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Prevalence and correlates of mental health symptoms and disorders among US international college students

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Abstract

Objective: This study assessed the prevalence and correlates of mental health (MH) symptoms and diagnoses in international college students in the United States.

Participants: The sample included 44,851 degree-seeking undergraduate students (42,428 domestic students and 2,423 international students).

Methods: Logistic regression analyses were conducted using international student status to predict MH symptoms and diagnoses from the Spring 2017 administration of the American College Health Association-National College Health Assessment (ACHA-NCHA).

Results: International students were less likely than domestic students to report a diagnosis of anxiety, co-morbid depression and anxiety, or other psychiatric diagnoses. International students were more likely to report suicide attempts and feeling overwhelmingly depressed.

Conclusions: Among international students studying in the US, lower rates of MH diagnoses despite higher rates of depressive symptoms and suicide attempts mirror similar trends seen in American-born minority students. University campuses should consider culturally sensitive and targeted psychoeducation, mental health services, and outreach programming.

Keywords

international college students; suicidal ideation; suicide attempt; mental health; universities

Introduction

The United States is currently the most common destination for study abroad globally.[1] The number of international students in the US has more than doubled in the last two decades, and in 2019 surpassed one million students for the third consecutive year, reaching a new high of 1.09 million and accounting for 5.5% of all higher education students in the US.[2]

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The majority of international students are from Asia; about one in three are from China, and students from China, India, and South Korea constitute over half of the overall international student population in the US. The sharp growth in international student enrollment has drawn increasing attention from researchers regarding the unique challenges these students face, as well as the need for additional supports to achieve educational success.[3]

International students are an at-risk population for mental health problems because of multiple stressors, including adjustment to a new culture, language barriers, and differences in living and learning environments.[4] Culture shock is a common experience for international students who must adjust to unfamiliar social norms, beliefs, and ways of communicating and interacting. International students often struggle with conflicting attitudes, behaviors, and values between American culture and their home culture.[5,6] Previous research has emphasized the impact of stressors such as language barriers, academic pressure, challenges with social interaction, and cultural differences impacting formation of peer relationships.[7–9] Further exacerbating these difficulties, international students also face challenges in seeking professional mental health treatment when needed due to cultural stigma regarding mental illnesses and their treatment, lack of English language proficiency, unfamiliarity with services offered, and differences in help-seeking behavior that lead international students to endure until the distress is intolerable.[10–13] If left unaddressed, these stressors may contribute to the development of more serious mental health problems and their sequelae, including depression, anxiety, and suicidality.[14]

Investigation into the prevalence of depression and related mental health issues among international students is limited using variable methods in the literature. Han et al.[15] used the Chinese versions of the Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) to assess Chinese international students' depression and anxiety symptoms within the past two weeks at an elite private university in New England. Han et al.[15] used a cutoff score of 5 or above for the measures to indicate at least mild depressive and anxiety symptoms. Results revealed a prevalence rate of 45% for depressive symptoms and 29% for anxiety symptoms.[15] A more recent study by Lian and Wallace[16] also specifically assessed Chinese international students through an online survey. These investigators provided definitions of depression and anxiety to respondents and asked for a binary response (Yes/No) as to whether participants experienced depression and/or anxiety in the past 30 days, 6 months, and 12 months.[16] Results indicated that 77.9% of the Chinese international students experienced depressive symptoms in the past 12 months, and 74.3% experienced anxiety symptoms in the same time period. These prevalence rates were markedly higher than the prevalence rate of depression among Chinese university students in China (23.8%) based on a meta-analysis of 39 studies conducted using self-report measures, or the prevalence rate of any depressive or anxiety disorder in the general college population in a multinational study across eight countries on 12-month prevalence rates of depression (18.5%) and anxiety (16.7%).[17–19] Despite higher prevalence rates of depressive and anxiety symptoms among international students, international students have been found to underutilize mental health services and thus to be less likely to receive diagnoses.[20,21] The samples of most of these studies were Asian or Chinese international students, which is not surprising given the demographic makeup of this group as described.

Taken together, these results suggest that international students may exhibit greater psychological distress than domestic students.[22] However, previous research has mainly utilized cross-sectional designs based on questionnaire reports of symptoms at only one or a few universities.[15,22,23] To our knowledge, no large-scale study has ever been conducted specifically focused on the mental health of international students in the US. This paper compares the prevalence of psychiatric symptoms and diagnoses among international and domestic undergraduate students using data from the Spring 2017 administration of the American College Health Association-National College Health Assessment (ACHA-NCHA), an annual survey administered to students in US institutions of higher education regarding their physical and mental health habits, behaviors, and perceptions. This paper focused on undergraduate students because past studies identified significant differences between undergraduate and graduate students in stress levels, mental health symptoms, and likelihood to seek help in mental health.[24,25] We addressed two main research questions: a) How does international student status predict mental health symptoms among international and domestic undergraduate students? and b) How does international student status predict psychiatric diagnoses among international and domestic undergraduate students? Based on limited extant research, it was hypothesized that international undergraduate students endorse higher levels of mental health symptoms but are less likely to receive psychiatric diagnoses.

Methods

Data Source and Sample

The American College Health Association-National College Health Assessment (ACHA-NCHA) is an English-language survey administered twice a year in the fall and spring semesters by the ACHA. Participating institutions choose to administer either the paper survey or the web-based survey to a randomly selected sample of enrolled students 18 years of age and older. The ACHA-NCHA survey takes approximately 20 minutes to complete. The Spring 2017 ACHA-NCHA IIC Reference Group compiles survey data from 63,497 respondents in 92 US postsecondary educational institutions that used random sampling techniques. Among 63,497 respondents, 44,851 respondents were undergraduates, and 2,423 (5.4%) of the undergraduates were international students. Recruitment methods varied across institutions. Only institutions that used a random selection method or sampled all enrolled students were included in this dataset. Among the 92 institutions, 89 administered the web-based survey with a mean response rate of 19% and the other three administered the paper survey with a mean response rate of 81%. The overall response rate was 21%. This analysis was deemed exempt from review by the Partners HealthCare Human Research Committee/Institutional Review Board, Boston, MA.

Measures

Mental Health (MH) Diagnoses and Symptoms

Mental health (MH) diagnoses of participants were evaluated by self-report of having been diagnosed or treated by a professional within the past 12 months for 15 MH diagnoses: anorexia, anxiety, attention-deficit/hyperactivity disorder (ADHD), bipolar disorder, bulimia,

depression, insomnia, other sleep disorder, obsessive-compulsive disorder (OCD), 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 listed condition, participants could endorse “no”; “yes, diagnosed but not treated”; “yes, treated with medication”; “yes, treated with psychotherapy”; “yes, treated with medication and psychotherapy”; or “yes, other treatment.”

Given the high prevalence of depression and anxiety among youth and young adults,[26,27] and following the example of recent studies utilizing this dataset,[28,29] we retained depression and anxiety diagnoses as both distinct and co-morbid MH diagnosis categories and collapsed the other disorders to create a fourth category of “other MH conditions.” Responses of the variable were dichotomized: “no” for those who did not have a diagnosis in the last 12 months, or “yes” for those who endorsed a diagnosis, regardless of whether they received any forms of treatment from a professional in the last 12 months. Following this dichotomization, four distinct diagnosis categories were created: depression (not co-morbid with anxiety), anxiety (not co-morbid with depression), co-morbid depression and anxiety, and other MH conditions (excluding depression or anxiety).

Participants were also assessed for their endorsement of 11 mental health-related feelings and behaviors. For the purposes of this paper, we relied on five mental health-related feelings and behaviors related to anxiety/depression diagnoses: “Felt so depressed that it was difficult to function”; “Felt overwhelming anxiety”; “Intentionally cut, burned, or otherwise injured yourself”; “Seriously considered suicide”; and “Attempted suicide.” For each feeling or behavior, participants selected one of five answer choices to indicate frequency, including: “No, never”; “No, not in the last 12 months”; “Yes, in the last two weeks”; “Yes, in the last 30 days”; or, “Yes, in the last 12 months.” Given the answer choices were not mutually exclusive, responses of these variables were dichotomized based on 12-month symptom prevalence: the two “No” responses into one category and the three “Yes” responses into the other.

International Student Status

International student status was measured by a self-report question “Are you an international student?”. Respondents who answered “Yes” to the question is categorized as international students and respondents who answered “No” were considered domestic students.

Data Analysis

To clean the data, we followed the previous practice of other studies.[30,31] First, 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 (BMI) between 16 and 65 kg/m^2.[32] Participants were also excluded if they omitted any answer within the list of five symptoms of interest, if they were missing responses to the diagnosis questions, or if they did not answer the question about international student status. This resulted in a total of 44,851 degree-seeking undergraduate students for analysis, of whom 42,428 were domestic students and 2,423 were international students.

International student status was used to predict each outcome using logistic regression with a generalized estimating equations (GEE) approach. This approach accounted for the correlations between the responses as a potential result of the relatedness of respondents within the same cluster (i.e., school). We set a level of significance at $p<.05$ and report 95% confidence intervals. IBM SPSS Statistics 25 was used to conduct data analysis.

Results

Table 1 presents descriptive statistics of the sample, as well as the rates of MH symptoms and diagnoses. The sample consists of 42,428 domestic students (94.6%) and 2,423 international students (5.4%). The majority of domestic undergraduate students identified as White (69.7%) whereas the largest racial group in international graduate students was Asian (44.8%). More respondents identified as female in both domestic (67.8%) and international (59.3%) student groups.

Table 2 presents results of logistic regression models of MH symptoms and diagnoses based on international student status. Although international and domestic students did not differ significantly in rates of depression diagnosis, international students were less likely to have diagnoses of anxiety (OR=0.47), comorbid anxiety and depression (OR=0.58), or other MH diagnoses (OR=0.72). Results of MH symptoms were less consistent. International students reported significantly lower levels of overwhelming anxiety (OR=0.69) and suicidal ideation (OR=0.83). Although the likelihood of self-injurious behavior was similar between international and domestic students, international students showed greater likelihood of depressive symptoms (OR=1.10) and suicide attempts (OR=1.37).

Discussion

To our knowledge, this is the first large-scale nationally sampled study of international student MH symptoms and diagnoses. The data reported here indicate that international students are at higher risk than non-international students for both depressive symptoms and suicide attempts. However, these higher rates of concerning MH symptoms and behaviors occur alongside significantly lower rates of diagnoses of several MH categories including anxiety, comorbid anxiety and depression, and other MH diagnoses, as well as lower rates of suicidal ideation.

Specifically, compared with domestic students, international students were less likely to endorse suicidal ideation but more likely to have attempted suicide within the past year. This alarming finding suggests that international students may be at increased risk for engaging in impulsive, immediate suicidality. Prior research is limited regarding suicidal ideation or attempts among international students. Servaty-Seib et al.[33] found that campus belongingness, but not family belongingness, is negatively associated with suicidal ideation among international students. One of the possible explanations is that international students place more emphasis on connectedness on campus because they are away from their family. Given the increase in the number of international students on most college campuses and awareness of international students' needs, international students may be more likely to find social support and a sense of belonging to their college, contributing to lower suicidal

ideation.[34,35] International students' elevated likelihood of suicide attempts, however, is similar to previous findings about American-born ethnic minority students in the same survey. Chen et al[32] reported that all American-born ethnic minority student groups were more likely to have attempted suicide than their White counterparts. As noted above, international students have been repeatedly found to underutilize mental health services, with reasons including differences in illness beliefs or conceptualization,[13] stigma,[36] lack of awareness of the need for help,[37] and lack of awareness of resources.[38] Cerel et al[38] also found that international students were less likely than domestic students to see suicide as a problem for college-aged individuals. Other risk factors for suicide attempts including discrimination, racial identity, and mental health symptoms are also applicable to international students.[39,40] Based on these findings, international students may not be aware of the severity of suicidality and their need for help. When faced with complex, overwhelming mental health symptoms without appropriate treatment, international students are more likely to attempt suicide.

The current study indicates that international students were more likely than domestic students to feel overwhelmingly depressed. However, the likelihood of a depression diagnosis between the two student populations was not significantly different. There are several potential explanations for this discrepancy; for instance, international students may have had less exposure to mental health practitioners who could provide a diagnosis,[41] they may believe that they can handle depressive symptoms without treatment,[42] or they may be reluctant to disclose a stigmatized diagnosis even in a confidential survey.[13]

The hypothesis that international students have less exposure to mental health professionals is consistent with previous studies on reduced help-seeking behavior related to mental health challenges in this group.[37,43] International students tend to privilege the use of social supports from friends or family over seeking professional help. However, such social supports can be less accessible for international students because their families are geographically distant, and many students may still struggle to form strong social networks in the US despite increase in the number of international students.[44] Based on data from the Healthy Minds Study, Hefner and Eisenberg[45] reported significantly lower quality of social support and quantity of social contact with family and friends among international college students than domestic students. Thus, international students lack both informal and professional supports that can help them overcome emotional challenges.

Taken together, these studies suggest a need to better understand these phenomena and discrepancies through qualitative research to understand the subjective mental health experiences of international students. Insights gained from such research could help shape the development and implementation of more preventative measures targeting international students with the goal of improving psychoeducation about mental health, particularly the warning signs and severity of suicide in the college-age population, and also make the case for increasing access to culturally and linguistically appropriate counseling and psychological services on campus.

A similar discrepancy between symptoms and diagnoses has been previously identified in racial and ethnic groups from the same ACHA-NCHA data.[32] Specifically, compared

with White American undergraduate students, Asian American undergraduate students also reported an increased likelihood of feeling overwhelmingly depressed but lower rates of depression diagnoses. It should be noted that Asian international students constitute 44.8% of the international student sample used in the current study, which may impact the generalizability of the results for other racial groups of international students. Further investigation specifically into the mental health experiences of non-Asian international students may be warranted. The similarity between international students and Asian American students may also suggest shared cultural factors impacting both of these groups reported in the literature, including stigma toward psychological help-seeking, lack of access to culturally sensitive services, and individual and systems-level discrimination.[13,46,47] Future research, both qualitative and quantitative, should examine the similarities and differences between these vulnerable minority groups to guide more nuanced approaches to addressing their mental health problems.

Limitations

As the ACHA-NCHA data were collected based on self-report, our interpretation of the results is limited by the respondents' interpretation of the items and possible response bias. The lack of queries regarding specific symptoms of MH diagnoses may affect our interpretation because the diagnoses could be made in another country with different conceptualizations of mental illnesses. The single items on feeling depressed and overwhelming anxiety also do not represent the diverse and complex symptoms of depression and anxiety. The findings are specific to international students studying in the US. It is unclear if the implications are generalizable for other international student populations (e.g., US students studying abroad).

Conclusion

The current study has significant implications for international student mental health services. To address the higher levels of depressive symptoms and suicide attempts among international students found in this analysis, university campuses should increase and improve psychoeducation on reducing stigma of mental health problems and understanding the warning signs of depression and suicidality in a culturally sensitive manner. Educational institutions can utilize prior research to tailor interventions for this unique and vulnerable population. For instance, knowing that international students tend to prefer to reach out to their social networks for mental health support, peer-based mental health awareness and referral training could help reduce stigma and promote international students' engagement with professional mental health services when appropriate. Engaging parents in mental health can also provide additional social support for international students.[48] On a systems-level, universities can consider providing translated psychoeducation materials and recruit more linguistically diverse clinicians to allow more options for international students who prefer their native language.[49,50]

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Table 1

Distribution of Descriptive Characteristics and Rates of Mental Health Symptoms and Diagonoses of ACHA-NCHA IIC Participants, Spring 2017 (n=44,851).

	Domestic Students (n =42,428)		International Students (n=2,423)	
Descriptive Characteristics	**n**	**%**	**n**	**%**
Race				
White	29,566	69.7	641	26.5
Hispanic	2,821	6.6	192	7.9
Black	1,935	4.6	151	6.2
Asian	3,450	8.1	1,085	44.8
American Indian/Alaskan Native/Native Hawaiian	150	0.4	3	0.1
Multiracial	4,077	9.6	244	10
Gender				
Male	12,436	29.3	917	37.8
Female	28,781	67.8	1,438	59.3
Non-binary	1,064	2.5	60	2.5
	No	**Yes**	**No**	**Yes**
Mental Health Diagonoses	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Depression Diagnosis	41,047 (96.7)	1,381 (3.3)	2,348 (96.9)	75 (3.1)
Anxiety Diagnosis	39,281 (92.6)	3,147 (7.4)	2,327 (96.0)	96 (4.0)
Depression and Anxiety Diagnosis	36,554 (86.2)	5,874 (13.8)	2,201 (90.8)	222 (9.2)
Other Diagnosis	40,064 (94.4)	2,364 (5.6)	2,313 (95.5)	110 (4.5)
Mental Health Symptoms				
Ever felt so depressed that it was difficult to function	25,363 (59.8)	17,065 (40.2)	1,395 (57.6)	1,028 (42.4)
Ever felt overwhelming anxiety	15,773 (37.2)	26,655 (62.8)	1,124 (46.4)	1,299 (53.6)
Ever intentionally cut, burned, bruised, or otherwise ingured yourself	39,033 (92.0)	3,395 (8.0)	2,236 (92.3)	187 (7.7)
Ever seriously considered suicide	37,525 (88.4)	4,903 (11.6)	2,186 (90.2)	237 (9.8)
Ever attempted suicide	41,735 (98.4)	693 (1.6)	2,369 (97.8)	54 (2.2)

Table 2

International Student Status Correlates of Mental Health Diagnoses and Symptoms of ACHA-NCHA IIC, Spring 2017.

	International	
	OR	**95% CI**
Mental Health Diagnoses		
Depression Diagnosis	0.84	0.66–1.06
Anxiety Diagnosis	0.47***	0.38–0.58
Depression and Anxiety Diagnosis	0.58***	0.50–0.67
Other Diagnosis	0.72**	0.59–0.87
Mental Health Symptoms		
Ever felt so depressed that it was difficult to function	1.10*	1.01–1.19
Ever felt overwhelming anxiety	0.69***	0.63–0.74
Ever intentionally cut, burned, bruised, or otherwise injured yourself	0.96	0.83–1.12
Ever seriously considered suicide	0.83**	0.72–0.95
Ever attempted suicide	1.37*	1.04–1.82

* p<.05,

** p<.01,

*** p<.001