} < 0.001$, Cohen's $d=0.31$) with a small effect size, indicating higher ADHD symptomatology in the LGBTQ+ community ($\bar{x}_{ASRS\text{ LGBTQ+}}=13.0$, $SD_{ASRS\text{ LGBTQ+}}=4.6$ and $\bar{x}_{ASRS\text{ CH}}=10.9$, $SD_{ASRS\text{ CH}}=4.7$).

There were significant differences were found between both communities in the PSS-4 ($t=12.1$; $df=6838$; $p_{\text{scheffé}} < 0.001$, Cohen's $d=0.31$) with a small effect size, indicating higher stress in the LGBTQ+ community ($\bar{x}_{stress\text{ LGBTQ+}}=8.7$, $SD_{stress\text{ LGBTQ+}}=3.3$ and $\bar{x}_{stress\text{ CH}}=7.3$, $SD_{stress\text{ CH}}=3.3$).

Finally, regarding MBI, significant differences were found between both communities in the three dimensions, with a small effect size. Post-hoc analyses revealed the following results: emotional exhaustion (EE; $t=8.34$; $df=7044$; $p_{\text{scheffé}} < 0.001$, Cohen's $d=0.21$), indicating higher EE in the LGBTQ+ community ($\bar{x}_{EE\text{ LGBTQ+}}=4.2$, $SD_{EE\text{ LGBTQ+}}=1.6$ and $\bar{x}_{EE\text{ CH}}=3.7$, $SD_{EE\text{ CH}}=1.5$); depersonalization (DP; $t=6.19$; $df=7044$; $p_{\text{scheffé}} < 0.001$, Cohen's $d=0.153$), the LGBTQ+ community has higher

DP scores ($\bar{x}_{DP\text{ LGBTQ+}}=2.2$, $SD_{DP\text{ LGBTQ+}}=1.9$ and $\bar{x}_{DP\text{ CH}}=1.8$, $SD_{DP\text{ CH}}=1.8$), and in the dimension of personal accomplishment (PA; $t=5.59$; $df=7044$; $p < .001$, Cohen's $d=0.138$) with higher PA scores in the CH community ($\bar{x}_{PA\text{ LGBTQ+}}=3.8$, $SD_{PA\text{ LGBTQ+}}=1.2$ and $\bar{x}_{PA\text{ CH}}=4.1$, $SD_{PA\text{ CH}}=1.2$).

Life satisfaction and well-being

Significant differences were found between both communities in life satisfaction (SWLS; $t=10.9$; $df=6901$; $p_{\text{scheffé}} < 0.001$, Cohen's $d=0.27$) with a small-medium effect size, indicating higher satisfaction in the CH community ($\bar{x}_{LS\text{ LGBTQ+}}=19.9$, $SD_{LS\text{ LGBTQ+}}=7.2$ and $\bar{x}_{LS\text{ CH}}=22.3$, $SD_{LS\text{ CH}}=7.3$). Regarding well-being index (WHO-5) significant differences were found between both communities ($t=11.5$; $df=6800$; $p_{\text{scheffé}} < 0.001$, Cohen's $d=0.29$) with a small-medium effect size, indicating higher well-being in the CH community ($\bar{x}_W\text{ LGBTQ+}=43.3$, $SD_W\text{ LGBTQ+}=19.6$ and $\bar{x}_{QOL\text{ CH}}=50.9$, $SD_{QOL\text{ CH}}=20.9$).

Relationship between diagnoses based on clinical cut-off scores and group (LGBTQ+ vs. CH)

The cut-off points of the measures on anxiety, depression, ED and ADHD were used to establish the presence or absence of disorder in both groups (Table 3). Regarding anxiety, a significant difference was found between both groups ($\chi^2 = 240$; $df = 1$, $p < .001$, $V_{Cramer} = 0.19$) with a low effect size. A higher percentage of the LGBTQ+ community (55.4%) exceeded the cut-off point of anxiety, whereas in the community the percentage was 36.4%. The prevalence ratio for anxiety was $PR = 1.54$ (95%CI 1.46–1.62; $p < .001$), unfavourable for LGBTQ+ community. In relation to depression, a significant relationship was found between both communities ($\chi^2 = 314$; $df = 1$, $p < .001$, $V_{Cramer} = 0.22$) with a moderate effect size. The percentage of the LGBTQ+ community that exceeded the cut-off point of depression (61.8%) was higher than the CH (40.2%). The prevalence ratio for depression was $PR = 1.52$ (95%CI 1.44–1.61; $p < .001$), unfavourable for LGBTQ+ community. For ED, a significant relationship was found between both groups ($\chi^2 = 43.4$; $df = 1$, $p < .001$, $V_{Cramer} = 0.08$) with a very low effect size. The percentage of the LGBTQ+ community that exceeded the cut-off point (14.2%) is higher than the CH community (9.0%). The prevalence ratio for ED was $PR = 1.35$ (95%CI 1.29–1.40; $p < .001$), unfavourable for LGBTQ+ community. Finally, for ADHD, a significant relationship was

Table 3 Contingency table and prevalence ratios (PRs) for mental health symptoms across community gender identities (based on cut-off scores)

Mental health issues	Cisgender Heterosexual	LGBTQ+	PR ratio (95% CI)
Anxiety			
No	1906 (59.8%)	1341 (38.2%)	1
Yes	1280 (40.2%)	2173 (61.8%)	1.54 ** (1.46–1.62)
Total	3186	3514	
Depression			
No	1991 (63.6%)	1569 (44.6%)	1
Yes	1140 (36.4%)	1949 (55.4%)	1.52** (1.44–1.61)
Total	3131	3518	
ED			
No	2834 (91%)	3013 (85.8%)	1
Yes	279 (9%)	498 (14.2%)	1.58 (1.38–1.82)
Total	3113	3511	
ADHD			
No	1532 (50.3%)	1164 (33.1%)	1
Yes	1515 (49.7%)	2352 (66.9%)	1.35** (1.29–1.40)
Total	3047	3516	

CI confidence interval

** $p < .001$

found between both variables ($\chi^2 = 199$; $df = 1$, $p < .001$, $V_{Cramer} = 0.17$) with a low effect size. The percentage of LGBTQ+, community that exceeded the cut-off point for ADHD (66.9%) is higher than the CH (49.7%). The prevalence ratio for ADHD was $PR = 1.58$ (95%CI 1.38–1.22; $p < .001$), unfavourable for LGBTQ+ community.

Relationship between mental health diagnoses and LGBTQ+ status

Participants reported whether they had a current or previous formal diagnosis of anxiety, depression, ED or ADHD (Table 4). Regarding anxiety, a significant relationship was found between both communities ($\chi^2 = 266$; $df = 3$, $p < .001$,

Table 4 Contingency table and prevalence ratios (PRs) by community and self-biographically reported disorders

Reported disorder	Cisgender Heterosexual	LGBTQ+	PR ratio (95% CI)
Anxiety			
No	2703 (75.90%)	2078 (59%)	1
Yes	858 (24.09%)	1442 (40.97%)	1.70** (1.58–1.82)
Currently	116 (3.26%)	234 (6.64%)	
Before	403 (11.31%)	490 (13.92%)	
Currently and before	339 (9.52%)	718 (20.39%)	
Total	3561	3520	
Depression			
No	3052 (85.70%)	2469 (74.14%)	1
Yes	509 (14.29%)	1051 (29.86%)	2.09** (1.89–2.30)
Currently	54 (1.51%)	128 (3.63%)	
Before	322 (9.04%)	562 (15.96%)	
Currently and before	133 (3.73%)	361 (10.25%)	
Total	3561	3520	
Eating			
No	3391 (95.22%)	3096 (89.95%)	1
Yes	170 (4.77%)	424 (12.05%)	2.52** (2.13–3.00)
Currently	21 (0.58%)	46 (1.30%)	
Before	103 (2.89%)	248 (7.04%)	
Currently and before	46 (1.29%)	130 (3.69%)	
ADHD			
No	3448 (96.82%)	3299 (93.72%)	1
Yes	113 (3.17%)	221 (6.28%)	1.98** (1.58–2.47)
Currently	33 (0.92%)	77 (2.18%)	
Before	32 (0.84%)	56 (1.59%)	
Currently and before	48 (1.34%)	88 (2.5%)	
Total	3561	3520	

CI confidence interval

** $p < .001$

$V_{Cramer} = 0.19$) with a low effect size. The percentage of the LGBTQ+ community (20.4%) that have had the diagnosis before and currently is higher than in the CH community (9.5%). The prevalence ratio for past or current diagnosis of anxiety disorder was $PR=1.70$ (95% CI: 1.58–1.82; $p < .001$), unfavourable for LGBTQ+ community. In relation to depression, a significant relationship was found between both variables ($\chi^2 = 262$; $df=3$, $p < .001$, $V_{Cramer} = 0.19$) with a low effect size. A higher percentage of the LGBTQ+ community (10.3%) had been diagnosed before or currently of depression than in the CH community (3.7%). The prevalence ratio for past or current diagnosis of depression disorder was $PR=2.09$ (95% CI: 1.89–2.30; $p < .001$), unfavourable for LGBTQ+ community. In the case of ED, a significant relationship was found between both variables ($\chi^2 = 123$; $df=3$, $p < .001$, $V_{Cramer} = 0.13$) with a low effect size. A higher percentage of the LGBTQ+ community (3.7%) had been diagnosed before or currently of alimentary disorders, than in the CH community (1.3%). The prevalence ratio for past or current diagnosis of ED was $PR=2.52$ (95% CI: 2.13–3.00; $p < .001$), unfavourable for LGBTQ+ community. Finally, regarding ADHD, a significant relationship was found between both variables ($\chi^2 = 39$; $df=3$, $p < .001$, $V_{Cramer} = 0.07$) with a very low effect size. As we can see, a higher percentage of the LGBTQ+ community (2.5%) had been diagnosed before or currently of ADHD than in the CH community (1.3%). The prevalence ratio for past or current diagnosis of ADHD was $PR=1.98$ (95% CI: 1.28–2.47; $p < .001$), unfavourable for LGBTQ+ community.

Interrelationships among mental health and well-being in the LGBTQ+ community

Correlation analyses were conducted separately for LGBTQ+ and CH participants to examine the pattern and strength of associations among study variables. As shown in Table 5, moderate to strong positive correlations were observed between depression, anxiety, and stress in both groups. In particular, the association between depression and anxiety was high ($r = .75$ in LGBTQ+; $r = .76$ in CH), indicating substantial overlap between these constructs across groups. Similarly, stress showed strong associations with both depression and anxiety, reinforcing its central role in psychological distress.

Well-being (WHO-5) and life satisfaction were consistently and moderately to strongly negatively correlated with depression, anxiety, and stress in both groups. These findings highlight the protective role of positive mental health indicators, with slightly stronger associations observed in the LGBTQ+ group in some cases (e.g., depression and WHO-5: $r = -.67$ vs. $r = -.66$). Burnout, particularly

Table 5 Main correlations between psychological variables for both groups

Variables	LGBTQ+ (r (r^2 , p))	CH (r (r^2 , p))
Depression-Anxiety	0.75 (0.56; $p < .001$)	0.76 (0.58; $p < .001$)
Depression-Stress	0.70 (0.49; $p < .001$)	0.70 (0.49; $p < .001$)
Anxiety-Stress	0.64 (0.41; $p < .001$)	0.66 (0.43; $p < .001$)
Depression-WHO-5	−0.67 (0.45; $p < .001$)	−0.66 (0.43; $p < .001$)
Anxiety-WHO-5	−0.55 (0.31; $p < .001$)	−0.58 (0.34; $p < .001$)
Stress-WHO-5	−0.67 (0.45; $p < .001$)	−0.66 (0.44; $p < .001$)
Depression-LS	−0.60 (0.36; $p < .001$)	−0.56 (0.32; $p < .001$)
Anxiety-LS	−0.46 (0.22; $p < .001$)	−0.48 (0.23; $p < .001$)
Stress-LS	−0.67 (0.45; $p < .001$)	−0.67 (0.44; $p < .001$)
Stress-Burnout (EE)	0.45 (0.20; $p < .001$)	0.45 (0.20; $p < .001$)
Depression-Burnout (EE)	0.50 (0.25; $p < .001$)	0.51 (0.26; $p < .001$)
Anxiety-Burnout (EE)	0.46 (0.21; $p < .001$)	0.48 (0.23; $p < .001$)
ADHD-Depression	0.46 (0.21; $p < .001$)	0.50 (0.25; $p < .001$)
ADHD-Anxiety	0.41 (0.17; $p < .001$)	0.45 (0.20; $p < .001$)
ADHD-Stress	0.41 (0.17; $p < .001$)	0.45 (0.20; $p < .001$)

emotional exhaustion, was positively associated with depression, anxiety, and stress, with moderate effect sizes in both groups. Cynicism showed similar but slightly weaker associations, while professional efficacy was negatively related to psychological distress, suggesting a protective effect. ADHD symptoms were moderately correlated with depression, anxiety, and stress in both groups, indicating a consistent pattern of comorbidity. Likewise, eating disorder risk (SCOFF) showed small to moderate positive associations with psychological distress variables. Overall, the pattern of correlations was highly similar across LGBTQ+ and CH participants, with only minor differences in magnitude. In general, associations tended to be slightly stronger in the LGBTQ+ group, although the overall structure of relationships remained consistent. For completeness, the full set of correlations, including all pairwise associations for both groups, is presented in Table S1 (Supplementary Material).

As correlations among variables were relatively high, two exploratory multiple linear regression analyses (stepwise method) were conducted within the LGBTQ+ subsample to identify the strongest predictors of depression and anxiety symptoms, which are key mental health indicators in this population. Stress, life satisfaction, well-being, and ADHD symptoms were included as predictors. Table 6 presents the regression models predicting depression and anxiety scores. For depression, the model explained 61% of the variance in PHQ-9 scores, whereas for anxiety, the model explained 47% of the variance in GAD-7 scores. In both cases, higher

Table 6 Best stepwise linear model for PHQ-9 depression test scores and for the GAD-7 anxiety score

	PHQ-9 depression scores (β (SE))	GAD-7 anxiety scores (β (SE))
Intercept	8.91 (0.54)	3.41 (0.56)
Stress	0.65 (0.65)	0.72 (0.03)
LS	-0.08 (0.01)	-0.04 (0.01)
WHO-5	-0.11 (0.005)	-0.07 (0.005)
ASRS	0.31 (0.02)	0.25 (0.02)

Model information:

Depression: $R^2 = 0.61$, Adjusted $R^2 = 0.61$, $F(4, 3499) = 1378$, $p < .001$

Anxiety: $R^2 = 0.47$, Adjusted $R^2 = 0.47$, $F(4, 3499) = 764$, $p < .001$

All predictors were statistically significant ($p < .001$) in the model and a $p > .05$ in Anderson's Darling test of normality, the Ramsey Regression Equation Specification Error (RESET) test, Durbin Watson's test, and the Breusch-Pagan test. β Parameter estimation, SE Standard error, FF Snedecor's test (ANOVA), LS life satisfaction, WHO-5 well-being, ASRS attention deficit hyperactivity disorder symptoms

levels of stress and ADHD symptoms, as well as lower levels of life satisfaction and well-being, were associated with increased depression and anxiety symptoms.

To examine whether these associations were specific to LGBTQ+ students or reflected more general patterns, additional regression models including interaction terms with group membership were conducted in the full sample, Table 7 presents the regression models for both groups. These models explained 62.5% of the variance in depression scores and 49.9% of the variance in anxiety scores. For depressive symptoms, the overall pattern of associations was largely similar across groups; however, significant interaction effects were observed for life satisfaction and well-being, indicating that these protective factors were

Table 7 Multiple linear regression model including interaction terms between group membership and psychological predictors for depression (PHQ-9 scores) and anxiety scores (GAD-7)

	PHQ-9 depression scores (β (SE; p))	GAD-7 anxiety scores (β (SE; p))
Intercept	10.25 (0.07; $p < .001$)	9.35 (0.07; $p < .001$)
Group (LGBTQ+ vs CH)	0.95 (0.10; $p < .001$)	0.43 (0.11; $p < .001$)
Stress	0.69 (0.03; $p < .001$)	0.77 (0.03; $p < .001$)
LS	-0.03 (0.01; $p = .085$)	0.045 (0.015; $p = .003$)
WHO-5	-0.09 (0.005; $p < .001$)	-0.070 (0.005; $p < .001$)
ASRS	0.70 (0.047; $p < .001$)	0.57 (0.05; $p < .001$)
Group x Stress	-0.009 (0.045; $p = .836$)	-0.015 (0.047; $p = .747$)
Group x LS	-0.060 (0.02; $p = .003$)	-0.009 (0.021; $p = .674$)
Group x WHO-5	-0.017 (0.007; $p = .018$)	0.001 (0.007; $p = .901$)
Group x ASRS	0.039 (0.065; $p = .550$)	0.02 (0.067; $p = .750$)

more strongly associated with lower depressive symptoms in LGBTQ+ students. In contrast, for anxiety symptoms, no significant interaction effects were found, suggesting that the relationships between predictors and anxiety were comparable across LGBTQ+ and CH students.

Discussion

A substantial body of research indicates that individuals identifying as LGBTQ+ experience significantly poorer outcomes in depression, anxiety, and overall mental health and well-being compared with their CH counterparts. In light of this evidence, it was hypothesized that self-identified LGBTQ+ university students would experience poorer mental health outcomes and report lower levels of life satisfaction and well-being than their CH peers. It was further anticipated that LGBTQ+ students would be more likely to meet clinical cut-off criteria indicative of elevated mental health risk on standardized psychopathology measures. Additionally, we expected that LGBTQ+ university students would report higher rates of current or previous formal diagnoses of anxiety, depression, ED, and ADHD compared with their CH counterparts. Finally, analyses focusing exclusively on LGBTQ+ students examined correlations followed by regression models to determine whether stress, life satisfaction, well-being, and ADHD symptoms functioned as significant predictors of anxiety and depression, two mental health conditions that are particularly prevalent within this population.

Regarding sociodemographic and university variables, a higher proportion of students identifying as non-binary, "other," or preferring not to disclose their gender identity was observed in the LGBTQ+ group compared with the CH group. This pattern reflects the study's operationalization of group membership based on self-identification with the LGBTQ+ community rather than on specific sexual orientation or gender identity categories. Although sexual orientation and gender identity are distinct constructs, gender-diverse individuals are more likely to affiliate with LGBTQ+ communities, which encompass diverse identities and may offer self-identification and visibility particularly relevant for individuals facing gender-related marginalization (Frankis, 2025). Accordingly, the greater representation of non-binary participants within the LGBTQ+ group likely reflects patterns of self-identification rather than conceptual overlap between gender identity and sexual orientation. With regard to university discipline, a higher proportion of the LGBTQ+ community was in Arts and Humanities and Sciences, whereas less proportion in Social Sciences or Engineering and Architecture. Finally, more people of the LGBTQ+ community were studying bachelor's degree, as

well as were younger than people of the CH community. Despite potential biases in our sample, some studies have reported that LGBTQ+ individuals face disadvantages in science, technology, engineering, and math (STEM) fields (Cech & Waidunas, 2021).

Regarding the first hypothesis, the findings provided partial support, as LGBTQ+ university students exhibited higher levels of psychopathological symptoms, including depression, anxiety, eating disorder, and ADHD symptomatology, compared with their CH peers, although the observed effect sizes were small. These findings align with previous research showing a higher prevalence of mental health issues among individuals of this community (Borgogna et al., 2019; Dawson et al., 2017; Downing & Przedworski, 2018; Gnan et al., 2019; Goetz & Adams, 2024; Matthews-Ewald et al., 2014). LGBTQ+ students also reported higher scores for stress and negative burnout dimensions, specifically emotional exhaustion and depersonalization. This is consistent with research linking minority status to chronic stress exposure and sustained psychological burden (Borgogna et al., 2019; Frost & Meyer, 2023; Samuels et al., 2021). Conversely, higher levels of personal accomplishment, life satisfaction, and well-being were observed among CH students. These results parallel findings from large-scale studies indicating lower life satisfaction among transgender students compared with cisgender peers (Anderssen et al., 2020). Taken together, these patterns suggest that even small mean-level differences in mental health and well-being may accumulate into meaningful disparities in psychological burden among sexual and gender minority university students.

Regarding the second hypothesis, the results confirmed that a higher proportion of LGBTQ+ university students exceeded the clinical cut-off criteria for depression, anxiety, ADHD, and ED risk compared with CH students. Similarly, a higher percentage of students who identify as LGBTQ+ reported a higher percentage of both past and current formal diagnosis of depression, anxiety, ADHD or ED. Belonging to the LGBTQ+ community was associated with a small to moderate increased risk of mental disorders compared with CH community, with risk estimates ranging between 35% and 58%. In turn, LGBTQ+ group membership was associated with a higher likelihood of reporting a formal mental disorder diagnosis, with an increased risk ranging from 70% to 152% compared to the CH community, becoming a predictive factor of moderate effect size. These findings are consistent with results reported by Dawson et al. (2017), who showed that transgender individuals report elevated rates of diagnoses of depression, anxiety, and ADHD compared with cisgender individuals.

With respect to the third hypothesis, LGBTQ+ students were consistently more likely than cisgender heterosexual (CH) peers to exceed clinical cut-off thresholds

on standardized psychopathology measures and to report having received mental health diagnoses. These disparities indicate a higher mental health risk among LGBTQ+ university students, although the magnitude of differences varied across conditions. Anxiety and depression emerged as the most prevalent diagnoses in both groups, with substantially higher proportions observed among LGBTQ+ participants. The prevalence of past or current anxiety diagnoses was nearly twice as high in the LGBTQ+ group compared with CH peers, while the disparity was even greater for depression, with LGBTQ+ students exhibiting more than double the prevalence. These results are in line with those of Dawson et al. (2017), who showed that transgender people report elevated rates of current and prior diagnoses of depression (61.1%), anxiety (46.3%), and ADHD (20.4%) compared to people who identify as men or women. Rather than reflecting disorder-specific vulnerabilities, these disparities likely represent broader patterns of psychological distress associated with minority status. In line with minority stress theory (Meyer, 1995, 2003), such inequalities may stem from chronic exposure to distal and proximal stressors such as discrimination, stigma, and social marginalization, which interact with general life stressors to increase overall psychological burden. Importantly, minority stress processes unfold within broader structural and institutional contexts, including access to affirming and appropriate mental health care. Prior research indicates that LGBTQ+ individuals particularly transgender and nonbinary people often face barriers to accessing mental health services due to fears of discrimination, limited provider competence, or previous negative experiences within healthcare systems (Baiocco et al., 2022; Mezzalana et al., 2025). These barriers may delay help-seeking or reduce engagement with psychological support, thereby amplifying mental health disparities. In particular, improving healthcare providers' cultural competence, expanding access to affirming and inclusive mental health services, and strengthening the enforcement of non-discrimination policies emerge as key strategies to promote well-being and reduce mental health disparities within this population (Cruciani et al., 2026; Fredriksen-Goldsen et al., 2014; Peterson et al., 2021). In university settings, where mental health services play a central role in student well-being, the availability and perceived safety of affirmative support services may constitute a key explanatory pathway underlying observed disparities. In this context, evidence suggests that the mere availability of mental health services is insufficient; rather, the perceived safety, affirmativeness, and inclusivity of these services play a central role in shaping psychological outcomes among sexual and gender minority students, potentially mediating mental health disparities through their effects on perceived belonging, trust in providers, and engagement with care rather than

service utilization alone (McField et al., 2025; Murchison et al., 2026).

Finally, with respect to the fourth hypothesis, significant associations were observed among mental health indicators within the LGBTQ+ group. Symptoms of depression, anxiety, ED, and ADHD, as well as stress, burnout (including emotional exhaustion and depersonalization), and age, were positively interrelated, whereas life satisfaction and well-being showed inverse associations. Given the conceptual overlap among several of these measures, the strong correlations observed likely reflect shared variance among closely related aspects of psychological distress and well-being rather than distinct causal processes. Accordingly, exploratory regression analyses were interpreted with caution. Although stress, ADHD symptoms, life satisfaction, and well-being accounted for substantial proportions of variance in depression and anxiety, these findings should not be interpreted as identifying unique predictors, particularly given the cross-sectional design. Instead, the results suggest that mental health outcomes among LGBTQ+ students are embedded within an interconnected system of psychological strain and protective resources. Notably, supplementary analyses indicated that the overall pattern of associations was largely shared with CH students, with no statistically significant differences observed in the magnitude of the associations among the assessed well-being and emotional distress variables between LGBTQ+ and non-LGBTQ+ students. Life satisfaction and well-being were associated with depressive symptoms in both groups, showing highly comparable predictive strength; the observed differences were minimal and do not support strong group-specific interpretations. Although stress, life satisfaction, well-being, and ADHD symptomatology have been consistently linked to mental health outcomes, their specific role within LGBTQ+ university students has not yet been sufficiently examined, particularly given the potential influence of minority-specific stressors such as discrimination and stigma, which may interact with general psychological risk and protective factors (Parchem et al., 2024; Xi & Peralta, 2025). In this context, and consistent with public-health-oriented mental health models, over-emphasizing group-specific distinctions when differences are small or non-significant may inadvertently contribute to stigma or discourage help-seeking (Ingram et al., 2024). Accordingly, the findings of the present study tentatively suggest that approaches aimed at enhancing well-being and life satisfaction may be considered within broader, university-wide mental health frameworks. When implemented inclusively, such universal approaches may help normalize depressive symptoms and their associated factors as shared experiences among university students, rather than framing them as characteristics unique to specific identity groups (Lindström, 2024).

In sum, the present findings indicate that legal protections and formal inclusion policies alone are insufficient to eliminate mental health inequalities among LGBTQ+ university students. Despite increasing social acceptance and the expansion of legal protections in many European contexts (Córdoba, 2021; Flores, 2019), sexual and gender minority students continue to experience discrimination and minority stress that place them at elevated risk for psychological distress. Within the Catalan university system, most institutions have established dedicated units, services, and growing institutional awareness of the need for protective actions. However, from a public-health perspective, over-emphasizing group-specific distinctions, particularly when empirical differences are small or non-significant, may inadvertently contribute to stigma or discourage help-seeking (Ingram et al., 2024). Explicitly linking empirically observed mental health disparities to institutional and contextual factors thus underscores the importance of developing accessible, visible, and affirming support services within higher education. In this regard, inclusive, university-wide mental health frameworks that promote well-being and life satisfaction across the student population, while remaining responsive to minority-specific stressors, may help normalize psychological distress as a shared experience and reduce the persistence of mental health inequalities among LGBTQ+ university students (Lindström, 2024).

This study has several limitations that should be considered when interpreting the findings. First, mental health status and psychopathological symptoms were assessed exclusively through self-report measures. As such, the results may be subject to reporting biases, including social desirability or subjective over- or underestimation of symptoms. Future research would benefit from combining self-reported data with additional methodologies, such as clinical interviews or clinician-rated assessments, to enhance diagnostic accuracy. Second, although the use of multiple self-report questionnaires allowed for a differentiated assessment of specific psychopathological domains, this approach did not yield a comprehensive or global indicator of overall psychopathology that could capture general mental health burden. Consequently, the strong interrelations observed among mental health variables should be interpreted in light of this conceptual overlap. Third, the LGBTQ+ population was treated as a single group without differentiation by specific sexual orientations or gender identities. While this approach was consistent with the study's aims and sample size, it may obscure meaningful within-group heterogeneity, given the diversity of experiences and risk profiles among sexual and gender minority individuals (Rees et al., 2021). Future studies should explore subgroup-specific patterns within the LGBTQ+ community, including lesbian, gay, bisexual, and transgender or nonbinary (TNB) students, to better capture

within-group heterogeneity. Relatedly, group classification was based on a single self-report item assessing identification with the LGBTQ+ community. Participants who did not identify as LGBTQ+ were grouped under the label “cisgender heterosexual (CH)” for analytical simplicity. However, this classification should be interpreted with caution, as sex assigned at birth was not assessed and group membership was not based on a formal evaluation of gender identity or sexual orientation. As a result, some degree of heterogeneity may also exist within the CH group. Fourth, the regression analyses relied on a stepwise procedure, which has been criticized for its data-driven nature and potential instability across samples. Although this approach was used in an exploratory manner and predictors were selected based on theoretical relevance and prior associations, the results should be interpreted with caution. Replication using theory-driven modelling strategies is therefore warranted. Fifth, additional regression models including interaction terms were conducted to explore differences between LGBTQ+ and CH students; however, these analyses were exploratory in nature. Future research should further investigate potential group differences using more comprehensive modelling approaches and longitudinal designs. Finally, the cross-sectional design of the study precludes causal inferences regarding the relationships observed among mental health variables. Longitudinal studies are needed to clarify the directionality and temporal dynamics underlying mental health disparities among LGBTQ+ university students.

Some strengths of the study are also worth noting. The findings are consistent with previous research, and to the best of our knowledge, this is among the first to examine such a wide range of mental health variables within a very large sample of LGBTQ+ university students. Moreover, with the exception of one of the eight standardized assessment instruments used (SCOFF), the overall quality of the data supports the robustness of the conclusions. Importantly, this study contributes to the early identification and prevention of mental health problems among LGBTQ+ university students. The findings may inform the development of targeted support programs for individuals at elevated risk. Furthermore, a better understanding of the interrelationships among mental health variables in this population may help guide the design of more effective and tailored interventions that address their specific challenges and needs, potentially enhancing students’ sense of belonging, engagement with the university environment, and overall, well-being.

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Data availability Data is available on request from the authors.

Declarations

Ethical approval The study was approved by the ethics committees of all participating Catalan universities, and a uniform procedure was applied across all institutions. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Informed consent Informed consent was obtained from all individual participants included in the study. Participants also consented to this research study’s publication in a journal.

Conflict of interest There are no competing interests to declare from the authors.

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References

- Anderssen, N., Sivertsen, B., Lønning, K. J., et al. (2020). Life satisfaction and mental health among transgender students in Norway. *BMC Public Health*, 20, Article 138. <https://doi.org/10.1186/s12889-020-8228-5>
- 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., WHO WMH-ICS Collaborators. (2018). WHO world mental health surveys international college student project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology*, 127(7), 623–638. <https://doi.org/10.1037/abn0000362>
- Baiocco, R., Pezella, A., Pistella, J., Kouta, C., Rousou, E., Rocamora-Perez, P., López-Liria, R., Dudau, V., Doru, A. M., Kuckert-Wösthelrich, A., Ziegler, S., Nielsen, D. S., Bay, L. T., & Papadopoulos, I. (2022). LGBT+ Training Needs for Health and Social Care Professionals: A Cross-cultural Comparison Among Seven European Countries. *Sexuality Research and Social Policy*, 19(1), 22–36. <https://doi.org/10.1007/s13178-020-00521-2>

- Bech, P. (2004). Measuring the dimension of psychological general well-being by the WHO-5. *Quality of Life Newsletter*, 32, 15–16.
- Borgogna, N. C., McDermott, R. C., Aita, S. L., & Kridel, M. M. (2019). Anxiety and depression across gender and sexual minorities: Implications for transgender, gender nonconforming, pansexual, demisexual, asexual, queer, and questioning individuals. *Psychology of Sexual Orientation and Gender Diversity*, 6(1), 54–63. <https://doi.org/10.1037/sgd0000306>
- Bretherton, I., Thrower, E., Zwickl, S., Wong, A., Chetcuti, D., Grossmann, M., Zajac, J. D., & Cheung, A. S. (2021). The health and well-being of transgender Australians: A national community survey. *LGBT Health*, 8(1), 42–49. <https://doi.org/10.1089/lgbt.2020.0178>
- Campbell, F., Blank, L., Cantrell, A., Baxter, S., Blackmore, C., Dixon, J., & Goyder, E. (2022). Factors that influence mental health of university and college students in the UK: A systematic review. *BMC Public Health*, 22(1), Article 1778. <https://doi.org/10.1186/s12889-022-13943-x>
- Carper, T. L., Negy, C., & Tantleff-Dunn, S. (2010). Relations among media influence, body image, eating concerns, and sexual orientation in men: A preliminary investigation. *Body Image*, 7(4), 301–309. <https://doi.org/10.1016/j.bodyim.2010.07.002>
- Cech, E. A., & Waidunas, T. J. (2021). Systemic inequalities for LGBTQ professionals in STEM. *Science Advances*, 7(3), Article eabe0933. <https://doi.org/10.1126/sciadv.abe0933>
- Christie, C. (2021). What is hidden can still hurt: Concealable stigma, psychological well-being, and social support among LGB college students. *Sexuality Research & Social Policy*, 18(3), 693–701. <https://doi.org/10.1007/s13178-020-00492-4>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385–396. <https://doi.org/10.2307/2136404>
- Córdoba, C. R. (2021). La situación actual del Colectivo LGTBI en España. Un análisis legislativo de los derechos reconocidos y la protección de víctimas de discriminación por orientación sexual y/o identidad o expresión de género. *EHQUIDAD International Welfare Policies and Social Work*, 16, 141–164. <https://doi.org/10.15257/ehquidad.2021.0017>
- Cruciani, G., Quintigliano, M., Mezzalana, S., Scandurra, C., & Carone, N. (2026). How Epistemic Stances Shape Quality of Life Through Healthcare Barriers in LGBTQ+ populations: A Comparison between Cisgender and Transgender, Nonbinary, and Questioning Individuals. *Sexuality Research and Social Policy*. <https://doi.org/10.1007/s13178-025-01245-x>
- Cunningham, T. J., Xu, F., & Town, M. (2018). Prevalence of five health-related behaviors for chronic disease prevention among sexual and gender minority adults—25 U.S. states and Guam, 2016. *MMWR. Morbidity and Mortality Weekly Report*, 67(32), 888–893. <https://doi.org/10.15585/mmwr.mm6732a4>
- Dawson, A. E., Wymbs, B. T., Gidycz, C. A., Pride, M., & Figueroa, W. (2017). Exploring rates of transgender individuals and mental health concerns in an online sample. *International Journal of Transgenderism*, 18(3), 295–304. <https://doi.org/10.1080/15532739.2017.1314797>
- Diemer, E. W., Grant, J. D., Munn-Chernoff, M. A., Patterson, D. A., & Duncan, A. E. (2015). Gender Identity, Sexual Orientation, and Eating-Related Pathology in a National Sample of College Students. *The Journal of Adolescent Health: Official publication of the Society for Adolescent Medicine*, 57(2), 144–149. <https://doi.org/10.1016/j.jadohealth.2015.03.003>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13
- Diez-Quevedo, C., Rangil, T., Sanchez-Planell, L., Kroenke, K., & Spitzer, R. L. (2001). Validation and utility of the patient health questionnaire in diagnosing mental disorders in 1003 general hospital Spanish inpatients. *Psychosomatic Medicine*, 63(4), 679–686. <https://doi.org/10.1097/00006842-200107000-0002>
- Downing, J. M., & Przedworski, J. M. (2018). Health of transgender adults in the U.S., 2014–2016. *American Journal of Preventive Medicine*, 55(3), 336–344. <https://doi.org/10.1016/j.amepre.2018.04.045>
- Dueñas, J. M., Racionero-Plaza, S., Melgar, P., & Sanvicén-Torné, P. (2021). Identifying violence against the LGTBI+ community in Catalan universities. *Life Sciences Society and Policy*, 17(1), 3. <https://doi.org/10.1186/s40504-021-00112-y>
- Flores, A. R. (2019). *Social Acceptance of LGBT People in 174 Countries, 1981 to 2017*. <https://williamsinstitute.law.ucla.edu/wp-content/uploads/Global-Acceptance-Index-LGBT-Oct-2019.pdf>
- Frankis, J. S. (2025). Understanding the mental health of LGBTQIA+ communities in Western Countries: What can nurses do to help? *Evidence-Based Nursing*, 28(1), 1–3. <https://doi.org/10.1136/ebnurs-2024-104159>
- Fredriksen-Goldsen, K. I., Simoni, J. M., Kim, H. J., Lehavot, K., Walters, K. L., Yang, J., Hoy-Ellis, C. P., & Muraco, A. (2014). The health equity promotion model: Reconceptualization of lesbian, gay, bisexual, and transgender (LGBT) health disparities. *The American Journal of Orthopsychiatry*, 84(6), 653–663. <https://doi.org/10.1037/ort0000030>
- Frost, D. M., & Meyer, I. H. (2023). Minority stress theory: Application, critique, and continued relevance. *Current Opinion in Psychology*, 51, Article 101579. <https://doi.org/10.1016/j.copsyc.2023.101579>
- Generalitat de Catalunya. Departament de Recerca i Universitats (2023). *Estudi sobre la salut mental en el sistema universitari de Catalunya. Informe de resultats de l'estudiantat, del personal tècnic, de gestió i d'administració i serveis (PTGAS) i del personal docent i investigador (PDI)*. <https://eureka.bibliotecadigital.gencat.cat/handle/20.500.14344/461>
- Gnan, G. H., Rahman, Q., Ussher, G., Baker, D., West, E., & Rimes, K. A. (2019). General and LGBTQ-specific factors associated with mental health and suicide risk among LGBTQ students. *Journal of Youth Studies*, 22(10), 1393–1408. <https://doi.org/10.1080/13676261.2019.1581361>
- Goetz, T. G., & Adams, N. (2024). The transgender and gender diverse and attention deficit hyperactivity disorder nexus: A systematic review. *Journal of Gay & Lesbian Mental Health*, 28(1), 2–19. <https://doi.org/10.1080/19359705.2022.2109119>
- Hartung, C. M., Lefler, E. K., Abu-Ramadan, T. M., Stevens, A. E., Serrano, J. W., Miller, E. A., & Shelton, C. R. (2025). A Call to Analyze Sex, Gender, and Sexual Orientation in Psychopathology Research: An Illustration with ADHD and Internalizing Symptoms in Emerging Adults. *Journal of Psychopathology and Behavioral Assessment*, 47(1), 18. <https://doi.org/10.1007/s10862-024-10188-3>
- Ingram, E., Schlieff, M., Pachankis, J. E., Levy, G., Stefanidou, T., Wright, T., & Lewis, G. (2024). Mental health inequality in young LGBT+ people demands early universal interventions. *Nature Mental Health*, 2, 257–258. <https://doi.org/10.1038/s44220-024-00201-9>
- Institut d'Estadística, & de Catalunya, IDESCAT. (2022). *Statistics on University Teaching*. <https://www.idescat.cat/pub/?id=eu=&en>
- Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., Howes, M. J., Jin, R., Secnik, K., Spencer, T., Ustun, T. B., & Walters, E. E. (2005). The World Health Organization Adult ADHD Self-Report Scale (A screening scale for use in the general population). *Psychological Medicine*, 35(2), 245–256. <https://doi.org/10.1017/s0033291704002892>
- Kessler, R. C., Adler, L., Gruber, M. J., Sarawate, C. A., Spencer, T., & Van Brunt, D. L. (2007). Validity of the World Health Organization Adult ADHD Self-Report Scale (ASRS) Screener in a representative sample of health plan members. *International Journal*

- of *Methods in Psychiatry Research*, 16(2), 52–65. <https://doi.org/10.1002/mpr.208>
- King, M., Semlyen, J., Tai, S. S., Killaspy, H., Osborn, D., Popelyuk, D., & Nazareth, I. (2008). A systematic review of mental disorder, suicide, and deliberate self-harm in lesbian, gay and bisexual people. *Bmc Psychiatry*, 8(1), 70. <https://doi.org/10.1186/1471-244X-8-70>
- Klinger, D., Oehlke, S. M., Riedl, S., Eschbaum, K., Zesch, H. E., Karwautz, A., Plener, P. L., & Kothgassner, O. D. (2024). Mental health of non-binary youth: A systematic review and meta-analysis. *Child and adolescent psychiatry and mental health*, 18(1), 126. <https://doi.org/10.1186/s13034-024-00822-z>
- Lefevor, G. T., Boyd-Rogers, C. C., Sprague, B. M., & Janis, R. A. (2019). Health disparities between genderqueer, transgender, and cisgender individuals: An extension of minority stress theory. *Journal of Counseling Psychology*, 66(4), 385–395. <https://doi.org/10.1037/cou0000339>
- Lindström, M. (2024). Promoting social and mental health among higher education students: Student engagement in co-creating a universal health-promotive intervention. *Research Square*. <https://doi.org/10.21203/rs.3.rs-9457082/v1>
- Marchi, M., Travascio, A., Uberti, D., De Micheli, E., Grenzi, P., Arcolin, E., Pingani, L., Ferrari, S., & Galeazzi, G. M. (2023). Post-traumatic stress disorder among LGBTQ people: A systematic review and meta-analysis. *Epidemiology and Psychiatric Sciences*, 32, Article e44. <https://doi.org/10.1017/S2045796023000586>
- Martínez-Vázquez, S., Martínez-Galiano, J. M., Peinado-Molina, R. A., Gutiérrez- Sánchez, B., & Hernández-Martínez, A. (2022). Validation of general anxiety disorder (GAD-7) questionnaire in Spanish nursing students. *PeerJ*, 10, Article e14296. <https://doi.org/10.7717/peerj.14296>
- Marx, R. A., Maffini, C. S., & Peña, F. J. (2024). Understanding non-binary college students' experiences on college campuses: An exploratory study of mental health, campus involvement, victimization, and safety. *Journal of Diversity in Higher Education*, 17(3), 330–345. <https://doi.org/10.1037/dhe0000422>
- Mason, A., Rapsey, C., Sampson, N., Lee, S., Albor, Y., Al-Hadi, A. N., Alonso, J., Al-Saud, N., Altwaijri, Y., Andersson, C., Atwoli, L., Auerbach, R. P., Ayuya, C., Báez-Mansur, P. M., Ballester, L., Bantjes, J., Baumeister, H., Bendtsen, M., Benjet, C., & van der Heijde, C. (2025). Prevalence, Age-of-Onset, and Course of Mental Disorders among 72,288 First-Year University Students from 18 Countries in the World Mental Health International College Student (WMH-ICS) Initiative. *Journal of Psychiatric Research*, 183, 225–236. <https://doi.org/10.1016/j.jpsychires.2025.02.016>
- Matthews-Ewald, M. R., Zullig, K. J., & Ward, R. M. (2014). Sexual orientation and disordered eating behaviors among self-identified male and female college students. *Eating Behaviors*, 15(3), 441–444. <https://doi.org/10.1016/j.eatbeh.2014.05.002>
- McField, A. A., Rogers, M. L., Wilson, K. J., & Oberle, C. D. (2025). Campus climate and sense of belonging explain the relationship between DEI initiatives and mental health of LGBTQ+ college students. *Journal of American college health: J of ACH*, 1–7. Advance online publication. <https://doi.org/10.1080/07448481.2025.2577648>
- Meyer, I. H. (1995). Minority stress and mental health in gay men. *Journal of Health and Social Behavior*, 36(1), 38–56. <https://doi.org/10.2307/2137286>
- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, 129(5), 674–697. <https://doi.org/10.1037/0033-2909.129.5.674>
- Mezzalana, S., Cruciani, G., Quintigliano, M., Boichicchio, V., Carone, N., & Scandurra, C. (2025). Perceived Stigma and Quality of Life in Binary and Nonbinary/Queer Transgender Individuals in Italy: The Mediating Roles of Patient–Provider Relationship Quality and Barriers to Care. *European Journal of Investigation in Health Psychology and Education*, 15(6), 113. <https://doi.org/10.3390/ejihpe15060113>
- Miranda-Mendizabal, A., Castellví, P., Vilagut, G., Alayo, I., Almenara, J., Ballester, L., Echeburúa, E., Gabilondo, A., Gili, M., Mortier, P., Piqueras, J. A., Roca, M., Auerbach, R. P., Bruffaerts, R., Kessler, R. C., & Caballero, A., J (2024). Suicidal ideation risk among LGB Spanish university students: The role of childhood and adolescence adversities and mental disorders. *Journal of Affective Disorders*, 353, 52–59. <https://doi.org/10.1016/j.jad.2024.02.084>
- Morgan, J., Reid, F., & Lacey, J. (1999). The SCOFF questionnaire: Assessment of a new screening tool for eating disorders. *Bmj*, 319, 1467–1468. <http://bmj.com/cgi/content/full/319/7223/1467>
- Murchison, G. R., van Seager, I., Wolfe, H. L., & Lipson, S. K. (2026). Transgender/nonbinary college and university students' perceptions and use of mental health services: Comparisons to peers in a large U.S. sample. *Journal of American college health: J of ACH*, 74(2), 313–324. <https://doi.org/10.1080/07448481.2025.2472202>
- Muro-Sans, P., Amador-Campos, J. A., & Morgan, J. F. (2008). The SCOFF-c: Psychometric properties of the Catalan version in a Spanish adolescent sample. *Journal of Psychosomatic Research*, 64(1), 81–86. <https://doi.org/10.1016/j.jpsychores.2007.06.011>
- Oswalt, S. B., & Wyatt, T. J. (2011). Sexual orientation and differences in mental health, stress, and academic performance in a national sample of U.S. college students. *Journal of Homosexuality*, 58(9), 1255–1280. <https://doi.org/10.1080/00918369.2011.605738>
- Parchem, B., Wheeler, A., Talaski, A., & Molock, S. D. (2024). Comparison of anxiety and depression rates among LGBTQ college students before and during the COVID-19 pandemic. *Journal of American college health: J of ACH*, 72(1), 31–39. <https://doi.org/10.1080/07448481.2021.2013238>
- Pérez-Fuentes, M., Molero Jurado, M., Simón Márquez, M., Oropesa Ruiz, N., & Gázquez Linares, J. (2020). Validation of the Maslach burnout inventory- student survey in Spanish adolescents. *Psicothema*, 32(3), 444–451. <https://doi.org/10.7334/psicothema2019.373>
- Peterson, A., Charles, V., Yeung, D., & Coyle, K. (2021). The Health Equity Framework: A Science- and Justice-Based Model for Public Health Researchers and Practitioners. *Health Promotion Practice*, 22(6), 741–746. <https://doi.org/10.1177/1524839920950730>
- Plöderl, M., & Tremblay, P. (2015). Mental health of sexual minorities. A systematic review. *International Review of Psychiatry*, 27(5), 367–385. <https://doi.org/10.3109/09540261.2015.1083949>
- Price-Feeney, M., Green, A. E., & Dorison, S. (2020). Understanding the Mental Health of Transgender and Nonbinary Youth. *The Journal of adolescent health: Official publication of the Society for Adolescent Medicine*, 66(6), 684–690. <https://doi.org/10.1016/j.jadohealth.2019.11.314>
- Rees, S. N., Crowe, M., & Harris, S. (2021). The lesbian, gay, bisexual and transgender communities' mental health care needs and experiences of mental health services: An integrative review of qualitative studies. *Journal of Psychiatric and Mental Health Nursing*, 28(4), 578–589. <https://doi.org/10.1111/jpm.12720>
- Reisner, S. L., Katz-Wise, S. L., Gordon, A. R., Corliss, H. L., & Austin, S. B. (2016). Social epidemiology of depression and anxiety by gender identity. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*, 59(2), 203–208. <https://doi.org/10.1016/j.jadohealth.2016.04.006>
- Rentería, R., Andersson, C., Bendtsen, M., Mortier, P., Auerbach, R. P., Bantjes, J., Baumeister, H., Berman, A. H., Bootsma, E., Bruffaerts, R., Cohut, I. F., Crockett, M. A., Cuijpers, P., David, O. A., Ebert, D. D., Gutierrez-García, R. A., Hasking, P. A., Hunt, X., Hurks, P., ... WMH-ICS collaborators. (2025). Mental disorders and sexual orientation in college students across 13 countries of differing levels of LGBTQ+ acceptance. *Journal of Psychiatric Research*, 186, 331–340. <https://doi.org/10.1016/j.jpsychires.2025.04.021>

- Richarte, V., Corrales, M., Pozuelo, M., Serra-Pla, J., Ibáñez, P., Calvo, E., Corominas, M., Bosch, R., Casas, M., & Ramos-Quiroga, J. A. (2017). Spanish validation of the adult Attention Deficit/Hyperactivity Disorder Rating Scale (ADHD-RS): Relevance of clinical subtypes. Validación al español de la ADHD Rating Scale (ADHD-RS) en adultos: Relevancia de los subtipos clínicos. *Revista de Psiquiatría y Salud Mental*, 10(4), 185–191. <https://doi.org/10.1016/j.rpsm.2017.06.003>
- Russell, S. T., Bishop, M. D., & Fish, J. N. (2023). Expanding Notions of LGBTQ. *Annual Review of Sociology*, 49, 281–296. <https://doi.org/10.1146/annurev-soc->
- Samuels, E. A., Boatright, D. H., Wong, A. H., Cramer, L. D., Desai, M. M., Solotke, M. T., Latimore, D., & Gross, C. P. (2021). Association between sexual orientation, mistreatment, and burnout among US medical students. *JAMA Network Open*, 4(2), Article e2036136. <https://doi.org/10.1001/jamanetworkopen.2020.36136>
- Seelman, K. L., Woodford, M. R., & Nicolazzo, Z. (2017). Victimization and microaggressions targeting LGBTQ college students: Gender identity as a moderator of psychological distress. *Journal of Ethnic & Cultural Diversity in Social Work: Innovation in Theory Research & Practice*, 26(1–2), 112–125. <https://doi.org/10.1080/15313204.2016.1263816>
- Sharp, J., & Theiler, S. (2018). A review of psychological distress among university students: Pervasiveness, implications and potential points of intervention. *International Journal for the Advancement of Counselling*, 40(3), 193–212. <https://doi.org/10.1007/s10447-018-9321-7>
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166, 1092–1097. <https://doi.org/10.1001/archinte.166.10.1092>
- Vázquez, C., Duque, A., & Hervás, G. (2013). Satisfaction with life scale in a representative sample of Spanish adults: Validation and normative data. *The Spanish Journal of Psychology*, 16, Article E82. <https://doi.org/10.1017/sjp.2013.82>
- Wittgens, C., Fischer, M. M., Buspavanich, P., Theobald, S., Schweizer, K., & Trautmann, S. (2022). Mental health in people with minority sexual orientations: A meta-analysis of population-based studies. *Acta Psychiatrica Scandinavica*, 145(4), 357–372. <https://doi.org/10.1111/acps.13405>
- World Medical Association (1964). *Declaration of Helsinki on Ethical Principles for Medical Research Involving Human Participants*. <https://www.wma.net/policies-post/wma-declaration-of-helsinki/>
- Xi, J., & Peralta, R. L. (2025). Mental health, resilience, and well-being among sexual minority college students: A study framed by the minority stress and minority resilience models. *Social Sciences*, 14(4), 231. <https://doi.org/10.3390/socsci14040231>
- Yavuz, G., & Dogan, N. (2014). Maslach burnout inventory-student survey (MBI-SS): A validity study. *Procedia Social and Behavioral Sciences*, 116, 2453–2457. <https://doi.org/10.1016/j.sbspro.2014.01.59>

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