A Public Health Approach to Understanding the Mental Health Needs of College Students with Disabilities: Results From a National Survey

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Abstract

Students with disabilities are a growing population on college and university campuses across the United States. Despite this, the mental health status and service utilization of students with disabilities remain largely understudied. From a public health perspective, large-scale research is needed to understand the mental and behavioral health needs of these students and inform evidence-based intervention and prevention efforts. The purpose of this study was to estimate the prevalence of mental health symptoms and rates of mental health help-seeking in a national sample of college students with disabilities (*N*=6,382) and to compare these outcomes to a national sample of students without registered disabilities (*N*=86,966). The large and diverse sample drawn from 60 campuses provides a valuable opportunity to explore mental health variations within the population of students with disabilities. Results demonstrate that students with disabilities have significantly higher prevalence rates of mental health problems and are more likely to utilize mental health services compared to students without disabilities. Overall, students with disabilities report finances and a lack of convenience as the main reasons for accessing fewer counseling sessions. The findings of this population-level analysis can provide insight into the mental and behavioral health needs of students with disabilities. In doing so, this study can inform disability service providers and deans of students on college campuses of the significance of addressing the mental health needs of a highly vulnerable population.

Keywords: adolescent and young adult mental health, campus mental and behavioral health, students with disabilities, mental health service utilization

College students across the country are experiencing what many refer to as a "campus mental health crisis" (Kadison & DiGeronima, 2004; Schwartz & Kay, 2009), with some researchers suggesting that the prevalence of mental health problems in college populations has increased in the last decade (Lipson et al., 2019). According to the American College Health Association (2018), over half of college students surveyed felt hopeless, and close to 90% felt overwhelmed during the past 12 months. Recent data from the Healthy Minds Study revealed that 39% of students were experiencing clinically-significant symptoms of one or more mental health problems (Eisenberg & Lipson, 2017). Of those students, 18% screened positive for major depression, and 13% for severe anxiety (Eisenberg & Lipson). Student-level data are consistent with findings from a national survey of college counseling center directors, in which a majority of directors perceive an increase in the severity of psychopathology among students presenting in their counseling centers (Mistler et al., 2012). Over 1,100 students die by suicide each year, making suicide the second leading cause of death among college students (National Institute of Mental Health, 2019). Furthermore, the period of onset for lifetime mental illnesses directly coincides with the age range of many college students: 75% of chronic mental illnesses begin by age 24 (Kessler, et al., 2005). These and other statistics underscore the public health importance of understanding and addressing the mental and behavioral health of college student populations.

There are approximately 20 million students en-

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rolled in U.S. postsecondary education, including graduate and less than 2- to 4-year undergraduate private, public, or proprietary institutions (Ginder et al., 2019). College students represent roughly 70% of all adolescents and young adults nationwide (Ginder et al.). College students in the U.S. are an ever-diversifying population across numerous dimensions, including age, race, ethnicity, citizenship, sexual orientation, gender identity, and socioeconomic status. A growing body of literature is focused on the mental and behavioral health of the subgroups of students defined by the aforementioned characteristics and identities (Lipson et al., 2019). However, disability status is one dimension that warrants additional attention in the national dialogue about understanding and addressing mental and behavioral health on campus.

According to the most recent data from the National Center for Education Statistics (2019), students with disabilities make up 19% of undergraduate students and 12% of graduate students in the U.S. The Americans with Disabilities Act (ADA) of 1990 (ADA, 1990) and ADA Amendments Act (ADA-AA, 2008) defined disability as a physical or mental impairment that significantly limits one or more major life activities. Major life activities include disabilities affecting seeing, hearing, walking, communicating, learning, thinking, and limited bodily functions (ADA, 1990; ADA-AA, 2008).

Disability Services for College Students

Postsecondary institutions are required by the ADA and ADA-AA to support students with disabilities throughout their college years by providing equal opportunities and reasonable accommodations (ADA, 1990; ADA-AA, 2008). Disability support services (DSS) offices on many college campuses play an integral role in assisting students with disabilities (Summers et al., 2014; Carter, 2017). DSS provides notetakers, adapted learning tools, tutors, advocacy and counseling services, and career advice to students with registered disabilities (Summers et al.; Carter). Research shows that of all students registered with disabilities, a vast majority received services from DSS on their college campuses (Marshak et al., 2010). DSS can serve as an advocate for students with disabilities through various partnerships with campus programs (Association on Higher Education And Disability [AHEAD], n.d.). By representing students with disabilities on campus committees, disability service providers can ensure students with disabilities have equal access to on-campus services (AHEAD, n.d.). Disability service providers also focus on enhancing disability awareness through comprehensive disability training of staff members (AHEAD, n.d.). Integrating DSS with other campus services and collaborating with program directors to promote accessibility for students with disabilities could improve the college experience for students with disabilities.

Prior Research on Campus Mental Health Services

The majority of university students in the U.S. have health insurance and access to free mental and behavioral health services (Eisenberg et al., 2007). According to the Association for University and College Counseling Center Directors Annual Survey (2018), over half of students receiving counseling reported that counseling helped them stay in school and improve their academic performance. While mental and behavioral health services are available and affordable on college campuses, a large portion of students experiencing mental and behavioral health symptoms are not utilizing these services (LeViness et al., 2017). Findings from the Healthy Minds Study show that only 53% of students with positive screens for depression and anxiety received mental health services in the past year (Eisenberg & Lipson, 2018). Available evidence suggests that there will be an increased demand for mental and behavioral health services among college students as prevalence rates continue to rise (Goodman, 2017). The large gap between campus mental health services and the increasing number of students experiencing mental and behavioral health conditions is another challenging aspect of the campus mental health crisis (Mistler et al., 2012).

Mental Health of Students with Disabilities

Students with disabilities have unique and additional challenges in navigating and adjusting to college (Ford et al., 2019). Compared to their peers, students with disabilities report greater academic-related concerns, distress, and self-harming tendencies (Coduti et al., 2016). Extant research suggests that students with disabilities are at increased risk of experiencing emotional, academic, and behavioral challenges (Hendrickson et al., 2017). However, the few existing studies in this area rely on small sample sizes of college students with disabilities (Coduti et al., 2016; Fleming et al., 2018). From a population-level perspective, even less is known about how students with disabilities seek disability support and mental health services, and the degree to which their needs are being met by the campus mental health system (Carter, 2017). Existing studies have looked at students seeking counseling services (i.e., those in treatment), rather than population-level, random student samples (Fleming et al.; Coduti et al.). The limited

body of research on mental health among college students with disabilities may not be representative of the population. Additional research can provide further knowledge of the mental health status and help seeking behaviors of students with disabilities. This information can serve as a measure of the additional counseling and advocacy needed by DSS and Counseling Center Directors on campus. Understanding the behavioral health needs of students with disabilities can propel Disability Service providers to review campus-wide programs and the services DSS offers. Through collaboration with related program directors, Disability Service providers can promote awareness of the multi-layered vulnerabilities experienced by students.

To fill these important gaps in knowledge, the objectives of this study were (1) to estimate the prevalence of clinically-significant mental health symptoms in a sample of college students with disabilities, (2) describe the mental health help-seeking behaviors of students with disabilities, and (3) compare the behavioral health needs and service utilization among students with disabilities relative to their peers. The large national sample in this study also provides a valuable opportunity to explore behavioral health variations within the heterogeneous population of students with disabilities along dimensions of racial, ethnic, and gender identity, among other student characteristics. The findings of this population-based nationwide study highlight the magnitude of behavioral health needs in the highly vulnerable yet understudied population of students with disabilities. The snapshot of the mental health experiences of students with disabilities can inform disability service providers and accessibility consults of the need for improvements in the delivery of campus mental health services.

Methods

Study Design

Data

The Healthy Minds Study (HMS) is a national web-based annual survey exploring mental health, use of services, and related topics in undergraduate and graduate student populations. Details about the study design and methodology of HMS have been reported in previous publications (Lipson et al., 2018; Sonneville & Lipson, 2018). In the present study, we analyzed two years of HMS data (2016-2018) from 60 colleges and universities. All participating institutions elected to take part in HMS. There are no exclusion criteria for institutions enrolling in the study. The institutions in the study have diverse characteristics, including location, size, type of institution, and admissions selectivity. Including institutions with varying characteristics strengthens how much the sample in the study represents the college student population.

The Institutional Review Board approved HMS on all participating campuses. Additional protections were provided by a Certificate of Confidentiality from the National Institutes of Health.

Recruitment and Informed Consent. At each participating campus, the HMS study team recruited a random sample of 4,000 degree-seeking students from the full student population at that institution; at smaller institutions, all students were recruited to participate. Random sampling was used to obtain an unbiased reflection of the population of interest. The Registrar of each institution provided student sample files, which included names and email addresses that were used for recruitment and nonresponse analyses. Students were emailed a personalized link and provided an informed consent page to review before entering the survey. Then, students had to agree to the terms of participation before starting the survey. Data from the surveys were collected using Qualtrics software. Students less than 18 years of age were excluded from the study—there were no other exclusion criteria. In an effort to improve participation rates, students were incentivized to participate in the survey through eligibility to receive one prize per cycle. Prizes totaled $2,000 annually and included ten $100 gift cards and two $500 gift cards.

Non-response Analysis. The overall response rate for the two years was 23%. The study team created sample probability weights to account for possible differences between responders and nonresponders. To construct response weights, administrative data were used. Participating institutions provided the data, including race/ethnicity, male/female gender, academic level, and grade point average. Response weights equal to 1 were divided by the estimated probability of response, which was calculated using logistic regression. To ensure the estimates are representative of the whole population, respondents with underrepresented characteristics have larger weights.

Measures

Disability Status

The primary independent variable was students' disability status; students in the study were categorized into two categories depending on whether they reported having a registered disability. We used the following question to assess disability status: "Are you registered with the office of disability services on this campus, as having a documented and diagnosed disability?" Students answered "yes" if they

were registered as having documented and diagnosed disability or "no" if they were not.

Disability Type

To understand variations in mental health symptoms across disabilities, we examined disability type. We used the following question to determine the students' disability type: "Please indicate which category of disability you are registered for." To ensure sufficient sample sizes for the analyses, we categorized students into the following disability types: neurodevelopmental, psychological, physical, and other. Participants who reported they were registered for attention-deficit/hyperactivity disorder and learning disorders were categorized in the "neurodevelopmental disability" category. Students were categorized in the "psychological disability" category if they reported registering for a psychological disorder/condition. Participants who reported they were registered for mobility impairments, visual impairments, physical/health-related disorders, and deaf or hard of hearing were categorized in the "physical disability" category. Participants who reported having a registered disability other than the choices listed above were categorized in the "other disability" category.

Mental Health Outcomes

The primary dependent variables in the study were mental health symptoms. We assessed seven binary measures of mental health: *flourishing, depression, anxiety,* non-suicidal self-injury *(NSSI), suicidal ideation, suicide attempt,* and *any mental health problem*. Most of the binary measures we used have been validated based on standard cutoffs allowing for comparison between students that screen positive or negative for mental health problems.

To understand how students with disabilities flourish (i.e., have positive mental health) compared to their peers, we examined the proportion of flourishing students using the Flourishing Scale (Diener et al., 2009). The eight-item scale has shown to have convergent validity with other similar scales (Diener et al., 2010). The scale is designed to measure major factors related to social-psychological functioning, including purpose, optimism, relationships, and self-esteem (Diener et al., 2009). The scale produced scores ranging from 8-56. Higher scores indicate higher well-being. We identified a score of >48 to indicate flourishing based on similar rates on other scales (Keyes, 2002).

Symptoms of *depression* were measured using the Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al., 2001). Validation studies of the PHQ-9 have determined it to be internally consistent and highly correlated with clinical diagnosis (Lowe et al., 2004; Huang et al., 2006). Scores ranged from 0-27 with higher scores indicating higher levels of depressive symptoms. We used the standard cutoff of >10, with scores >10 indicating symptoms of depression.

Symptoms of *anxiety* were assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale (Spitzer et al., 2006). We used the standard cutoff of >10, with scores >10 indicating symptoms of anxiety (Spitzer et al. 2006). Prior studies found this cutoff to be sensitive and specific (Spitzer et al. 2006).

To compare *NSSI* across disability status we used the following: "This question asks about the ways you may have hurt yourself on purpose, without intending to kill yourself. In the past year, have you ever done any of the following intentionally?" Self-injury was identified as any harm individuals inflict upon themselves, with response options including cutting, burning, and punching. We created a binary measure of any past-year NSSI and no past-year NSSI.

To determine whether students with disabilities experienced suicidal ideation or attempt more or less often than students without disabilities, we used two questions. To measure *suicidal ideation* we asked the following question: "In the past year, did you ever seriously think about attempting suicide?" *Suicide attempt* was examined using a single question: "In the past year did you attempt suicide?" Students selected "yes" or "no" from the response options. We created binary measures based on the response options for these questions.

In addition to examining each of the above-mentioned mental health symptoms, measuring whether students experienced at least one mental health symptom would provide an overview of the overall mental health status of students. We developed a binary variable of *any mental health problem* to determine whether one or more of the above-mentioned problems were present (depression, anxiety, NSSI, suicidality).

Help Seeking/Service Utilization

We assessed two binary measures related to mental health service utilization: (1) any therapy, past year, and (2) any prescription medication, past year. We examined service utilization among students meeting criteria for each of the mental health measures and any mental health problem. To measure therapy use in the past year, we asked the following question: "How many total visits or sessions for counseling or therapy have you had in the past 12 months?" We created a binary variable and categorized students who had no visits in the past year and students who had one or more visits in the past year. To measure any medication intake in the past

year, we asked the following question: "In the past 12 months, have you taken any of the following types of prescription medications? (Please count only those you took, or are taking, several times per week, Select all that apply)." We created a binary variable and categorized students who did not take medications or took sleeping aids into one category and those who took any other medications in the answer choice list into another category. Response options include psychostimulants, amphetamine salts, antidepressants, anti-psychotics, and anti-anxiety medications.

Data Analysis

We examined student characteristics by disability status and identified significant differences in characteristics between the two disability status groups using chi-square tests and *t*-tests. We report significant differences in student characteristics using *p*-values. To address our main research questions, we report the prevalence of the mental health measures described above stratified by disability status. Then, we calculated bivariate statistics for help seeking/service utilization among students with each mental health measure and any mental health problem stratified by disability status. In Tables 1 and 2, we report significance using *p*-values based on two-tailed chi-square tests. We assessed sample characteristics of students with registered disabilities by mental health measures and service utilization. We identified significant differences in the characteristics of students with disabilities using chi-square tests and t-tests and use *p*-values to report them. We report significant findings in the text with odds ratios and 95% confidence intervals (CI) to show effect size. We calculated the odds ratios for significant findings using logistic regression analysis. We report confidence intervals and p-values for the odds ratios. An odds ratio greater than one indicates higher likelihood of occurrence. Analyses were conducted using SAS 9.4.

Results

Sample Characteristics

The sample consisted of 93,348 students on 60 U.S. campuses. Within the sample, 70.4% were undergraduate, and 28.6% were graduate students. The sample included 6,382 students with registered disabilities (6.8%) and 86,966 students without registered disabilities (93.2%). Among students with disabilities, 44.3% reported being registered for a neurodevelopmental disability, 28.4% reported being registered for a psychological disability, 18.3% reported being registered for a physical disability, and 9.0% reported being registered for other disabilities. Additional sample characteristics are presented in Table 1.

Mental Health Status

Overall, 47% of students in the study met the criteria for at least one mental health problem, defined as screening positive for depression or anxiety or reporting NSSI, or suicidality. As shown in Figure 1, students with disabilities were more likely to meet the criteria for any mental health problem relative to students without disabilities (p <.0001). The prevalence of at least one mental health problem among students with disabilities was 67% compared to 45% for students without disabilities (p <.0001). More specifically, the odds of meeting the criteria for any mental health problem were 2.5 times greater among students with disabilities (p<.0001, 95% CI: 2.4-2.6). This finding was consistent across mental health indicators, with a higher prevalence of depression, anxiety, NSSI, suicidal ideation, and suicide attempt among students with disabilities relative to students without disabilities. Over half of students with disabilities screened positive for depression (51%), and 43% for anxiety. Over one-third of students with disabilities (37%) reported non-suicidal self-injury. Students with disabilities had a prevalence of suicidal ideation that was twice as high (23%) as their peers (11%) or odds that are 2.4. times higher (p<.0001, 95% CI: 2.0-2.2). The prevalence of suicide attempt was more than three times higher for students with disabilities (3.3%) compared to students without disabilities (0.9%) (p<.0001). The odds of suicide attempt were 3.8 times greater among students with disabilities (p<.0001, 95% CI: 3.3-4.5).

Among students with disabilities, the following individual characteristics were associated with significantly higher rates of having one or more mental health problem all at p <.001: being female, being a gender minority, being queer, and being a student of color. Additionally, students of color, gender minority students, and queer students with disabilities had significantly higher rates of mental health therapy and medication use (p<.001).

Mental Health Service Utilization

Of students with at least one mental health problem, 69% of students with disabilities reported receiving therapy for their mental health concerns and 67% reported taking prescription medication over the past year. As shown in Figure 2, students without disabilities and at least one mental health problem reported less utilization of therapy services (35%) and medication (26%). We also explored the location of services received. We did not find statistically sig-

Table 1

Sample Characteristics Among Students With and Without Registered Disabilities

	Students with registered disabilities	Students without registered disabilities	Statistical significance
N	6,382	86,966	.0400
Age (*N*)	6,382	86,966	
Mean (*SD*)	23.3 (+ 7.2)	23.5 (+ 6.6)	
Gender identity (*N*, %)			<.0001
Male	1,600 (25.1)	26,351 (30.3)	
Female	4,344 (68.1)	58,623 (67.5)	
Gender minority	433 (6.8)	1,903 (2.2)	
Sexual orientation (*N*, %)			<.0001
Heterosexual	4,324 (68.1)	71,814 (82.9)	
Queer (gay, bisexual, etc.)	2,030 (32.0)	14,772 (17.1)	
Race/ethnicity (*N*, %)			<.0001
White	4,363 (68.5)	53,657 (61.8)	
Student of color	2,006 (31.5)	33,176 (38.2)	
Citizenship (*N*, %)			<.0001
U.S.	6,132 (96.3)	78,326 (90.2)	
International student	235 (3.7)	8,522 (9.8)	
Degree program (*N*, %)			<.0001
Undergraduate	5,286 (83.8)	60,395 (70.2)	
Graduate	1,025 (16.2)	25,683 (29.8)	
Year in degree program (*N*, %)			<.0001
1st	1,466 (24.0)	26,402 (31.5)	
2nd	1,656 (27.1)	22,562 (26.9)	
3rd	1,443 (23.0)	17,325 (20.7)	
4th	1,203 (19.7)	13,839 (16.5)	
5th	231 (3.8)	2,405 (2.9)	
6th	72 (1.2)	739 (0.9)	
7th	46 (0.8)	476 (0.6)	
Housing (*N*, %)			<.0001
On-campus	2,981 (46.7)	30,979 (35.6)	
Off-campus	2,516 (39.4)	43,030 (49.5)	
Parent/ relative home	780 (12.2)	11,801 (13.6)	
Other	105 (1.7)	1,156 (1.3)	
Parental education (*N*, %)			<.0001
First-generation college student	2,228 (35.0)	34,120 (39.3)	
Non-first-generation college student	4,144 (65.0)	52,690 (60.7)	

Note. Table values are weighted percentages with the exception of age, presented as means with standard deviations (*SD*) in parentheses. Statistical significance based on an identified significance level of 0.05. Students are classified as gender minority if they reported their gender identity as trans male, trans female, genderqueer, or self-identity. Students are classified as first-generation if neither parent received a bachelor's degree.

Table 2

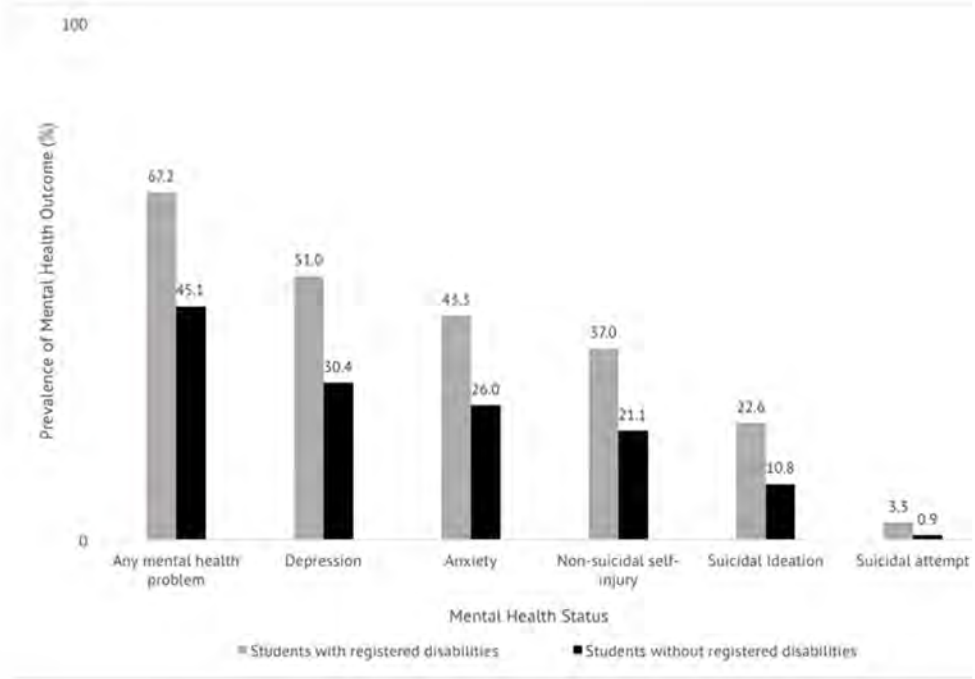
Mental Health Status Among Students With and Without Registered Disabilities

	Students with registered disabilities	Students without registered disabilities	Statistical significance
N	6,382	86,966	
Positive mental health (Flourishing Scale>48) (*N*, %)	2,015 (31.6)	36,577 (42.1)	<.0001
Depression (PHQ-9>10) (*N*, %)	3,255 (51.0)	26,393 (30.4)	<.0001
Anxiety (GAD-7>10) (*N*, %)	2,766 (43.3)	22,588 (26.0)	<.0001
Non-suicidal self-injury, past year (*N*, %)	2,241 (37.0)	17,382 (21.1)	<.0001
Suicidality, past year (*N*, %)			
Suicidal ideation	1,425 (22.6)	9,283 (10.8)	<.0001
Attempted suicide	207 (3.3)	754 (0.9)	<.0001
Any mental health problem (*N*, %)	4,289 (67.2)	39,250 (45.1)	<.0001

Note. Table values are weighted percentages. Statistical significance is based on an identified significance level of 0.05. Any mental health problem is defined as one or more of the following: PHQ-9>10, GAD-7>10, any past-year non-suicidal self-injury, any past-year suicidal ideation, and/or suicide attempt.

Figure 1

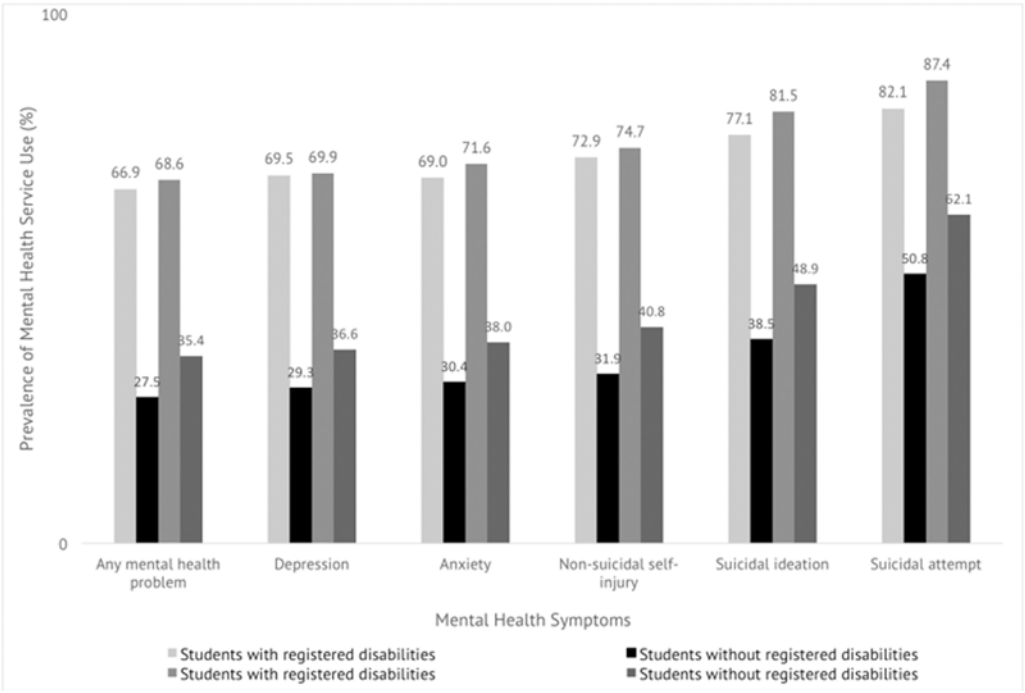
Mental Health Symptoms Among College Students With and Without Registered Disabilities



Note. Depression is defined as PHQ-9>10, and anxiety is defined as GAD-7>10. Non-suicidal self-injury is defined as any past-year non-suicidal self-injury. Suicidal ideation is defined as any past-year suicidal ideation. Suicide attempt is defined as any past-year suicide attempt. Any mental health problem is defined as one or more of the following: PHQ-9>10, GAD-7>10, any past-year non-suicidal self-injury, any past-year suicidal ideation, and/or suicide attempt.

Figure 2

Past Year Mental Health Service Utilization by Disability Status Among Students with Mental Health Symptoms



Note. Depression is defined as PHQ-9>10, and anxiety is defined as GAD-7>10. Non-suicidal self-injury is defined as any past-year non-suicidal self-injury. Suicidal ideation is defined as any past-year suicidal ideation. Suicide attempt is defined as any past-year suicide attempt. Any mental health problem is defined as one or more of the following: PHQ-9>10, GAD-7>10, any past-year non-suicidal self-injury, any past-year suicidal ideation, and/or suicide attempt. Therapy is defined as any past-year utilization of therapy or counseling services. Medication utilization is defined as any past-year utilization of medication.

nificant differences in the location of mental health services received by students with and without registered disabilities. The majority of students with disabilities (53%) reported receiving counseling from on-campus providers rather than off-campus providers, which include psychiatrists, psychologists, social workers, or primary care doctors. Students with disabilities received fewer mental health services due to the inconvenience of accessing services and financial reasons. Both students with disabilities and students without disabilities who receive therapy perceived the inconvenience of accessing services (38%) and financial reasons (27%) as a barrier to receiving mental health services.

Discussion

To our knowledge, this is the first population-level study to examine the mental and behavioral health status and service utilization patterns of college students with disabilities at a national level. Students with disabilities form a large portion of the collegiate population, with 19% of undergraduate and 12% of graduate students having a disability; this represents over 400,000 students (National Center for Education Statistics, 2019; Ginder et al., 2019). Students with disabilities are at a higher risk of experiencing additional needs and challenges as they navigate through college than their peers (Ford et al., 2019; Hendrickson et al., 2017). Students with disabilities may also be confronted with public or perceived stigma from classmates, instructors, or staff on college campuses (Paul, 2000). The academic success of students with disabilities may be difficult due to concerns of being misunderstood by professors or stigmatized if they receive accommodations (Denhart, 2008). Knowledge of the mental and behavioral health needs of such a large vulnerable population of college students can provide insight for deans of students and disability service providers servicing the mental and behavioral health needs of diverse student bodies.

The results of this study demonstrate the mag-

nitude of the mental and behavioral health needs of students with disabilities relative to students without disabilities. Our findings reveal that students with disabilities have a significantly higher prevalence of depression, anxiety, non-suicidal self-injury, and suicidality. In our sample, the prevalence of suicide attempt is over three times higher for students with disabilities than students without disabilities. The mental and behavioral health symptoms of students with disabilities in the study are consistent with research related to the increased risk of greater emotional, behavioral, and academic needs and concerns of students with disabilities (Ford et al., 2019; Hendrickson et al., 2017).

The diverse sample of more than 90,000 college students, including over 6,000 students with disabilities, is a unique strength of this study. The multi-campus nature of HMS further strengthens the generalizability of our study. The comparison of the mental health measures and service utilization of students with disabilities and students without disabilities demonstrates that students with disabilities have greater and unmet mental health needs. The analyses of variations in mental and behavioral health needs between specific subgroups within the sample of students with disabilities point to additional and multiple vulnerabilities that can affect the mental health needs of students with disabilities.

Students with disabilities who experience symptoms of at least one mental health problem reported accessing therapy or counseling services with a prevalence that is nearly two times greater than students without disabilities. The prevalence of prescription medication use is two times greater among students with disabilities who reported experiencing at least one mental health problem relative to students without disabilities. On-campus counseling services were utilized more than off-campus services by both students with disabilities and their peers. Among students with at least one mental health problem who receive counseling services, students with disabilities reported receiving fewer mental and behavioral health services due to a lack of convenience of accessibility and financial reasons. Students with disabilities reported that appointments are not readily available, too expensive, or not covered by insurance. Although students with disabilities reported seeking mental and behavioral health services at a higher prevalence than their peers, they may face challenges accessing the number of counseling sessions they require. Perceived accessibility barriers to therapy sessions could be related to the session limits, waitlists, and wait times for appointments that some mental and behavioral health counseling centers on college campuses report (Mistler et al., 2012). Almost half of the Counseling Centers participating in the AUCCCD Annual Survey reported having flexible session limits (Mistler et al.). Centers reported an average wait time of 6.5 business days for a first appointment, and those who utilized waitlists reported that clients waited an average of 17.7 business days for a first appointment (Mistler et al.). Moreover, students with disabilities identified finances as a reason they obtain fewer therapy sessions. Studies show that people with disabilities have greater financial burdens due to higher health expenses and transportation costs compared to people without disabilities (Mitra et al., 2017; Mitra et al., 2009). Students with disabilities may have additional expenses related to their medical and transportation needs that create financial stress and limit them from seeking the number of therapy sessions they need.

Implications and Opportunities for Disability Service Educators

Our findings highlight a gap in the services offered to students with disabilities and an opportunity for disability service educators to work toward addressing the unmet mental health needs of students with disabilities. Students with disabilities have worse mental health outcomes, regardless of their high utilization of mental health services. These results show that the disability and mental health services offered on college campuses are not meeting the mental health needs of students with disabilities. As advocates of students with disabilities, disability service providers have the opportunity to partner with counseling center directors to review the delivery and inclusivity of mental health services offered on campus. Disability and counseling service providers can work to ensure proper disability training is given to staff. Moreover, they can help determine whether counseling programs are adequately funded to meet the needs of vulnerable populations (Goodman, 2017). The benefits of such partnerships could improve both DSS and counseling sessions for students with disabilities (Abreu et al., 2016; Goodman, 2017).

The disability and mental health service experiences of students with disabilities often begin before students step into a DSS office or counseling center. Research shows that close to half of all college students with disabilities do not register with the office of DSS (Coduti et al., 2016). Therefore, students may not be aware of services that can ease their mental health burdens. Counseling and disability service providers can aim to understand why students are not registering with DSS and raise awareness of the importance of registering. Moreover, prevention-focused interventions, such as mental health screening,

given by disability service providers may be one proactive approach to addressing the needs of students with disabilities. In one study, researchers implemented universal mental health screens at a university health center to identify the mental health needs of college students, (Shepardson & Funderburk, 2014). They found that screening students for mental health allowed them to determine the needs of students and improve access to care centers. Similarly, students with disabilities may benefit from mental health screens given by disability providers upon registration or on a semester basis. Disability service providers can work with counselors and key stakeholders to implement mental health screens during visits to the DSS Office. Mental health screening can allow disability service providers to create individual support plans and refer students to counseling.

Some college campuses are turning to embedded counselors in athletic departments, residence halls, colleges within the university, and other locations to meet the increased need for mental and behavioral health services (Mistler et al., 2012). Campuses with embedded counselors align mental and behavioral health services with students' routines to increase accessibility. Disability service providers can advocate and promote efforts for the inclusion of students with disabilities by stressing the importance of integrated mental health services (Goodman, 2017). Institutions with integrated services reported an improvement in meeting students' needs and providing convenient services in the ACHA survey (Downs et al., 2018). Moreover, students reported being satisfied with the services offered by integrated centers .

Mental and behavioral health during the college years is an important factor in short- and long-term outcomes, including educational attainment, economic productivity, and social relationships (Arria et al., 2013; Hefner & Eisenberg, 2009; Kawachi & Berkman, 2001; Eisenberg et al., 2009; Wang et al., 2007). For many students, college will be the only time in their lives when a single setting encompasses the main aspects of their daily lives, such as work, place of residence, healthcare, and peer/social networks. Through each of these avenues, there are opportunities for intervention and prevention. Overall, these findings are indicative of the unmet mental and behavioral health needs of students with disabilities and highlight the opportunities for disability service providers to address all students' needs.

Future Research

Longitudinal research following students with disabilities throughout their college experience can inform and contribute to the inclusion and participation of students with disabilities in mental and behavioral health programs and policies. Research examining how institutional factors, such as the integration of counseling and disability services and the size of the student body, are associated with outcomes for students with disabilities is needed to address the mental and behavioral health needs of students with disabilities. Future research of the quality and results of the services offered by disability and mental health providers to students with disabilities can help identify areas of improvement related to staffing and training.

Limitations

There are several limitations to consider in this study. Although the mental health screens in the study are validated and have been widely used in college populations, these screens do not represent clinical diagnoses. Additionally, the sample of students with disabilities in the study includes students who reported having registered with the office of disability services on their campus. Students who have a disability but did not register with their office of disability services were not captured in the sample definition. Due to the cross-sectional design of HMS, we cannot measure changes in mental health among students with disabilities over time. The response rate of 23% is average for online surveys of college students; however, it is important to note that there is a potential for response bias in the study (Eisenberg et al., 2007). This potential bias was partially addressed in the non-response weights applied in the analysis; the extent to which disability status may be associated with differential response to the survey would introduce additional bias into the estimates. Importantly, HMS is conducted entirely online and is designed to be accessible to all students with mobile devices such as computers or smart-phones. Lastly, studies show that about 45% of high school students with disabilities do not pursue postsecondary education after high school (Sanford et al., 2011). Students with disabilities are less likely than their peers to enroll in postsecondary institutions; therefore, these analyses are not representative of the national adolescent and young adult population with disabilities as a whole (Sanford et al.).

Conclusion

This national study demonstrates the great unmet mental and behavioral health needs of college students with disabilities relative to college students overall while highlighting higher utilization of on-campus mental and behavioral health services and perceived barriers to accessing care. Findings stress the impor-

tance of providing adequate disability and behavioral health services to students with disabilities and other understudied vulnerable populations by implementing inclusive programs, policies, and partnerships that support accessibility for all students.

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