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Beyond COVID-19: Changes in Mental Health, Hopelessness, and Subjective Social Status Among College Students in Rural Settings

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ABSTRACT

Background: Subjective social status (SSS) and hopelessness are linked to anxiety and depression, yet research among undergraduates – particularly considering the COVID-19 pandemic – is limited. This study examined associations among SSS, hopelessness, depression, and anxiety during and after the pandemic.

Methods: Cross-sectional surveys were conducted at a Southeastern U.S. university in 2021 (N = 1,602) and 2024 (N = 972). Measures included anxiety (GAD-7), depression (PHQ-9), SSS (MacArthur Scale), and hopelessness (Brief-H-Neg). Higher scores indicated greater distress, social status, or hopelessness. Linear regression models assessed associations.

Results: In 2021, 82.3% reported moderate to severe depression and 63.0% anxiety. By 2024, depression rose slightly (83.0%) and anxiety increased to 70.3%. Mean depression scores increased (p <.0001), anxiety remained stable (p = .7712), hopelessness declined (p <.0001), and SSS improved (p <.0001). Hopelessness correlated positively with anxiety (r = 0.60) and depression (r = 0.53), while SSS correlated negatively with both (p <.001). Regression analyses confirmed that lower SSS and higher hopelessness predicted greater distress. Female and lower-income students reported higher distress.

Translation to Health Education Practice: Despite improvements in hopelessness and SSS, mental health concerns remain widespread, highlighting the need for targeted prevention and treatment strategies in university settings.

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Introduction

Mental health concerns among college students, particularly depression and anxiety, have reached unprecedented levels in recent years (Pedrelli et al., 2014). These conditions are increasingly recognized as chronic health concerns rather than temporary emotional states, given their persistence, recurrent nature, and long-term consequences for academic performance, physical health, and overall quality of life (Eisenberg et al., 2013; National Institute of Mental Health [NIMH], 2022). Depression is characterized by persistent sadness and diminished interest in previously enjoyable activities (Onyemaechi, 2024) and anxiety involves excessive worry, tension, and physiological symptoms (American Psychological Association, 2018). Both conditions often follow a chronic course, marked by recurrent episodes and significant impairment if not addressed early. Depression and anxiety can significantly hinder students' intellectual engagement with their academic studies and cause health impacts such as unintentional weight loss or gain due to disrupted eating patterns, sleep disturbances like insomnia or hypersomnia, and even self-harming behaviors in more severe cases (American College Health Association [ACHA], 2023; Eisenberg et al., 2013; NIMH, 2022). In 2008, approximately half of college students met the diagnostic criteria for at least one psychiatric disorder (Blanco et al., 2008), and these rates have steadily increased over time. By 2018, 63% of students reported experiencing overwhelming anxiety (ACHA, 2018), and a 2019 study found that the prevalence of mental health issues in college populations had nearly doubled over the previous decade (Duffy et al., 2019). Research has identified several factors contributing to the development of anxiety and depression among college students, including academic pressure, financial stress, social isolation, and the transition to independent living (Bailey et al., 2019; Beiter et al., 2015).

The COVID-19 pandemic further exacerbated these mental health challenges. Social isolation, academic disruption, and uncertainty about the future have contributed to a worsening of psychological well-being (Inscore, 2023; Lederer et al., 2021; Odriozola-González et al., 2020; Son et al., 2020;

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Wang et al., 2020; Xu et al., 2022). Research reports that over 70% of college students experienced increased stress and anxiety during the early months of the pandemic (Son et al., 2020). The 2021–2022 Healthy Minds Study revealed that 44% of college students experienced depressive symptoms, and 37% reported anxiety – representing the highest rates in the study's 15-year history (Inscore, 2023). Despite rising demand, access to mental health services was often limited during the pandemic, with many students facing barriers to virtual therapy, especially in environments lacking privacy or internet access (Lederer et al., 2021). In sum, the pandemic created what could be described as a "perfect storm" of stressors that severely impacted the mental health and well-being of college students. These effects also underscored the chronic and cumulative burden of depression and anxiety within this population, highlighting the need for sustained prevention and management strategies rather than short-term crisis responses.

These challenges have drawn attention to psychological and social factors that shape students' mental health including Subjective Social Status and Hopelessness. Subjective Social Status (SSS) refers to an individual's perception of their rank or status in a social hierarchy (Adler et al., 2000). This concept emerged as a critical psychological factor influencing mental well-being during this period (Operario et al., 2004). SSS is most commonly assessed using the MacArthur Scale of Subjective Social Status, which presents respondents with a visual "social ladder" representing their society or community. Participants are asked to place themselves on the rung of the ladder where they believe they stand relative to others based on income, education, and job status (Adler et al., 2000). This single-item measure captures individuals' holistic perceptions of their social standing and reliably predicts mental and physical health outcomes (Goodman et al., 2001). Unlike objective socioeconomic indicators such as income or education, SSS captures how people interpret their social position relative to others. Research suggests that lower SSS is strongly associated with poor psychological outcomes, including increased depression and anxiety (Kraus et al., 2013; Singh-Manoux et al., 2005), particularly in environments like college campuses where social comparison is frequent and salient. College students who perceive themselves as having lower social status in marginalized groups such as race/ethnicity, gender, and sexual minorities often report greater psychological distress, including symptoms of depression (Kraus et al., 2013; Salami & Walker, 2013; Uecker & Wilkinson, 2019; Vidal et al., 2018; Worthen et al., 2021).

Hopelessness is described as individuals' expectations that their experience of relevant life events will result in negative outcomes, as they feel powerless to exert any positively influence on the events (Abramson et al., 1989). Hopelessness may lead to factors such as suicidal thoughts, risk, and behavior.Notably, earlier evidence suggests that higher perceptions of hopelessness is associated with both depression and anxiety (Salami & Walker, 2013). Also, preliminary findings suggest that hopelessness may mediate the effect of SSS on depression (Cheung & Lucas, 2016).

While prior research has examined the individual associations among SSS, hopelessness, and depression, few studies have directly explored their triadic relationship, particularly in the context of the pandemic. Preliminary findings suggest that hopelessness may mediate the effect of SSS on depression (Cheung & Lucas, 2016). Still, little is known about how this dynamic may have changed during and after the COVID-19 crisis. Therefore, the purpose of the present study is to examine changes in the relationship between Subjective Social Status, hopelessness, depression, and anxiety among undergraduate students during and after the COVID-19 pandemic period (2021 and 2024). By framing depression and anxiety as chronic health conditions, this study also aligns with public health and health education priorities that emphasize prevention, early detection, and sustainable support for college populations. Additionally, little research has focused on the interplay of anxiety with these SSS, hopelessness, and depression. Therefore, the present study aims to examine how these variables interact over time. The findings are intended to inform the work of health educators and Certified Health Education Specialists (CHES) in developing, implementing, and evaluating evidence-based interventions aligned with NCHEC Responsibilities and Competencies (NCHEC, 2025). We strive to provide insights that can inform mental health interventions and support services targeted at vulnerable student populations.

Methods

Study design and participants

This study used data from an annual cross-sectional survey of college students at a southeastern public university,

administered via Qualtrics in 2021 and 2024 (Qualtrics, 2024). The Health Behavior Survey, described in prior research (Martin et al., 2018), is completed by students in an introductory public health course, with faculty annually updating questions to assess various health behaviors. In both 2021 and 2024, the survey included measures of anxiety, depression, subjective social status (SSS), and hopelessness.

Participants were recruited from the university's *Health in Modern Society* course through in-class announcements and e-mail reminders. Students were informed of the survey details, including the option to earn five extra credit points, with alternatives available. The online survey was open for two weeks. Participation was voluntary, limited to individuals aged 18 or older, and informed consent was obtained. As no identifying information was collected, the study was approved as exempt by the university's Institutional Review Board (IRB).

Measures

Outcome measures

Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9), a widely used and validated tool that measures the severity of depressive symptoms through nine questions. Answer choices range from "Not sure at all" to "Nearly every day" and hold corresponding numerical values ranging from 0 to 3. The values from each of the nine questions are summed together for a range of 0 to 27. Scores between 0 to 4 indicate minimal depression, 5 to 9 indicate mild depression, 10 to 14 indicate moderate depression, and 20 to 27 indicate severe depression. The PHQ-9 has demonstrated strong reliability and validity in individuals diagnosed with major depressive disorder (Son et al., 2020).

Anxiety levels were measured using the Generalized Anxiety Disorder-7 (GAD-7) scale, which evaluates the severity of anxiety through seven questions. Answer choices range from "Not sure at all" to "Nearly every day" and hold corresponding numerical values ranging from 0 to 3. The values of the seven questions are summed together to present an anxiety score. A total score ranging from 0 to 4 indicates no anxiety. A score ranging from 5 to 9 indicates mild anxiety, 10 to 14 is moderate anxiety, and 15 to 21 indicates severe anxiety.

Independent measures

Subjective Social Status (SSS): The MacArthur Scale of Subjective Social Status (MacArthur SSS Scale) was used to assess participants' perceived social rank relative to others in their group or society. Participants selected the rung on a visual ladder that best represented their societal position, ranging from 1 to 10. Higher scores, those closer to 10, indicate greater perceived social status.

Hopelessness: The Brief-H-Neg scale was employed to measure hopelessness. This two-item scale includes two items, "The future seems hopeless, and I cannot believe that things will improve," and "I feel that it is impossible to reach the goals I would like to achieve". Five answer choices range from "Absolutely disagree" to "Absolutely agree," with a numerical score corresponding to each answer choice ranging from 1 to 5. These numerical scores are summed together. A total score ranging from 2 to 4 indicates low hopelessness, 5 to 7 indicates moderate hopelessness, and 8 to 10 indicates high hopelessness.

Covariates

Demographic variables assessed in the survey included: Age (18–19, 20–21, 22+); Sex (Male, Female); Race/Ethnicity (Black, Hispanic, White, Other); College Class (Freshman, Sophomore, Junior, Senior); Grade Point Average (GPA); Nativity (the US-born vs. non-U.S. born); And Income (categorized as ≤$34,300, $34,301–$42,790, $42,791-$65,710, $65,711-$100K, > $100K).

Statistical analysis

Demographic characteristics were summarized as frequencies and percentages for 2021 and 2024 separately as well as combined. Depression, anxiety, hopelessness, and SSS scores were summarized as means with standard deviations for both years and differences between the two years were tested using independent-sample t-tests.

Depression severity was categorized into three levels: mild (≤9), moderate (10–14), and severe (≥15). The range of the possible scores is 0–20. Respondents with anxiety scores of 10 or higher were categorized as having anxiety. Pearson's correlation coefficients were calculated to assess bivariate associations between depression and anxiety scores and the independent variables of hopelessness and social status.

General linear regression models were used to evaluate the adjusted effects of hopelessness and social status on depression and anxiety while controlling for age, sex, race/ethnicity, college class, income, and year (2021 vs. 2024). Interactions between the year variable and other independent variables were also tested to explore potential differences between the two data collection periods. About 10–11% of the missing data in the regression analyses was considered relatively small. We assumed the data were missing at random and did not pursue imputations. Data were analyzed using SAS

Version 9.4 (SAS Institute Inc., Cary, NC). A significance level of 0.05 was used for all statistical tests. Lastly, figures were created to illustrate better key findings from the regression models, including the interaction profile plots.

Results

Table 1 presents the demographic characteristics of the 2490 undergraduate students ($n = 1,497$ in 2021 and $n = 993$ in 2024). The majority of students were 18–19 years old (76.3% overall; 74.7% in 2021 and 78.9% in 2024), female (60.1% overall; 59.1% in 2021 and 61.7% in 2024), White (65.4% overall; 64.5% in 2021 and 66.7% in 2024), freshmen (71.4% overall; 65.4% in 2021 and 80.7% in 2024), had a GPA ≥3.0 (59.6% overall; 66.0% in 2021 and 50.1% in 2024) and were natively born in the US (87.8% overall; 86.0% in 2021 and 90.5% in 2024). Family income ranged from less than $34,300 to more than $100,000, with a higher proportion of students reporting families in the higher income categories. We included the 9.0% of students with missing income data (11.0% in 2021 and 5.9% in 2024) in subsequent analyses.

Forty-five percent of students (47.6% in 2021 and 40.9% in 2024) reported severe depression, and 66.1% (63.0% in 2021 and 70.3% in 2024) reported experiencing anxiety.

Table 2 shows that average depression scores significantly decreased from 2021 to 2024 by 0.89 points (SD = 5.81, $p < .001$). The decrease in average anxiety scores

Table 1. Demographic characteristics of college students.

	Total N (%)	2021 Sample N (%), Mean (SD)	2024 Sample N (%), Mean (SD)
Age (years)			
18-19	1901 (76.3)	1118 (74.7)	783 (78.9)
20-21	346 (13.9)	201 (13.4)	145 (14.6)
22+	243 (9.8)	178 (11.9)	65 (6.5)
Sex*			
Male	983 (39.9)	611 (40.9)	372 (38.3)
Female	1482 (60.1)	882 (59.1)	600 (61.7)
Race*			
White	1622 (65.4)	965 (64.5)	657 (66.7)
Black	457 (18.4)	249 (16.6)	208 (21.1)
Hispanic	139 (5.6)	82 (5.5)	57 (5.8)
Other	264 (10.6)	201 (13.4)	63 (6.4)
Class*			
Freshman	1766 (71.4)	978 (65.4)	788 (80.7)
Sophomore	335 (13.6)	260 (17.4)	75 (7.7)
Junior	248 (10.0)	201 (13.4)	47 (4.8)
Senior+	123 (5.0)	56 (3.8)	67 (6.9)
GPA			
≤ 1.99	123 (4.9)	46 (3.1)	77 (7.8)
2.00 - 2.99	693 (27.8)	321 (21.4)	372 (37.5)
≥ 3.00	1485 (59.6)	988 (66.0)	497 (50.1)
Missing	189 (7.6)	142 (9.5)	47 (4.7)
Nativity			
Native	2187 (87.8)	1288 (86.0)	899 (90.5)
Foreign Born	104 (4.2)	59 (4.0)	45 (4.5)
Missing	199 (8.0)	150 (10.0)	49 (4.9)
Income			
≤$34,300	284 (11.4)	183 (12.2)	101 (10.2)
$34,301-$42,790	281 (11.3)	160 (10.7)	121 (12.2)
$42,7901-$65,710	418 (16.8)	256 (17.1)	162 (16.3)
$65,711-$100K	560 (22.5)	309 (20.6)	251 (25.3)
> $100K	723 (29.0)	424 (28.3)	299 (30.1)
Missing	224 (9.0)	165 (11.0)	59 (5.9)
Depression**			
Severe	1018 (44.9)	639 (47.6)	379 (40.9)
Moderate	855 (37.7)	465 (34.7)	390 (42.1)
Mild	396 (17.5)	238 (17.7)	157 (17.0)
Anxiety**			
Yes	1518 (66.1)	849 (63.0)	669 (70.3)
No	780 (33.9)	498 (37.0)	282 (29.7)

*: 16 students didn't report sex and 9 students reported other. 8 students didn't report race/ethnicity. 18 students didn't report class. **: Depression had 221 missing data and anxiety had 192 missing data.

Table 2. Differences in social status, hopelessness, anxiety, and depression during and after the COVID-19 pandemic.

	2021 Sample			2024 Sample			2021–2024 difference	
	N	Mean (SD)	Median (IQR)	N	Mean (SD)	Median (IQR)	Mean (SD)	P-value
Depression	1342	15.5 (6.11)	14 (11–19)	927	14.6 (5.35)	13 (10–17)	0.89 (5.81)	<.001
Anxiety	1347	13.0 (5.87)	11 (8–16)	951	12.9 (4.99)	12 (9–15)	0.07 (5.52)	.755
Hopelessness	1363	3.91 (2.10)	3.0 (2–5)	945	3.55 (1.83)	3.0 (2–5)	0.35 (1.99)	<.001
Social Status	1345	5.04 (2.43)	5 (3–7)	920	5.73 (1.96)	6 (4–7)	−0.69 (2.25)	<.001

was not statistically significant (mean difference = 0.07, SD = 5.52, $p = .775$). Hopelessness scores significantly decreased by 0.35 points on average (SD = 1.99, $p < .001$), while social status scores significantly increased by 0.69 points (SD = 2.25, $p < .001$).

Table 3 shows moderate positive correlations between depression and anxiety scores and hopelessness ($r = 0.472$–0.615) and weaker negative correlations between depression and anxiety scores and social status ($r = -0.295$ to -0.213). All correlations were statistically significant ($p < .001$).

Table 4 indicates results from linear regression analyses. In 2021, hopelessness (B = 1.67, 95% CI = 1.55–1.80) and social status (B = −0.24, 95% CI = −0.35 to −0.13) were significantly associated with depression ($p < .001$), and similarly with anxiety: hopelessness (B = 1.36, 95% CI = 1.24–1.49) and social status (B = −0.24, 95% CI = −0.35 to −0.13), all $p < .001$. There were no significant interactions between year and either hopelessness or social status on depression ($p = .118$ and $p = .070$, respectively) or anxiety ($p = .231$ and $p = .749$, respectively), indicating that the effects were consistent across waves.

The only significant interaction between wave and covariates was observed for income on anxiety ($p = .042$). Among the covariates, age was significantly associated with anxiety ($p = .047$); sex was significantly associated with both depression and anxiety ($p < .001$); class was significantly associated with depression ($p = .009$); and year had a significant main effect on depression ($p = .036$).

Figure 1 illustrates the effect of income-by-year interaction on anxiety. A reversal of income effects is evident across several income categories between 2021 and 2024, although the individual income effects were not statistically significant in either 2021 ($p = .161$) or 2024 ($p = .173$).

Figure 2 displays the effects of age, sex, and class on depression and anxiety. While the overall age effect was statistically significant ($p = .047$), the within-wave age effects were not ($p = .134$ for 2021 and $p = .187$ for 2024). Students aged 20–21 tended to report lower average anxiety scores. Female students consistently reported higher depression and anxiety scores than males across both waves ($p < .001$). Class level had a significant effect on depression in 2021 ($p = .018$) but not in 2024 ($p = .293$). In 2021, first-year students had the lowest average depression scores, followed by sophomores and juniors, while seniors' average depression scores decreased from 2021 to 2024.

Discussion

This study examined whether there were differences in depression, anxiety, hopelessness, and perceived social status among undergraduate students between 2021 and 2024. As noted in the Introduction, depression and anxiety represent chronic and persistent public health concerns among college populations, with lasting implications for academic performance and long-term well-being. Several significant findings emerged that contribute to the growing body of research on student mental health during and after the COVID-19 pandemic. These findings also have direct implications for health education practice, particularly in informing the planning and delivery of evidence-based, campus-wide mental health promotion initiatives.

First, we observed a significant decrease in average depression and hopelessness scores from 2021 to 2024, suggesting a modest but meaningful improvement in student well-being during and after the pandemic. This pattern may reflect a gradual recovery from the acute mental health stressors associated with the early pandemic period, including social isolation, academic disruption, and uncertainty about the future (Liu et al., 2020; Son et al., 2020). However, anxiety scores

Table 3. Associations of social status and hopelessness with depression and anxiety.

Pearson's Correlation	Depression			Anxiety		
	2021	2024	Total	2021	2024	Total
Social status	−0.286	−0.295	−0.296	−0.270	−0.213	−0.249
Hopelessness	0.615	0.555	0.597	0.533	0.472	0.511

*All correlations are significantly different from zero (p <.001).

Table 4. Linear regressions of depression and anxiety on social status and hopelessness.

	Depression score				Anxiety score			
	Est	95% CI		P	Est	95% CI		P
Hopelessness	1.67	1.55	1.80	<.001	1.36	1.24	1.49	<.001
Social status	−0.24	−0.35	−0.13	<.001	−0.24	−0.35	−0.13	<.001
Age				0.108				0.047
20–21 vs. 18–19	−0.92	−1.92	0.07		−1.00	−2.00	0.01	
22+ vs. 18–19	−1.19	−2.31	−0.08		−0.83	−1.93	0.28	
Sex				<.001				<.001
Male vs. Female	−1.29	−1.80	−0.78		−2.11	−2.62	−1.59	
Race/ethnicity				0.647				0.072
Black vs. White	0.37	−0.35	1.09		−0.24	−0.96	0.49	
Hispanic vs. White	0.96	−0.13	2.06		0.26	−0.85	1.37	
Other vs. White	0.36	−0.40	1.11		0.12	−0.63	0.88	
Class				0.009				0.089
Sophomore vs. Freshman	0.72	−0.06	1.50		0.61	−0.17	1.39	
Junior vs. Freshman	1.23	0.14	2.33		0.67	−0.43	1.77	
Senior+ vs. Freshman	2.43	0.85	4.02		1.96	0.38	3.54	
Income				0.111				0.514
≤ $34,300 vs. >$100K	0.16	−0.71	1.04		−0.44	−1.32	0.44	
$34,301–$42,790 vs. >$100K	−0.43	−1.17	0.30		−0.18	−0.92	0.56	
$42,7901–$65,710 vs. >$100K	−0.31	−0.99	0.38		−0.73	−1.41	−0.04	
$65,711–$100K vs. >$100K	0.58	−0.28	1.45		0.38	−0.49	1.25	
Missing vs. >$100K	0.60	−1.22	2.42		−0.30	−2.10	1.49	
Year				0.036				0.054
2024 vs. 2021	1.81	0.12	3.51		1.66	−0.03	3.34	
Hopelessness*Year(2024 vs. 2021)	−0.17	−0.38	0.04	0.118	−0.13	−0.34	0.08	0.231
Social status*Year(2024 vs. 2021)	−0.18	−0.38	0.01	0.070	−0.03	−0.23	0.16	0.749
Age*Year(2024 vs. 2021)				0.671				0.605
20–21 vs. 18–19	0.12	−1.48	1.73		0.11	−1.48	1.70	
22+ vs. 18–19	0.95	−1.32	3.23		1.05	−1.21	3.30	
Sex*Year(2024 vs. 2021)				0.647				0.773
Male vs. Female	−0.20	−1.04	0.65		−0.12	−0.96	0.71	
Race/ethnicity*Year(2024 vs. 2021)				0.141				0.207
Black vs. White	−1.10	−2.16	−0.03		−0.87	−1.93	0.19	
Hispanic vs. White	−1.10	−2.84	0.64		−0.67	−2.43	1.09	
Other vs. White	−0.90	−2.36	0.55		−1.21	−2.66	0.24	
Class*Year(2024 vs. 2021)				0.676				0.190
Sophomore vs. Freshman	0.36	−1.73	2.45		0.84	−1.24	2.92	
Junior vs. Freshman	−1.06	−3.48	1.36		−1.62	−4.01	0.78	
Senior+ vs. Freshman	0.16	−1.49	1.80		0.47	−1.16	2.09	
Income*Year(2024 vs. 2021)				0.860				0.042
≤ $34,300 vs. >$100K	0.36	−0.98	1.71		−0.02	−1.37	1.33	
$34,301–$42,790 vs. >$100K	−0.16	−1.34	1.03		−0.78	−1.96	0.40	
$42,7901–$65,710 vs. >$100K	0.46	−0.59	1.52		0.77	−0.28	1.81	
$65,711–$100K vs. >$100K	−0.31	−1.74	1.13		−1.42	−2.85	0.00	
Missing vs. >$100K	0.25	−2.97	3.47		−0.37	−3.58	2.84	

remained stable, with no statistically significant change between the two-time points. Given the chronic nature of anxiety among college students, this persistence highlights the need for ongoing monitoring and long-term mental health support beyond crisis interventions. Health educators and Certified Health Education Specialists (CHES) can play a critical role in designing and sustaining these long-term strategies, which may include promoting coping skills, strengthening peer support networks, and implementing multilevel campus interventions (NCHEC, 2025). The persistence of anxiety may reflect ongoing academic, financial, or societal pressures that extend beyond the immediate context of the pandemic (Watkins-Martin et al., 2023). These findings indicate that anxiety continues to be a critical area for intervention.

Second, hopelessness emerged as a consistent and robust predictor of mental health outcomes, with higher hopelessness levels significantly associated with greater depression and anxiety in both years. Similarly, lower perceived social status was consistently linked to higher levels of psychological distress, even after adjusting for covariates. In our sample, 45% of students reported severe depressive symptoms, and 66% reported anxiety symptoms. These rates are higher than those reported in national studies prior to the COVID-19 pandemic (e.g., 44% depression and 37% anxiety; Inscore, 2023) and are consistent with evidence that the pandemic exacerbated psychological distress among college students (Son et al., 2020; Wang et al., 2020). These comparisons underscore the elevated prevalence of mental health challenges in our study population relative to broader

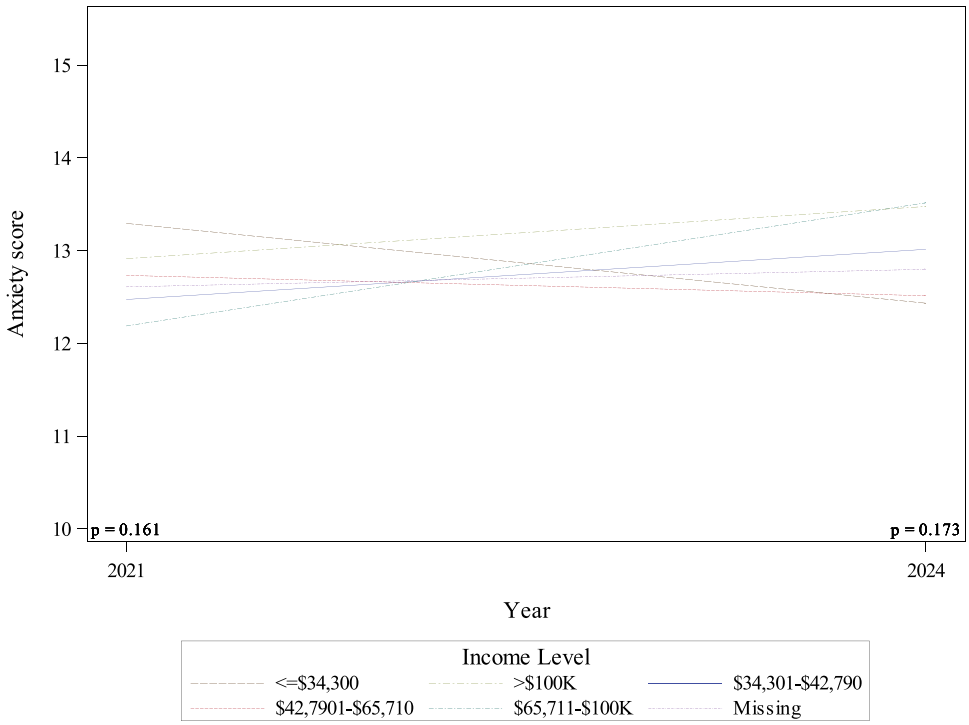

Figure 1. An illustration of the income*year interaction effect on anxiety.

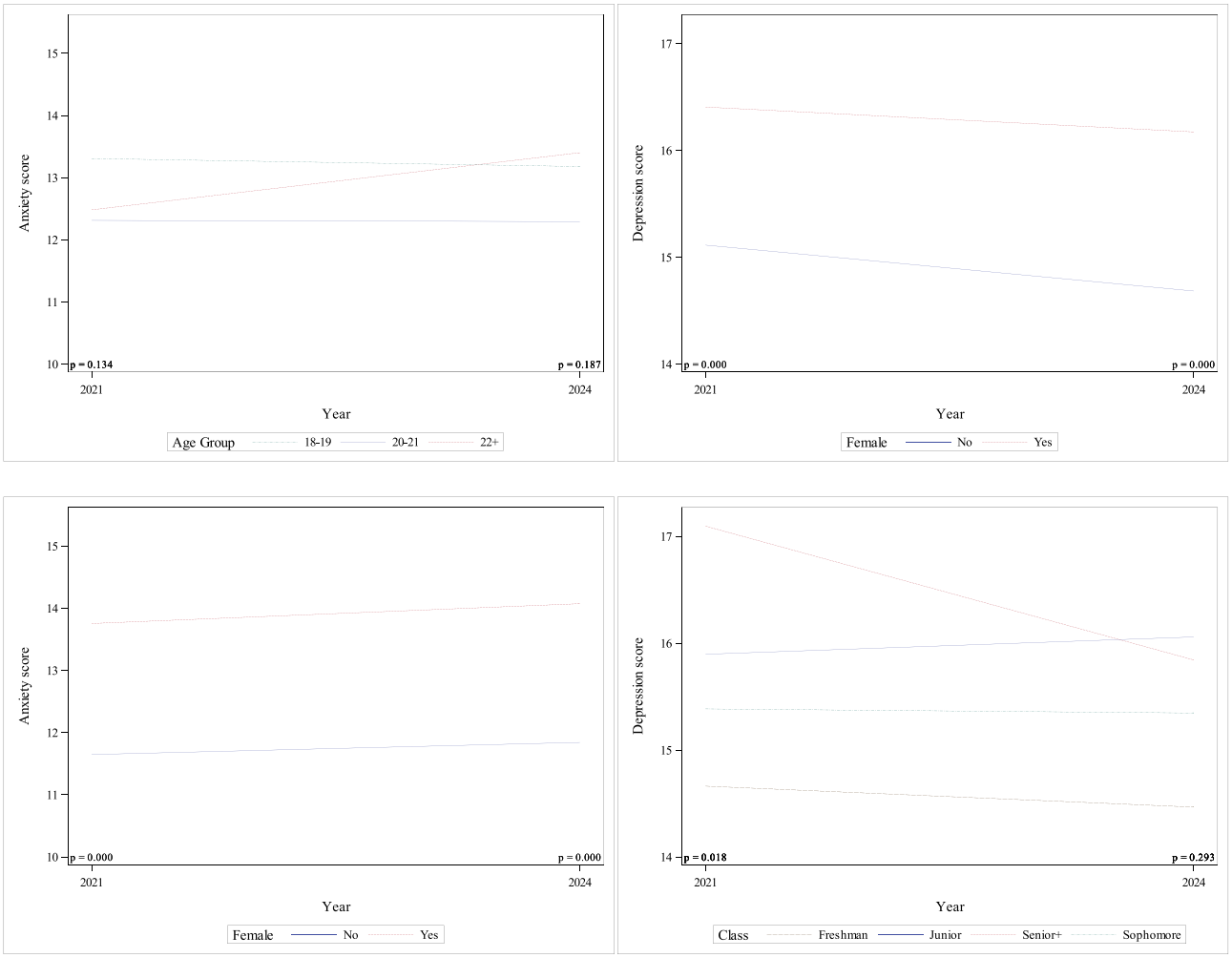

Figure 2. An illustration of the age, sex, and class effects on depression and anxiety.

college student samples. These results reflect the enduring influence of internal psychological resources and social positioning on students' mental health (Beutel et al., 2017; Shankar et al., 2015). Notably, the effects of hopelessness and social status did not differ across survey waves, indicating that their impact remained consistent over time. These findings highlight the importance of targeted health education strategies that address both immediate mental health needs and the underlying determinants of distress. CHES professionals are uniquely positioned to assess these determinants, plan culturally responsive interventions, and evaluate their effectiveness using standardized professional competencies.

A particularly concerning finding is the high prevalence of mental health challenges, with 45% of students reporting severe depressive symptoms and 66% reporting anxiety symptoms. These rates underscore the scale of the ongoing mental health crisis in college populations and reinforce the urgent need for comprehensive, campus-based mental health services and support (Eisenberg et al., 2013; Lipson et al., 2019). Health education professionals can contribute to these efforts by integrating mental health promotion into broader campus health strategies, aligning prevention and early intervention efforts with evidence-based practices.

We also identified notable sociodemographic disparities. Female students consistently reported higher levels of depression and anxiety than their male peers – a pattern consistent with previous research on gender differences in internalizing symptoms (Kuehner, 2017). These disparities may reflect a combination of gender-specific stressors and potential differences in help-seeking behaviors. Additionally, freshmen in 2021 reported the lowest average depression scores, which may reflect early-college optimism or reduced academic stress; however, this pattern was not observed in 2024. Students aged 20–21 exhibited slightly lower anxiety levels, although age differences within each wave were not statistically significant (Twenge et al., 2019). The persistence of gender disparities underscores the need for tailored health education approaches that address the specific stressors faced by different student populations, ensuring that interventions are inclusive, equitable, and responsive to diverse needs.

An especially intriguing finding was a significant income-by-year interaction for anxiety, suggesting that the relationship between family income and anxiety shifted between 2021 and 2024. While income was not a significant predictor within each year, the reversal of the pattern across income groups suggests that economic stressors – or students' perceptions of financial stability – may have evolved. This finding warrants further exploration to understand better how changes in financial circumstances or future outlooks influence mental health among college students (Eisenberg et al., 2013; Lipson et al., 2019). Such findings further support the integration of equity-focused health education approaches, enabling practitioners to address structural and economic stressors as part of comprehensive mental health promotion strategies.

Several limitations should be noted. First, the use of cross-sectional data from 2021 and 2024 prevents assessment of individual-level changes or causal inferences over time. Observed differences may reflect sample variation or external influences rather than true shifts in mental health. Second, reliance on self-reported data may introduce bias, particularly for sensitive measures like mental health symptoms, perceived social status, and income. Third, the samples, primarily White, female, U.S.-born first-year students, may not generalize to more diverse college populations, including international or underrepresented students. Fourth, the majority of our sample consisted of freshmen aged 18–19 years (76.3% overall), which may limit generalizability to older college students, graduate students, or more diverse student populations. Caution should be exercised when extrapolating these results to other institutions or age groups.

Fifth, limited demographic and contextual data restricted analysis of other key factors, such as counseling access, academic stress, or discrimination. Finally, all associations observed are correlational and should not be interpreted as causal. Longitudinal or experimental studies are needed to clarify these relationships.

Translation to Health Education Practice

This study provides several actionable implications for health education practice. First, the findings can guide health educators in designing, implementing, and evaluating mental health promotion initiatives that address chronic depression and anxiety among college students. Screening programs and interventions should focus on both emotional (e.g., hopelessness) and social (e.g., perceived social status) dimensions of well-being. Certified Health Education Specialists (CHES) can play a central role in translating these findings into practice by applying the NCHEC Responsibilities and Competencies, including: **1.1.2**: Identify priority population(s) – by targeting at-risk groups such as female students and those with low perceived social status. **1.2.1**: Collect quantitative and qualitative data – to assess ongoing mental health needs and evaluate program reach. **2.1.1**: Develop measurable objectives – that focus on reducing depressive and anxiety symptoms through skill-building and social support.

4.1.2: Apply culturally appropriate strategies – to ensure that interventions resonate with diverse student backgrounds and experiences. **5.1.1**: Analyze evaluation data to inform decisions – using outcome data to refine and sustain evidence-based campus mental health programs (NCHEC, 2025). Ultimately, this study underscores the importance of integrating health education frameworks into campus mental health initiatives to enhance prevention, reduce disparities, and improve long-term student well-being.

Conclusions

This study offers early insight into the links between subjective social status (SSS), hopelessness, and mental health among college students. Consistent with prior evidence, findings reinforce that depression and anxiety are not transient reactions but chronic conditions that require sustained prevention and management strategies within higher education settings. While signs of improvement were observed in depression and hopelessness, anxiety remains a concern, and disparities persist across gender, social status, and income. Findings support the need for ongoing mental health screening, evidence-based interventions, and targeted support services, with health educators applying NCHEC competencies to implement effective, culturally responsive programs. Future health education specialists are in a better position to help expand on these findings using larger, more diverse samples and incorporate ecological factors to better inform intervention strategies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Ethical statement

The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from the University and Medical Center Institutional Review Board of East Carolina University.

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