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# The prevalence and predictors of mental health diagnoses and suicide among U.S. college students: Implications for addressing disparities in service use

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## Abstract

**Background:** The college years represent a period of increased vulnerability for a wide range of mental health (MH) challenges. The onset of common psychiatric conditions occurs during this period of development. Increases in depression, anxiety, and suicidality among U.S. college students have been observed. This study identified prevalence and correlates of MH diagnoses and suicidality in a recent sample of U.S. college students.

**Methods:** The Spring 2015 American College Health Association-National College Health Assessment (ACHA-NCHA) survey assessed MH diagnoses and suicidality from U.S. undergraduate students ($n$ = 67,308) across 108 institutions.

**Results:** Stress was strongly associated with a greater likelihood of suicide attempts and MH diagnoses, even among students reporting 1–2 stressful events (OR [odds ratio] range 1.6–2.6, CI [confidence interval] = 1.2–3.2). Bisexual students were more likely to report MH diagnoses and suicidality, compared to heterosexual and gay/lesbian students (OR range 1.5–3.9, CI = 1.8–4.3), with over half engaging in suicidal ideation and self-harm, and over a quarter reporting suicide attempts. Transgender students reported a higher rate of MH diagnoses and suicidality relative to females (OR range 1.9–2.4, CI = 1.1–3.4). Racial/ethnic minority students were generally less likely to report MH diagnoses relative to Whites, although the likelihood for suicidality was mixed.

**Conclusions:** The high rate of multiple stress exposures among the U.S. college population and the high impacts of stress on MH and suicidality point to an urgent need for service utilization

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strategies, especially among racial/ethnic, sexual, or gender minorities. Campuses must consider student experiences to mitigate stress during this developmental period.

**Keywords**

mental health; minority groups; sexual and gender minorities; suicidal ideation; attempted suicide; universities

## 1 | INTRODUCTION

College students face unprecedented levels of distress that affect their mental health (MH) (Mortier et al., 2018). Depression, anxiety, and suicidality rates are rising among U.S. college students (Blanco et al., 2008; Eisenberg, Hunt, & Speer, 2013). In the past decade, students and college counseling directors report increased rates of MH symptomatology and severity (Gallagher, 2012; Twenge et al., 2010). With media attention on incidents from untreated psychological problems (Jolicoeur, 2015), these high rates underscore MH as a growing public health concern within college campuses.

During college, students encounter new experiences, relationships, and living situations (Byrd & Mckinney, 2012, Ketchen Lipson, Gaddis, Heinze, Beck, & Eisenberg, 2015), with greater exploration of racial/ethnic, gender, and sexual identities (Syed & Azmitia, 2009). These factors give rise to stress experiences that can impact MH during college (Soet & Sevig, 2006; Woodford, Han, Craig, Lim, & Matney, 2014). The onset of common psychiatric conditions occurs during late adolescence and early adulthood (Kessler et al., 2007). Together, the college years represent a period of increased vulnerability for the development of a wide range of MH challenges.

Research addressing access to and use of MH services by students in general, and minority students (racial/ethnic, gender, or sexual minority), in particular, is limited (Mayer et al., 2008). Sexual minority students who identify as lesbian, gay, or bisexual appear to utilize MH services more than their heterosexual counterparts (Kerr, Santurri, & Peters, 2013; Oswalt & Wyatt, 2011). However, racial/ethnic minorities show low utilization of MH services (Nestor, Cheek, & Liu, 2016) perhaps due to factors such as stigma (Cheng, Kwan, & Sevig, 2013), lack of culturally sensitive services (Augsberger, Yeung, Dougher, & Hahm, 2015), and different conceptions of MH (Leong, Kim, & Gupta, 2011). This may lead to the probable under-diagnosis among certain minority students, with college campuses facing the task of reaching students that have “hidden” but urgent health concerns.

A major research gap is the lack of update on rates of MH diagnoses and the most severe symptoms among minority students. To our knowledge, there has been no comprehensive analysis conducted based on U.S. minority college students and other sociodemographic factors from the past 10 years, with the last update on MH rates among sexual minorities conducted in 2009 (Oswalt & Wyatt, 2011). The literature tends not to consider marginalized statuses including those who are unsure about their sexual orientation, Asians or Pacific Islanders, American Indian, Alaska Native, or Native Hawaiian, and Multi-racial, often due to low sample size.

To develop a clear strategy for practitioners and policy makers in addressing MH access and stigma on U.S. campuses, the scope of the issue must be well described. We present MH data for U.S. under-graduate college students based on minority statuses using data from the Spring 2015 administration of the American Health Association-National College Health Assessment (ACHA-NCHA). Capitalizing on a large sample size, our analysis simultaneously examines racial/ethnic, gender, and sexual minorities and other sociodemographic factors potentially associated with diagnoses related to depression and anxiety. We juxtaposed these rates of diagnoses (which would require disclosure to a health provider) with the self-report of the most severe MH symptoms, those that require the most urgent need for service, specifically, suicidality and self-harm.

## 2 | METHODS

### 2.1 | Data source and sample

The Spring 2015 American Health Association-National College Health Assessment (ACHA-NCHA IIB) Reference Group aggregates survey data from postsecondary educational institutions using probability-based sampling methods, which included 93,034 respondents from 108 U.S. institutions. Each institution selected a random sample of enrolled students who were 18 years of age and older. The response rates for Web-based surveys was 18% and the response rate for paper surveys was 89%, with only 7% of participating institutions distributing paper surveys. This analysis was exempt from human subjects review according to the Institutional Review Board.

## 3 | MEASURES

### 3.1 | MH diagnoses

Participants reported having been diagnosed or treated by a professional within the past 12 months for 15 MH diagnoses: anorexia, anxiety, attention deficit and hyperactivity disorder, bipolar disorder, bulimia, depression, insomnia, other sleep disorder, obsessive–compulsive disorder, panic attacks, phobia, schizophrenia, substance abuse or addiction (alcohol or other drugs), other addiction (e.g., gambling, internet, sexual), and other MH condition. For each condition, participants could respond with “no,” “yes, diagnosed but not treated,” “yes, treated with medication,” “yes, treated with psychotherapy,” “yes, treated with medication and psychotherapy,” or “yes, other treatment.”

We focused on depression and anxiety diagnoses given their prevalence among youth and young adults (Aalto-Setälä, Marttunen, Tuulio-Henriksson, Poikolainen, & Lönnqvist, 2001; Kessler et al., 2005), and collapsed the other disorders to create a category of “other MH conditions.” Two categories were created: “no” for those who did not have a diagnosis in the last 12 months, or “yes” for those who did have a diagnosis, regardless of whether they received treatment from a professional in the last 12 months. Four possible mutually exclusive diagnosis categories included: depression (not co-morbid with anxiety), anxiety (not co-morbid with depression), co-morbid depression and anxiety, and other MH conditions (not including depression or anxiety). Four binary variables were created that

coded participants as having the disorder of interest, for example, depression (not co-morbid with anxiety) versus no diagnosis of any kind.

### 3.2 | Self-injury and suicidality

We relied on three items: “intentionally cut, burned, bruised, or otherwise injured yourself,” “seriously considered suicide,” and “attempted suicide.” Five options were available to indicate frequency of each feeling or behavior, including, “no, never,” “no, not in the last 12 months,” “yes, in the last 12 months,” “yes, in the last 30 days,” or “yes, in the last 2 weeks.” The options were not mutually exclusive, thus, the “no, never” remained as a category, and the other responses collapsed into “yes.”

### 3.3 | Stressful events

Participants responded “yes” or “no” on whether each of 12 possible events had been “traumatic or difficult for you to handle” in the past 12 months. Events included “academics,” “career-related issue,” “death of a family member or friend,” “family problems,” “intimate relationships,” “other social relationships,” “finances,” “health problem of family member or partner,” “personal appearance,” “personal health issue,” “sleep difficulties,” or “other.” Following prior life stress research (Liu & Tronick, 2013b, 2013ab; Salm Ward, Kanu, & Rubb, 2017) and to account for distributions, the variables were recoded into four levels of stress exposure with roughly equal numbers of students per category: 0 events, 1–2 events, 3–5 events, and 6+ events.

### 3.4 | Sociodemographic characteristics

Participants were asked, “How do you usually describe yourself?” Options included “White, “Black,” “Hispanic or Latino/a,” “Asian or Pacific Islander,” “American Indian, Alaska Native, or Native Hawaiian,” “Biracial or Multiracial,” and “Other.” Multiple options were allowed, thus responses were recoded to produce mutually exclusive categories. Those who selected one response, excluding the “Biracial or Multiracial” option, were coded using the identity selected. Those who selected more than one option were combined with those who selected only “Biracial or Multiracial” and referred as “Multiracial.” Participants who selected “Other” only were excluded from the analysis.

Age was recoded to 18–24 years and 25+ years (Araas & Adams, 2009; Brittain & Dinger, 2015; Lindley, Barnett, Brandt, Hardin, & Burcin, 2008). Gender categories included “male,” “female,” and “transgender.” Sexual orientation categories included “heterosexual,” “gay/lesbian,” “bisexual,” and “unsure.” Relationship categories included “not in a relationship,” “in a relationship but not living together,” and “in a relationship and living together.”

We restricted our sample to degree-seeking students. Years in school included: 1, 2, 3, 4, and 5+ years. Transfer and international student status (yes/no) were dichotomously coded.

### 3.5 | Data analysis

Following the practice of other studies (Ball et al., 2009), we eliminated respondents who produced implausible height or weight data and retained respondents reporting heights

between 120 cm and 210 cm, weights between 35 and 180 kg, and body mass indices between 16 and 65. The sum of the symptoms variable was coded as missing if the participant omitted any answer within the list of 11 symptoms presented or if participants were missing responses to the diagnoses questions. This resulted in 67,308 degree-seeking undergraduate students for analysis.

For the logistic regression analysis, binary outcomes were used for each of the four MH diagnosis outcomes along with suicidal ideation, attempted suicide, and self-injury. Given the sample size and number of comparisons, we set a conservative level of significance at $p < 0.01$ and report 99% CIs.

## 4 | RESULTS

Table 1 presents the sample characteristics. MH diagnoses were common, with one in four students reporting being diagnosed with or treated for a MH disorder in the prior year. One-fifth of all students surveyed had thought about suicide, with 9% reporting having attempted suicide and nearly 20% reporting self-injury.

Table 2 displays rates of MH diagnoses and suicidality within each of the sociodemographic groups. Hispanics, Blacks, and Asians had lower rates of all four MH diagnosis categories relative to Whites but differences in rates of suicidality or self-injury appeared less marked. Transgender students showed particularly elevated rates of all outcomes, with more than half reporting having received a MH diagnosis, over two-thirds endorsing suicidal ideation, and approximately two-thirds reporting self-injury and more than one-third attempting suicide. Sexual minorities showed elevated rates of MH disorders and suicidality/self-injury. Students who reported experiencing at least six events that were traumatic or very difficult to handle in the last 12 months had rates of MH diagnoses three-to-sixteen times higher than those experiencing no such events, with almost half having engaged in suicidal ideation, one-fifth attempting suicide and over two-thirds engaging in self-injury.

Table 3 presents results of logistic regression models. Stress exposure exhibited the strongest association with MH diagnosis, suicidality, and self-injury. Sexual minorities were almost all significantly more likely to have received a MH diagnosis, to endorse suicidality, and to engage in self-injury. Racial/ethnic minorities were generally less likely to have received a MH diagnosis. Despite lower rates of MH diagnoses than Whites, Asians exhibited significantly higher levels of suicidal ideation and suicide attempts. Multiracial students also showed significantly elevated rates of suicidal ideation and suicide attempts. Hispanics and Blacks exhibited significantly lower rates of self-injury and suicidal ideation, but no significant differences in suicide attempts relative to Whites.

Transfer students were more likely than nontransfer students to have an anxiety-related MH diagnosis, to engage in self-injury, and to attempt suicide. International students did not differ significantly from domestic students in likelihood on any of the MH outcomes but showed significantly lower levels of suicidal ideation and self-injury.

# 5 | DISCUSSION

## 5.1 | Self-injury and suicidality

We observed a 24% rate of suicidal ideation and approximately 9% rate of suicide attempts reported among our undergraduate sample, reflecting higher rates compared to other studies encompassing a wider time period. The lifetime prevalence of suicidal ideation in adults worldwide, through screening, is 9%, and the prevalence of suicide attempts is 2.7% (Nock et al., 2008). Although a major difference across studies is the methodology for assessment (Downs & Eisenberg, 2012; Kisch, Leino, & Silverman, 2005), these rates, based on simple self-report, remain a concern.

Even low levels of stress exposure that were traumatic or very difficult to handle (1 to 2 events) were associated with a nearly twofold increase the likelihood of suicidal ideation across the sample. This is problematic given the high prevalence of stress in this population, with 75% of the sample reporting having been exposed to at least 1 to 2 events. The high rate of multiple stress exposures among the college population and the potential high impacts of stress on MH and suicidality point to an urgent need for strategies to reduce student stress.

Overwhelmingly, sexual minorities had higher rates of suicidality relative to heterosexual students. Over half of bisexual students reported suicidal ideation and self-harm, with over a quarter reporting attempted suicide. Our finding that gay/lesbian and bisexual students were two-to-three times more likely to report suicidal ideation and to attempt suicide is consistent with a systematic review and meta-analysis (King et al., 2008). Our rates are also higher than the 2009 administration of this survey for suicidal ideation (57.8% vs. 47.7%), suicide attempts (27.6% vs. 25.3%), and self-injury (51.4% vs. 44.8%) (Oswalt & Wyatt, 2011). It is concerning that so many U.S. college students identifying as sexual minorities have had thoughts or taken action toward suicide and that the rates have not decreased over time.

Bisexual students in our study had a higher rate of suicidality relative to gay/lesbian students, which is consistent with previous research (Bostwick, Boyd, Hughes, & Mccabe, 2010; Oswalt & Wyatt, 2011). Similar to a previous administration of this survey, bisexual students fared worse than those who indicated being unsure of their sexual orientation (Oswalt & Wyatt, 2011). Bisexual students might face greater stress in navigating different social groups (e.g., both heterosexual or homosexual), with heterosexual and homosexual groups holding negative attitudes toward bisexual individuals (Israel & Mohr, 2004). Some may perceive bisexuality as a transition or denial of one’s actual sexual orientation (Eliason, 2001). More than half of transgender respondents reported suicidal ideation and/or suicide attempts. Transgender individuals may also face stigma from both the majority population and from the LGB community, in navigating different social groups and cultural norms (Bauermeister et al., 2010).

Multiracial students, similar to Asian students, were more likely to engage in suicidal ideation and to have attempted suicide than Whites. Multiracial youth may experience internal conflict in their racial identity development (Nuttgens, 2010; Yeh & Hunter, 2004), experiencing distress when there is a mismatch between their self-identification and how

others perceive them (e.g., being perceived as not authentic enough to belong to any particular racial group) (Campbell & Troyer, 2007). Given the increase of those who identify as multiracial, our finding highlights the need for addressing the multiracial experience and the importance of nuances in racial/ethnic categorization.

### 5.2 | MH diagnoses

Rates of diagnosis among the MH diagnostic categories ranged from 3.4% to 10%. While we placed restrictions so that each disorder categorized was mutually exclusive, when integrating comorbidity across disorders, they are consistent with previous other studies from the past 10 years (Zivin, Eisenberg, Gollust, & Golberstein, 2009). In line with prior research regarding stress exposure on MH outcomes (Liu & Tronick, 2013b; Mclaughlin, Conron, Koenen, & Gilman, 2010), the presence of stressful events in this college sample was a strong predictor of MH diagnoses.

Sexual minorities were more likely to endorse having had a MH diagnosis. Those unsure of their sexual orientation had rates that were not as elevated as those identified as gay/lesbian and bisexual. Identifying as unsure could reflect concealment of one's orientation; if so, this could be a source of stress (Grossman & D'Augelli, 2006). However, it is unclear how many of those who are unsure may be concealing their sexual orientation versus taking a more open-minded approach to sexuality and whether endorsing uncertainty about their sexual orientation is related to repercussions of disclosure.

More than half of transgender respondents reported having a MH diagnosis. These high rates are consistent with recent studies on individuals who identify as transgender (Arcelus, Claes, Witcomb, Marshall, & Bouman, 2016; Bockting, Miner, Swinburne Romine, Hamilton, & Coleman, 2013; Dawson, Wymbs, Gidycz, Pride, & Figueroa, 2017), with our large and diverse data set underscoring the major needs of transgender individuals during college. Psychological factors like the expectation of rejection may lead students to feel unworthy and unsafe, leaving them more susceptible to MH challenges compared to their counterparts who classify as cisgender (Bouman et al., 2017; Denton, Rostosky, & Danner, 2014). Notably, these high rates of diagnoses might reflect greater service utilization use among sexual minorities (Kerr et al., 2013; Oswalt & Wyatt, 2011). However, given their very high rates of suicidality and self-injury, a question is the extent to which health provider encounters that result in diagnoses translates to treatment engagement that is effective in reducing severe symptomatology.

In general, racial/ethnic minority students had similar or lower rates of MH diagnoses relative to Whites. Cultural factors including the stigma of MH may lead to lower rates of help-seeking and disclosure of MH symptoms, and consequently, lower rates of diagnoses (Aponte-Rivera et al., 2014; Sanchez, Ybarra, Chapa, & Martinez, 2016). The lack of recognition or ability by minority individuals themselves to detect MH problems may contribute to this lower rate of diagnosis (Huang & Zane, 2016).

Despite a higher likelihood of suicidal ideation and attempted suicide observed in our study, we observed a lower rate of diagnosis among Asians relative to Whites, consistent with prior research (Kisch et al., 2005). An important consideration is that self-reported symptoms of

depression have been found to be higher among Asian American college students (Eisenberg et al., 2013). The lower likelihood of disclosure and/or diagnosis of MH problems may result from shame in having a mental illness (Augsberger et al., 2015; Thapa, Sung, Klingbeil, Lee, & Klimes-Dougan, 2015). Black students showed a lower likelihood of reporting all outcomes compared to Whites. This too could be due to underreporting, with views held among Blacks that mental illness is a weakness that should not be disclosed (Conner et al., 2010), and the possibility that the language and framing of the instruments for detecting symptoms may not be sensitive for use among Blacks (Ellis, 2003). The lower rates of MH diagnoses among racial/ethnic minorities may be attributable to stigma, language, and a lack of culturally sensitive interventions that together discourage racial/ethnic minorities from seeking professional help, leading to lower rates of diagnosis.

### 5.3 | Transfer and international students, MH, and suicidality

Transfer students were more likely to endorse suicidal ideation, or to attempt suicide compared to students who did not transfer institutions, consistent with prior work using smaller samples (Beiter et al., 2015). The psychological well-being of transfer students is scant; however, their levels of distress may be associated with the inherently stressful experience of moving schools, lower involvement in on-campus social activities, a narrow focus on personal and career goals, and/or financial stress (D'Amico, Dika, Elling, Algozzine, & Ginn, 2014; Ishitani & Mckitrick, 2010).

International students did not differ significantly from domestic students on rates for MH diagnoses and attempted suicide, with the exception of a lower rate of suicidal ideation. International students may face challenges related to communication, homesickness, and acculturation that may cause emotional distress (Kilinc & Granello, 2003; Lee, Koeske, & Sales, 2004; Sümer, Poyrazli, & Grahame, 2008). It is striking that our data showed a lower tendency for international students to engage in suicidal ideation. Studies have found perception of social support to be a major predictor of lower levels of suicidal ideation (Chioqueta & Stiles, 2007), and some studies have found that international students often build social support quickly by relying heavily on peers instead of professionals for social support (Heggins & Jackson, 2003; Hyun, Quinn, Madon, & Lustig, 2007; Rai, 2002).

Although the ACHA-NCHA data set is not inherently generalizable to all U.S. schools and students given the self-selecting nature of the participating schools, the ACHA-NCHA is reliable and valid for representing U.S. college students through multiple comparison approaches. Triangulation methods, which include comparing percentages, conducting item reliability, and construct validity analyses between the ACHA-NCHA and three separate population-level surveys of U.S. college-aged students, demonstrate consistency and replication (ACHA, 2013). The use of multiple approaches increase our confidence that our findings represent U.S. students overall. The majority of institutions (93%) utilized web-based surveys, which had a low response rate of 18%. It is important to note the possibility of response bias among those who received the web-based surveys. This may include higher levels of health risk behaviors (Bosnjak & Tuten, 2001; Kypri, Samaranayaka, Connor, Langley, & Maclennan, 2011) in nonrespondents compared to respondents, although other studies have recently shown high response rates associated with higher rates of suicidality

(Mortier et al., 2018); it is difficult to discern the relative impacts of these potential biases. The use of self-reported diagnoses may limit the interpretation of prevalence, due to readiness of disclosure and willingness to seek services. Finally, the sociodemographic factors in this study are broad and do not represent the complex experiences that individuals may face through their self-identified categories.

Aside from research that would address these limitations, this study yields several additional questions for future research. This includes determining the potential for increased vulnerabilities among those who belong to an intersection of identities (e.g., those who identify as both a sexual and racial/ethnic minority), and the extent to which help seeking with nonprofessional supports (e.g., peers and resident advisors) could reduce symptomatology for specific minority groups within the campus setting.

## 6 | CONCLUSION

The high rate of multiple stress exposures among the U.S. college population and the potential high impacts of stress on MH and suicidality point to an urgent need for strategies that inoculate students against stress during this developmental period, especially among racial/ethnic, sexual, or gender minorities. MH diagnoses may be attributable to group differences in encounters with MH provider encounters, in contrast to reported suicidality and self-harm. Providers that work with young adults should consider supporting identity formation and concerns about disclosure in ways that consider the specific minority experience, for all students and not just those with acute MH needs. Together, this may address disparities in MH service utilization.

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## TABLE 1

Distribution of descriptive characteristics of American Health Association-National College Health Assessment (ACHA-NCHA IIB) participants, Spring 2015 ($n$ = 67,308)

| | Total | |
|---|---|---|
| **Characteristic** | ***n*** | **%** |
| Race | | |
| White | 43,330 | 64.4 |
| Hispanic | 5,980 | 8.9 |
| Black | 3,002 | 4.5 |
| Asian | 7,166 | 10.6 |
| AI/AN/NH | 357 | 0.5 |
| Multiracial | 7,473 | 11.1 |
| Age (years) | | |
| 18–24 | 61,422 | 91.3 |
| 25+ | 5,886 | 8.7 |
| Gender | | |
| Male | 21,159 | 31.4 |
| Female | 45,848 | 68.1 |
| Transgender | 301 | 0.4 |
| Sexual orientation | | |
| Heterosexual | 59,536 | 88.5 |
| Gay/Lesbian | 2,017 | 3.0 |
| Bisexual | 3,777 | 5.6 |
| Unsure | 1,978 | 2.9 |
| Relationship status | | |
| Not in a relationship | 35,620 | 52.9 |
| In a relationship, living separately | 24,476 | 36.4 |
| In a relationship, living together | 7,212 | 10.7 |
| Year in school | | |
| 1st | 18,228 | 27.1 |
| 2nd | 15,034 | 22.3 |
| 3rd | 16,305 | 24.2 |
| 4th | 13,251 | 19.7 |
| ≥5th | 4,490 | 6.7 |
| Transfer student | 11,132 | 16.5 |
| International student | 3,364 | 5.0 |
| Stress exposure | | |
| 0 events | 16,462 | 24.5 |
| 1–2 events | 16,842 | 25.0 |
| 3–5 events | 19,371 | 28.8 |
| 6+ events | 14,633 | 21.7 |
| Diagnoses | | |

| | Total | |
|---|---|---|
| **Characteristic** | ***n*** | **%** |
| Depression | 2,283 | 3.4 |
| Anxiety | 4,083 | 6.1 |
| Depression and anxiety | 6,734 | 10.0 |
| Other | 3,662 | 5.4 |
| Self-injury | 13,325 | 19.8 |
| Suicidal ideation | 16,337 | 24.3 |
| Suicide attempts | 6,257 | 9.3 |

American Indian, AI; Alaska Native, AN; Native Hawaiian, NH.

**TABLE 2**

Rates of mental health diagnosis and suicidality within characteristics

| Characteristic | Depression diagnosis (*n* = 2,283) % | Anxiety diagnosis (*n* = 4,083) % | Depression and anxiety diagnosis (*n* = 6,734) % | Other diagnosis (*n* = 3,662) % | Self-injury (*n* = 13,325) % | Suicidal ideation (*n* = 16,337) % | Suicide attempts (*n* = 6,257) % |
|---|---|---|---|---|---|---|---|
| Race | | | | | | | |
| White | 3.5 | 7.0 | 11.6 | 6.0 | 20.0 | 23.9 | 8.7 |
| Hispanic | 2.9 | 4.5 | 6.3 | 3.9 | 17.7 | 19.9 | 9.0 |
| Black | 2.8 | 3.5 | 4.9 | 4.3 | 12.8 | 21.7 | 9.1 |
| Asian | 2.5 | 2.8 | 5.0 | 3.5 | 18.3 | 25.1 | 10.1 |
| AI/AN/NH | 3.6 | 6.4 | 9.0 | 7.6 | 19.6 | 22.1 | 11.8 |
| Multiracial | 3.8 | 6.2 | 10.8 | 6.1 | 24.6 | 30.4 | 12.2 |
| Age (years) | | | | | | | |
| 18–24 | 3.2 | 5.9 | 9.6 | 5.2 | 20.1 | 24.1 | 9.1 |
| 25+ | 5.3 | 7.3 | 14.3 | 7.7 | 17.1 | 25.7 | 11.7 |
| Gender | | | | | | | |
| Male | 3.0 | 3.6 | 6.0 | 6.3 | 13.4 | 21.8 | 7.7 |
| Female | 3.5 | 7.2 | 11.7 | 5.0 | 22.4 | 25.1 | 9.8 |
| Transgender | 7.3 | 11.0 | 36.5 | 8.0 | 65.1 | 68.4 | 38.2 |
| Sexual orientation | | | | | | | |
| Heterosexual | 3.1 | 5.9 | 8.5 | 5.3 | 16.8 | 20.9 | 7.5 |
| Gay/Lesbian | 5.6 | 7.8 | 15.7 | 7.1 | 33.3 | 42.6 | 19.8 |
| Bisexual | 6.5 | 8.0 | 26.2 | 6.5 | 51.4 | 57.8 | 27.6 |
| Unsure | 5.2 | 6.8 | 17.6 | 5.6 | 37.3 | 43.6 | 16.5 |
| Relationship status | | | | | | | |
| Not in a relationship | 3.3 | 5.5 | 9.7 | 5.4 | 18.5 | 24.2 | 8.7 |
| In a relationship, living separately | 3.3 | 6.6 | 9.6 | 5.2 | 20.9 | 23.7 | 9.3 |
| In a relationship, living together | 4.1 | 7.2 | 12.8 | 6.3 | 22.5 | 26.7 | 12.1 |
| Year in school | | | | | | | |
| 1st | 3.3 | 5.3 | 8.5 | 5.3 | 20.0 | 24.1 | 9.4 |
| 2nd | 3.2 | 5.6 | 10.2 | 5.3 | 20.5 | 25.0 | 9.2 |

| Characteristic | Depression diagnosis (*n* = 2,283) % | Anxiety diagnosis (*n* = 4,083) % | Depression and anxiety diagnosis (*n* = 6,734) % | Other diagnosis (*n* = 3,662) % | Self-injury (*n* = 13,325) % | Suicidal ideation (*n* = 16,337) % | Suicide attempts (*n* = 6,257) % |
|---|---|---|---|---|---|---|---|
| 3rd | 3.3 | 6.7 | 10.6 | 5.5 | 19.5 | 23.9 | 9.1 |
| 4th | 3.5 | 6.5 | 10.3 | 5.3 | 18.9 | 22.9 | 8.8 |
| ≥5th | 4.2 | 7.1 | 12.7 | 6.6 | 20.3 | 27.8 | 8.1 |
| Transfer student | | | | | | | |
| Yes | 3.7 | 6.6 | 11.3 | 6.0 | 20.8 | 25.6 | 10.8 |
| No | 3.3 | 6.0 | 9.7 | 5.3 | 19.6 | 24.0 | 9.0 |
| International student | | | | | | | |
| Yes | 3.3 | 4.8 | 9.1 | 4.8 | 17.4 | 21.3 | 9.3 |
| No | 3.4 | 6.1 | 10.1 | 5.5 | 19.9 | 24.4 | 9.3 |
| Stress exposure | | | | | | | |
| 0 events | 1.0 | 3.2 | 1.7 | 3.9 | 7.4 | 8.0 | 3.3 |
| 1–2 events | 2.3 | 5.6 | 4.4 | 5.6 | 12.7 | 14.5 | 4.7 |
| 3–5 events | 4.2 | 7.7 | 11.4 | 6.1 | 22.8 | 28.1 | 9.4 |
| 6+ events | 6.2 | 7.7 | 23.9 | 6.2 | 37.9 | 48.8 | 21.1 |

American Indian, AI; Alaska Native, AN; Native Hawaiian, NH.

## TABLE 3

Sociodemographic correlates of mental health diagnoses and suicidality of American Health Association-National College Health Assessment (ACHA-NCHA IIB) participants, Spring 2015

| | Depression diagnosis | | Anxiety diagnosis | | Depression and anxiety diagnosis | | Other diagnosis | | Self-injury | | Suicidal ideation | | Suicide attempts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Characteristic** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** |
| Race | | | | | | | | | | | | | | |
| White | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – |
| Hispanic | 0.58[c] | 0.47–0.72 | 0.49[c] | 0.41–0.58 | 0.36[c] | 0.31–0.42 | 0.52[c] | 0.43–0.62 | 0.76[c] | 0.69–0.84 | 0.66[c] | 0.60–0.73 | 0.92 | 0.81–1.05 |
| Black | 0.55[c] | 0.41–0.74 | 0.37[c] | 0.28–0.48 | 0.27[c] | 0.21–0.34 | 0.56[c] | 0.44–0.72 | 0.52[c] | 0.45–0.61 | 0.79[c] | 0.69–0.89 | 0.98 | 0.82–1.17 |
| Asian | 0.54[c] | 0.44–0.67 | 0.33[c] | 0.27–0.40 | 0.32[c] | 0.28–0.38 | 0.48[c] | 0.40–0.58 | 0.93 | 0.85–1.02 | 1.12[c] | 1.03–1.22 | 1.25[c] | 1.11–1.41 |
| AI/AN/NH | 0.85 | 0.40–1.79 | 0.83 | 0.47–1.47 | 0.63 | 0.37–1.06 | 1.13 | 0.67–1.91 | 0.90 | 0.62–1.30 | 0.79 | 0.55–1.13 | 1.26 | 0.81–1.96 |
| Multiracial | 0.83[b] | 0.69–0.98 | 0.76[c] | 0.66–0.87 | 0.66[c] | 0.59–0.74 | 0.91 | 0.79–1.04 | 1.07 | 0.99–1.16 | 1.11[b] | 1.03–1.20 | 1.17[c] | 1.05–1.30 |
| Age (years) | | | | | | | | | | | | | | |
| 18–24 | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – |
| 25+ | 2.06[c] | 1.70–2.50 | 1.42[c] | 1.21–1.67 | 1.85[c] | 1.62–2.11 | 1.69[c] | 1.44–1.98 | 0.77[c] | 0.69–0.86 | 1.06 | 0.96–1.17 | 1.22[c] | 1.07–1.40 |
| Gender | | | | | | | | | | | | | | |
| Female | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – |
| Male | 0.88 | 0.78–1.00 | 0.48[c] | 0.43–0.53 | 0.55[c] | 0.50–0.60 | 1.18[c] | 1.07–1.30 | 0.64[c] | 0.60–0.68 | 1.07[b] | 1.01–1.13 | 0.95 | 0.87–1.03 |
| Transgender | 2.03[b] | 1.08–3.85 | 1.89[b] | 1.11–3.24 | 2.38[c] | 1.59–3.57 | 2.15[b] | 1.18–3.91 | 2.38[c] | 1.69–3.36 | 2.32[c] | 1.62–3.32 | 2.05[c] | 1.47–2.87 |
| Sexual orientation | | | | | | | | | | | | | | |
| Heterosexual | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – |
| Gay/Lesbian | 1.85[c] | 1.41–2.42 | 1.78[c] | 1.41–2.25 | 2.01[c] | 1.67–2.42 | 1.38[b] | 1.09–1.75 | 2.49[c] | 2.18–2.85 | 2.44[c] | 2.14–2.78 | 2.60[c] | 2.21–3.04 |
| Bisexual | 2.20[c] | 1.82–2.67 | 1.50[c] | 1.27–1.79 | 2.79[c] | 2.48–3.15 | 1.53[c] | 1.27–1.84 | 3.82[c] | 3.48–4.20 | 3.93[c] | 3.57–4.32 | 3.33[c] | 2.99–3.71 |
| Unsure | 1.68[c] | 1.27–2.22 | 1.25[a] | 0.98–1.60 | 1.90[c] | 1.59–2.27 | 1.18 | 0.90–1.53 | 2.46[c] | 2.15–2.80 | 2.43[c] | 2.13–2.76 | 1.95[c] | 1.65–2.30 |
| Relationship status | | | | | | | | | | | | | | |
| Not in a relationship | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – |
| In a relationship, living separately | 1.0 | 0.88–1.13 | 1.12[b] | 1.02–1.23 | 0.93 | 0.86–1.01 | 0.97 | 0.88–1.07 | 1.18[c] | 1.12–1.25 | 1.01 | 0.96–1.07 | 1.13[c] | 1.05–1.23 |

| | Depression diagnosis | | Anxiety diagnosis | | Depression and anxiety diagnosis | | Other diagnosis | | Self-injury | | Suicidal ideation | | Suicide attempts | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Characteristic** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** | **OR** | **99% CI** |
| In a relationship, living together | 0.97 | 0.80–1.18 | 1.07 | 0.92–1.24 | 0.98 | 0.86–1.11 | 0.98 | 0.83–1.14 | 1.36[c] | 1.23–1.49 | 1.11[b] | 1.01–1.21 | 1.34[c] | 1.19–1.52 |
| Year in school | | | | | | | | | | | | | | |
| 1st | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – |
| 2nd | 0.96 | 0.82–1.13 | 1.04 | 0.91–1.18 | 1.14[b] | 1.03–1.27 | 0.99 | 0.87–1.12 | 0.97 | 0.90–1.05 | 0.98 | 0.91–1.06 | 0.92 | 0.83–1.02 |
| 3rd | 0.97 | 0.83–1.14 | 1.25[c] | 1.10–1.41 | 1.18[c] | 1.06–1.31 | 1.00 | 0.88–1.13 | 0.91[b] | 0.85–0.98 | 0.92[b] | 0.85–0.98 | 0.86[c] | 0.78–0.96 |
| 4th | 1.03 | 0.87–1.22 | 1.22[c] | 1.07–1.39 | 1.18[c] | 1.05–1.32 | 0.97 | 0.85–1.11 | 0.89[c] | 0.82–0.96 | 0.87[c] | 0.81–0.94 | 0.86[c] | 0.77–0.96 |
| ≥ 5th | 1.06 | 0.84–1.35 | 1.34[c] | 1.12–1.62 | 1.31[b] | 1.12–1.53 | 1.12 | 0.93–1.34 | 0.93 | 0.82–1.04 | 1.02 | 0.92–1.14 | 0.95 | 0.82–1.11 |
| Transfer student | 1.06 | 0.91–1.23 | 1.13[b] | 1.00–1.26 | 1.13[b] | 1.03–1.25 | 1.10 | 0.97–1.24 | 1.09[b] | 1.01–1.17 | 1.06[a] | 0.99–1.13 | 1.15[c] | 1.05–1.27 |
| International student | 1.13 | 0.87–1.48 | 1.02 | 0.82–1.27 | 1.03 | 0.86–1.25 | 1.01 | 0.81–1.27 | 0.88[c] | 0.77–1.00 | 0.81[c] | 0.71–0.91 | 0.97 | 0.82–1.15 |
| Stress | | | | | | | | | | | | | | |
| 0 events | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | 1.0 | – | – | – |
| 1–2 events | 2.40[c] | 1.89–3.04 | 1.86[c] | 1.61–2.15 | 2.64[c] | 2.20–3.18 | 1.56[c] | 1.37–1.79 | 1.71[c] | 1.55–1.88 | 1.89[c] | 1.72–2.08 | 1.41[c] | 1.21–1.63 |
| 3–5 events | 5.07[c] | 4.07–6.33 | 2.88[c] | 2.51–3.30 | 7.69[c] | 6.50–9.09 | 2.03[c] | 1.78–2.32 | 3.23[c] | 2.95–3.53 | 4.25[c] | 3.90–4.63 | 2.76[c] | 2.42–3.14 |
| 6+ events | 9.21[c] | 7.38–11.49 | 3.62[c] | 3.13–4.18 | 20.0[c] | 16.96–23.62 | 2.64[c] | 2.29–3.03 | 6.32[c] | 5.77–6.92 | 10.06[c] | 9.22– 10.98 | 6.66[c] | 5.87–7.56 |

American Indian, AI; Alaska Native, AN; Native Hawaiian, NH.

CI, confidence interval; OR, odds ratio.

[a] $p < 0.05$

[b] $p < 0.01$

[c] $p < 0.001$.