

Mental Health and Suicidal Behavior Among Graduate Students

Amanda G. Garcia-Williams · Lauren Moffitt ·
Nadine J. Kaslow

Received: 26 September 2013 / Accepted: 9 January 2014
© Academic Psychiatry 2014

Abstract

Objective The objective of this paper is to describe the mental health and service utilization of graduate students at a large southeastern university and identify psychological factors associated with their student suicidal behavior.

Methods E-mail invitations to complete the Interactive Screening Program, an online anonymous mental health questionnaire, were sent to graduate students. The questionnaire included the Patient Health Questionnaire (PHQ-9) as well as items assessing suicide behavior, anxiety, negative emotion, substance use, eating behavior, and service utilization.

Results A total of 301 graduate students responded to the questionnaires between 14 July 2010 and 24 January 2012. With regards to suicide, 7.3 % of the sample reported thoughts of suicide, 2.3 % reported having plans for suicide, and 1.7 % had hurt themselves in the past 2 weeks; while 9.9 % had ever made a suicide attempt in their lifetime. Graduate students had PHQ-9 scores indicating mild depression, and more than half endorsed feeling nervous, irritable, stressed, anxious, lonely, or having fights/arguments. In terms of service utilization, 22.2 % of the sample was currently taking some type of medication, and 18.5 % currently in counseling/therapy are females and those with higher PHQ-9 scores more likely to be using services. Those endorsing suicidal behavior in the past 2 weeks had significantly higher depression scores than those without such behavior and were characterized by more anxiety, negative emotions (such as loneliness, anger, hopelessness, desperation, and being out of control), substance use, and eating problems.

Conclusions Graduate students experience significant amounts of stress and anxiety, and their suicidal behavior is strongly characterized by depression, hopelessness,

desperation, lack of control, and eating problems. Future work with this population should focus on the development and evaluation of mental health and wellness interventions and on ways to promote help-seeking, especially among male students.

Keywords Graduate students · Suicidal behavior · Patient Health Questionnaire

Relatively little is known about the mental health of graduate students. Most studies combine undergraduate and graduate student samples, making it challenging to create a picture of the mental health of this important cohort. Half of the graduate student population experiences an emotional- or stress-related problem in the prior year [1]. There is some suggestion that graduate students endorse higher levels of depression and anxiety than professional school students, but lower than undergraduates [2, 3].

One of the most concerning mental health problems exhibited by graduate students is suicidal behavior. Compared to undergraduates, graduate students may be at elevated risk for suicide [4]. In a 10-year longitudinal study of suicides across 12 colleges, students over the age of 25 were at elevated risk for suicide than younger students. With regards to suicide ideation and attempts, one large study revealed that 4 % of graduate students reported seriously considering suicide and 0.3 % had attempted suicide in the past 12 months [5] and a longitudinal study found that 11.2 % of medical student participants had considered suicide in the past 12 months [6]. Little is known about the mental health factors associated with suicidal behavior in this population. Depression, anxiety, substance use, eating issues, and service utilization are important variables to consider in this regard.

Depression is common among graduate and professional school students, who have higher levels than age- and gender-matched populations [7–9]. Studies find variable prevalence

A. G. Garcia-Williams · L. Moffitt · N. J. Kaslow (✉)
Department of Psychiatry and Behavioral Sciences,
Emory University, Atlanta, GA 30303, USA
e-mail: nkaslow@emory.edu

rates of depression in graduate and professional school students, ranging from 13 to 33 % [2, 10, 11]. Graduate and professional school students have also been found to experience high levels of anxiety and distress [2, 6–9], though possibly at lower levels than their undergraduate counterparts [2, 12]. Factors influencing levels of depression and anxiety include gender; females report higher levels than males [8, 9, 13–16]. Burnout has also been found to be strongly associated with suicidal ideation among medical students [6].

Few studies have been conducted exploring substance use and eating behavior among graduate students. What has been done suggests that graduate students may engage in less alcohol and drug use than their undergraduate peers [17, 10] and dissatisfaction with weight or appearance may be common [18].

The mental health service utilization literature shows that graduate students who use such resources are more likely to be female and to have had a longer tenure within their program [1, 5]. Those who are more depressed and those with more serious suicidal thoughts are most likely to seek mental health care [1, 5]. Barriers to service use include cost, time, confidentiality, fear of impact on academic career, inadequate number of sessions, stigma, long wait lines, lack of awareness, improving symptoms, and access problems [11, 13, 15, 19].

The purpose of this paper is to describe the mental health presentation of graduate students, with attention paid to associations between suicidal behavior and multiple other mental health problems (depression, anxiety, substance use, and eating issues) and service utilization. Data gleaned will (1) contribute to the limited research on graduate student mental health and (2) serve as the first to explore specific psychological factors associated with suicidal behavior (thoughts, plans, and actions) among an exclusively graduate student population.

Methods

Graduate students at Emory University in Atlanta, Georgia were sent email invitations to complete an online mental health questionnaire. The 36-item questionnaire was part of the Interactive Screening Program (ISP), an online system developed by the American Foundation for Suicide Prevention with the purpose of screening at-risk individuals and connecting them with counselors through an anonymous, online interface [14]. The ISP was pilot tested with undergraduate students at Emory University [11], and has also been used in over 60 colleges across the country [1], as well as among medical students, medical staff, and medical faculty at the University of California, San Diego [23]. For details about ISP implementation at Emory University, please refer to the work of Kaslow and colleagues [24]. The questionnaire included the following:

Demographic Characteristics Minimal demographic characteristics were collected to ensure anonymity of the participating students and these included gender, age, year in school, and academic department.

Suicide-Related Behavior Suicide-related behavior was assessed by three items that asked how often the student had thought of taking his/her own life, planned ways of taking his/her own life, or done things to hurt him/her self in the last 2 weeks on a 4-point Likert scale ranging from 0 (not at all) to 3 (most of the time). Students were asked one yes/no question of “Have you ever attempted suicide?” to determine lifetime history of prior suicide attempt. The authors were primarily interested in the association between the presence or absence of psychological symptoms and the presence or absence of suicidal behavior. To accommodate this research, the objective of the 4-point Likert scale for suicidal behavior was dichotomized. Given the categorical nature of the Likert scale, the authors did not perceive the costs associated with dichotomization to outweigh the advantages to interpretation. Furthermore, there was an intuitive cutoff point to indicate presence and absence of symptoms; specifically, suicide-related behavior items were dichotomized such that endorsement of “some of the time”, “a lot of the time”, and “most or all of the time” (Likert score of 1–3) were coded as “Yes” and “not at all” (Likert score of 0) was coded as “No.”

Patient Health Questionnaire (PHQ-9) [25]. The PHQ-9 is a nine-item self-report scale of depressive symptoms in the past 2 weeks based on the PRIME-MD diagnostic tool for psychiatric disorders. Students rated themselves on the nine DSM-IV-TR criteria for depression, on a 4-point Likert scale ranging from 1 (not at all) to 3 (most of the time). Items were summed to create a PHQ-9 total score that ranged from 0 (lowest) to 27 (highest). Depression categories were created based on the total score that ranged from “no depression” to “severe depression.”

Anxiety Five items related to anxiety were asked on a 4-point Likert scale ranging from 0 (not at all) to 3 (most of the time). These items asked the participant if they experienced any of the following in the past 4 weeks: feeling nervous or worrying, becoming easily annoyed, feeling life is stressful, having arguments/fights, and feeling intensely anxious/anxiety attacks. Items were dichotomized; endorsement of “some of the time” “a lot of the time” and “most or all of the time” were coded as “Yes” and “not at all” was coded as “No.”

Negative Emotions Five items related to negative emotions were asked on a 4-point Likert scale ranging from 0 (not at all) to 3 (most of the time). These items asked the participant if they experienced any of the following in the past 4 weeks: feeling lonely, angry, hopeless, desperate, and out of control.

Items were dichotomized into “Yes” and “No” categories as was described previously.

Substance Use Four items related to alcohol and drug use were asked on a 4-point Likert scale ranging from 0 (not at all) to 3 (most of the time). These items asked the participant if they experienced any of the following in the past 4 weeks: drinking more than usual, feeling like drinking too much, feeling that work or school impacted by drinking and use of drugs or prescription medication without medical supervision. All items were dichotomized into “Yes” and “No” categories.

Eating Behavior Three items related to eating behavior were asked on a 4-point Likert scale ranging from 0 (not at all) to 3 (most of the time). These items asked the participant if they experienced any of the following in the past 4 weeks: the feeling one cannot control what or how much is eaten, feeling concerned about staying thin/losing weight, and making yourself vomit after eating. All items were dichotomized into “Yes” and “No” categories.

Service Utilization Service utilization was assessed by asking six yes/no questions that asked students if they were currently receiving medications for anxiety, depression, stress, pain or sleep, and if they were currently receiving counseling/therapy. A new item was created to identify if a student was on any form of medication and this was used in all subsequent analyses.

Data Analysis

Data were downloaded from the ISP secure server and imported into SPSS Statistic 20.0 for analysis. Chi-squared tests explored differences between dichotomous variables; however, when sample size was small, Fisher’s exact tests were used (and only a *p* value reported). Due to the non-normal nature of the data, nonparametric independent-samples Mann–Whitney *U* and Kruskal–Wallis tests examined group differences on continuous variables. Pearson product moment correlation determined level of association between age and PHQ-9 score. For all statistical tests conducted, a two-sided *p* value of less than 0.05 was considered significant.

Results

Demographic Characteristics A total 301 graduate students responded (approximately 8 % response rate) to email invitations for the ISP between 07/14/10 and 01/24/12. More females (77.1 %, *n*=232) than males (22.9 %, *n*=69) responded, a gender distribution dissimilar to the proportion of males and

Table 1 Frequency of mental health complaints and service utilization for entire sample

	Frequency (<i>n</i>)
Suicide behavior	
Thoughts of suicide	7.3 % (22)
Plans for suicide	2.3 % (7)
Hurt self	1.7 % (5)
Lifetime suicide attempt	9.9 % (30)
PHQ-9 categories (total score range)	
No depression (0)	3.1 % (9)
Minimal depression (1–4)	27.3 % (80)
Mild depression (5–7)	35.2 % (103)
Moderate depression (10–14)	22.9 % (67)
Moderately severe depression (15–19)	9.2 % (27)
Severe depression (20–27)	2.3 % (7)
Anxiety	
Feeling nervous or worrying a lot	95.4 % (288)
Becoming easily annoyed or irritable	86.7 % (261)
Feeling your life is too stressful	88.7 % (267)
Having arguments or fights	54.8 % (165)
Feeling intensely anxious or having anxiety attacks	52.0 % (157)
Negative emotion	
Feeling intensely lonely	53.8 % (162)
Feeling intensely angry	39.7 % (120)
Feeling hopeless	44.4 % (134)
Feeling desperate	35.4 % (107)
Feeling out of control	43.5 % (131)
Substance use	
Drinking alcohol more than usual	25.5 % (77)
Feeling like you were drinking too much	14.2 % (43)
Feeling that your work or school attendance or performance was affected by your drinking	4.0 % (12)
Using drugs other than alcohol or taking prescription medications without medical supervision?	6.6 % (20)
Eating behavior	
Feeling that you can’t control what or how much you eat	40.7 % (123)
Feeling overly concerned about staying thin or losing weight	46.4 % (140)
Making yourself vomit after eating	2.7 % (8)
Service utilization	
Any medication	22.2 % (67)
Counseling/therapy	18.5 % (56)

females enrolled in the graduate-level programs at Emory. The average age of respondents was 27.98 (range, 18–63; SD, 5.903). The Graduate School of Arts and Sciences had the highest number of respondents (72.7 %) with smaller percentage of respondents from Theology (13.8 %), Medical/Allied Health/Nursing (10.1 %), Public Health (2.7 %), and Business (0.7 %). Close to a third of respondents (31.1 %, *n*=83) were first year graduate students, 34.8 % (*n*=93) were in their

second or third year, 34 % ($n=91$) were in their fourth year or beyond.

Suicidal Behavior Of the participants, 7.3 % ($n=22$) reported experiencing suicidal thoughts, 2.3 % ($n=7$) reported having plans for suicide, and 1.7 % ($n=5$) had hurt themselves in the past 2 weeks. Overall, 9.9 % ($n=30$) responded that they had made a suicide attempt at some point in their lifetime. There were no significant differences in suicidal behavior related to gender or age.

Depression The average score on the PHQ-9 was 7.95 (range, 0–27; SD, 5.16), a score indicative of mild depression; most fell between minimal and moderate depression (Table 1). Although there were no group differences by gender, all seven students with scores of severe depression were female. There was a positive correlation between age and PHQ-9 total scores among males, $r(65)=0.264$, $p=0.031$, but no association was found among females or in the sample overall.

Anxiety and Negative Emotions At least half of all graduate students endorsed feelings of anxiety and over 86 % reported feeling nervous or worrying a lot, feeling life is too stressful, and becoming easily annoyed or irritable in the past 4 weeks (see Table 1). When stratified by gender, males were less likely to endorse feeling nervous compared to females ($\chi^2(1, N=301)=9.73$, $p=0.005$). The only negative emotion item endorsed by over half the respondents was intense loneliness.

Substance Use and Eating Behaviors None of the items assessing drug and alcohol use was endorsed by a large proportion of graduate students, while less than half endorsed items assessing problems controlling eating, and concerns with weight. When stratified by gender, females were more likely to endorse feeling overly concerned about their weight ($\chi^2(1, N=301)=17.21$, $p<0.001$).

Service Utilization Close to a quarter of the students reported current use of medication (22.2 %, $n=67$) and a slightly smaller proportion reported current counseling/therapy (18.5 %, $n=56$). Overall, students receiving counseling/therapy were older ($Mdn=29.0$) than those not receiving counseling/therapy ($Mdn=26.0$) ($U=4,793.5$, $p=0.001$), and were more likely to be female ($\chi^2(1, N=301)=4.23$, $p=0.040$). PHQ9 total scores were higher among students taking medication ($Mdn=7.0$) than those not taking medication ($Mdn=10.0$), $U=4,978.0$, $p<0.001$; and among those in counseling/therapy ($Mdn=7.0$) than those not doing so ($Mdn=9.0$), $U=5,067.5$, $p=0.020$.

Suicidal Behavior and Mental Health Symptoms In terms of the association between suicidal behavior and depression, the

majority (73.6 %) of graduate students with thoughts of suicide had a PHQ-9 score of moderate depression or moderately severe depression and 21.1 % had PHQ-9 scores of severe depression. Students with thoughts of suicide had higher PHQ-9 total scores ($Mdn=15.0$) than those without thoughts of suicide ($Mdn=7.00$), $U=551.50$, $p<0.001$. Consistent with this, half (50 %) of students that had made plans for suicide had PHQ-9 scores of severe depression, with a third (33.3 %) having scores associated with moderately severe depression. Students with plans of suicide had higher PHQ-9 scores ($Mdn=21$) than those without plans of suicide ($Mdn=7$), $U=93.5$, $p<0.001$. Finally, the majority (60 %) of graduate students that had hurt themselves in the past 2 weeks had PHQ-9 total scores of moderately severe depression and had higher ($Mdn=15$) PHQ-9 scores than those that had not ($Mdn=7$), $U=107.0$, $p=0.001$. The PHQ-9 scores of graduate students that had ever made a suicide attempt were highly variable, ranging from current minimal depression to current severe depression. There was a difference between students with ($Mdn=9$) and without ($Mdn=7$) a history of suicide attempt on PHQ-9 scores, $U=2,764.0$, $p=0.048$.

With regard to suicidal behavior and both anxiety and negative emotions, students with thoughts of suicide were more likely to endorse having arguments and fights ($\chi^2(1, N=300)=4.76$, $p=0.029$), and feeling intensely anxious ($\chi^2(1, N=301)=4.15$, $p=0.042$), lonely ($\chi^2(1, N=300)=9.14$, $p=0.002$), angry ($\chi^2(1, N=301)=7.94$, $p=0.005$), hopeless ($\chi^2(1, N=301)=25.3$, $p<0.001$), desperate ($\chi^2(1, N=300)=14.5$, $p<0.001$), and out of control ($\chi^2(1, N=300)=14.3$, $p<0.001$). Although no association emerged in terms of hurting oneself, making plans for suicide or a lifetime history of a suicide attempt and anxiety, a number of findings emerged vis-à-vis these aspects of suicidal behavior and negative emotions. Graduate students with plans for suicide were more likely to endorse feeling lonely ($p=0.016$), hopeless ($p=0.003$), desperate ($p=0.009$), and out of control ($p=0.046$). Similarly, graduate students that had hurt themselves were more likely to feel hopeless ($p=0.017$), desperate ($p=0.005$), or out of control ($p=0.015$). Those with a previous history of suicide attempt were more likely to describe feeling intensely angry ($p=0.017$) than those without prior history.

There were significant associations between suicidal behavior and substance use and eating issues. Graduate students with thoughts of suicide were more likely to self-report drinking alcohol more than usual ($\chi^2(1, N=301)=4.92$, $p=0.026$), feeling they cannot control what they eat ($\chi^2(1, N=301)=5.09$, $p=0.024$), and feeling overly concerned about staying thin or losing weight, $\chi^2(1, N=301)=4.62$, $p=0.032$. While no differences emerged with regard to making plans about suicide and substance use, differences emerged between making plans and eating issues. Students with plans about suicide were more likely to self-report feeling they cannot control what they eat ($p=0.020$) and feeling overly concerned about

weight ($p=0.004$). Graduate students that had hurt themselves in the past 2 weeks were significantly more likely to endorse using drugs or taking prescription without medical supervision than those that had not engaged in suicidal actions ($p=0.037$). No differences emerged with regard to substance use when lifetime history of a suicide attempt was considered. Also, no associations were found between hurting oneself or a prior suicide attempt and eating behavior.

The links between suicidal behavior and service utilization were as follows. Students with thoughts of suicide were more likely to be on any form of medication ($p=0.013$) than those without thoughts of suicide. Graduate students with plans for suicide were more likely to currently be taking any form of medication ($p=0.045$) than those without plans. No associations were found between service utilization and hurting oneself in the past 2 weeks. However, graduate students with a previous history of a suicide attempt were more likely to be currently receiving counseling/therapy ($p=0.001$).

Discussion

Study results are consistent with other literature that presents graduate students as a population that experiences high levels of depression, anxiety, and distress [7–9]. Overall, this sample was characterized by mild depression and feelings of anxiety, nervousness, stress, and loneliness. As has been found before, substance abuse is not a significant problem for the majority of graduate students [10, 17]. However, concerns about weight are salient, especially among females. Patterns of service utilization found in this study were also similar to what has been found in the literature [1, 5, 15], with older students more likely to be receiving counseling/therapy and females and those with higher PHQ-9 scores more likely to be using any type of medication and/or receiving counseling/therapy. Results, such as those pertaining to the link between loneliness and suicidal ideation, also were consistent with the suicide literature more broadly as reflected in the interpersonal theory of suicide [26].

This is the first investigation to examine correlates of suicidal behavior among graduate students. The data reveal that the psychological factors associated with suicidal behavior in this population are similar to those found to be important among undergraduate students [2–27–34]. More specifically, as is the case with their suicidal undergraduate counterparts, graduate students who endorse suicidal behavior acknowledge more feelings of depression and anxiety, more negative emotions, and more substance use than their nonsuicidal peers. However, this is the first study with students, undergraduate or graduate, to demonstrate a relationship between suicidal behavior and eating problems, such as

being concerned about staying thin and being unable to control eating.

The findings have major implications for addressing the mental health needs of graduate students on university campuses. First, as part of orientation, graduate students must receive information about common emotional and behavioral reactions that occur in graduate school and places on and off campus to receive appropriate assessments and treatment. Second, the use of universal screening should be considered on campuses as a means of identifying and triaging those at high to participate in treatment, with attention paid to the advantages and disadvantages of this approach. Third, graduate students who report depression and anxiety, negative emotions, and substance use should be evaluated with regard to their level of suicidal ideation and risk for suicide attempts and/or death by suicide. More intensive intervention and outreach efforts are needed for students who have engaged in suicidal behavior or who appear at risk for doing so. Finally, as service utilization rates were low among graduate students in this sample, new and innovative ways of encouraging help seeking, such as use of the ISP, must be developed and implemented.

This study had several limitations. First, the low response rate of this nonrandom sample resulted in a study population that was highly skewed, with more females than males responding. Therefore, the results of this study should not be generalized to the entire graduate student population on this campus or to graduate students outside of the study institution. As the goal of the screening was to identify and triage at-risk students into treatment, survey respondents may have represented students with more severe mental health needs who responded to the survey as a means of seeking help. Second, the sample size of the study was small, and this meant that the levels of suicidal behavior were also very low (given their low base rate in graduate student populations). The small sample size also greatly limited the types of analyses that could be conducted and also greatly limits the generalizability of the study's findings.

Future research must focus on designing, implementing, and evaluating comprehensive mental health and suicide prevention programs specific for graduate student populations. These programs should target common mental health complaints and provide ways for students to cope with graduate student life in a healthy and effective way. More research is needed to identify institution and program factors associated with poor mental health and suicide behavior among graduate students. There may be aspects of school or department culture that exacerbate student distress and inhibit appropriate self-care and help-seeking [8, 9, 35] and these should be examined and strategies for addressing these factors should be developed and evaluated. In addition, research should be conducted to understand male graduate students' help-seeking behavior, as they do not use services

as much as females. Finally, in order to strengthen the generalizability of the findings, it behooves academic institutions to partner with one another and combine data when possible.

Implications for Educators

- Educators should include wellness activities within their course offerings and experiential training opportunities to actively target lowering the levels of depression, anxiety, and suicidality experienced among graduate and professional school students.
- Educators should be trained recognize the factors associated with suicidal behavior among graduate and professional school students.
- Educations must be prepared to link graduate and professional school students they are concerned about to appropriate mental health resources.

Implications for Academic Leaders

- Academic leaders must be informed about the psychological stressors associated with life as a graduate or professional school student and appreciative of the negative impact such stressors have on students' well-being and likelihood of academic and career success.
- Academic leaders should provide adequate and comprehensive resources to college counseling centers and faculty staff assistance programs to help them promote and improve their services to increase accessibility, utilization, and outreach efforts.

Acknowledgments This research was supported by a grant from the Garrett Lee Smith Memorial Campus Suicide Prevention Grant Program—Substance Abuse and Mental Health Services Administration entitled “Positively transforming Emory’s diverse culture: Reducing stigma and promoting a community of caring—EMORY CARES 4 U” (1U79M058941-01) awarded to the last author.

Disclosure On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

- Hyun JK, Quinn BC, Madon T, Lustig S. Graduate student mental health: needs assessment and utilization of counseling services. *J Coll Stud Dev*. 2006;47:247–66. doi:10.1353/csd.2006.0030.
- Eisenberg D, Gollust SE, Golberstein E, Hefner JL. Prevalence and correlates of depression, anxiety, and suicidality among college students. *Am J Orthopsychiatry*. 2007;77:534–42. doi:10.1037/0002-9432.77.4.534.
- Helmert KF, Danoff D, Steinert Y, Leton M, Young SN. Stress and depressed mood in medical students, law students, and graduate students at McGill University. *Acad Med*. 1997;72:708–14. doi:10.1097/00001888-199708000-00018.
- Silverman MM, Meyer PM, Sloane F, Raffel M, Pratt DM. The Big Ten Student Suicide Study: A 10-year study of suicides on midwestern university campuses. *Suicide Life Threat Behav*. 1997;27:285–303. doi:10.1111/(ISSN)1943-278X.
- Drum DJ, Brownson C, Denmark AB, Smith SE. New data on the nature of suicidal crises in college students: Shifting the paradigm. *Prof Psychol Res Pract*. 2009;40:213–22. doi:10.1037/a0014465.
- Dyrbye LN, Thomas MR, Massie S, Power DV, Eacker A, Harper W, et al. Burnout and suicidal ideation among U.S. medical students. *Ann Intern Med*. 2008;149:334–41. doi:10.7326/0003-4819-149-5-200809020-00008.
- Dammeyer MM, Nunez N. Anxiety and depression among law students: Current knowledge and future directions. *Law Hum Behav*. 1999;23:55–73. doi:10.1023/A:1022374723371.
- Dyrbye LN, Thomas MR, Huntington JL, Lawson KL, Novotny PJ, Sloan JA, et al. Personal life events and medical student burnout: A multicenter study. *Acad Med*. 2006;81:374–84. doi:10.1097/00001888-200604000-00010.
- Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. *Acad Med*. 2006;81:354–73. doi:10.1097/00001888-200604000-00009.
- Nogueira-Martins LA, Neto RF, Macedo PCM, Cítero VA, Mari JJ. The mental health of graduate students at the Federal University of Sao Paulo: A preliminary report. *Braz J Med Biol Res*. 2004;37:1519–24. doi:10.1590/S0100-879X2004001000011.
- Stecker T. Well-being in an academic environment. *Med Educ*. 2004;38:465–78. doi:10.1046/j.1365-2929.2004.01812.x.
- Morgan TJ, Ness D, Robinson M. Students’ help-seeking behaviours by gender, racial background, and student status. *Canadian Journal of Counseling* 2003; 37, 151–166. doi: Retrieved from <http://cjc-rc.ualgary.ca/cjc/index.php/rc>
- Dyrbye LN, Thomas MR, Shanafelt TD. Medical student distress: Causes, consequences, and proposed solutions. *J Mayo Clin Proc*. 2005;80:1613–22. doi:10.4065/80.12.1613.
- Givens JL, Tjia J. Depressed medical students’ use of mental health services and barriers to use. *Acad Med*. 2002;77:918–21. doi:10.1097/00001888-200209000-00024.
- Tjia J, Givens JL, Shea JA. Factors associated with undertreatment of medical student depression. *J Am Coll Heal*. 2005;53:219–24. doi:10.3200/JACH.53.5.219-224.
- Toews JA, Lockyer JM, Dobson DJ, Brownell AK. Stress among residents, medical students, and graduate students (MSc/PhD) students. *Acad Med*. 1993;68:S46–8. doi:10.1097/00001888-199310000-00042.
- Cranford JA, Eisenberg D, Serras AM. Substance use behaviors, mental health problems, and use of mental health services in a probability sample of college students. *Addict Behav*. 2009;34:134–45. doi:10.1016/j.addbeh.2008.09.004.
- Parker SC, Lyons J, Bonner J. Eating disorders in graduate students: Exploring the SCOFF questionnaire as a simple screening tool. *J Am Coll Heal*. 2005;54:103–7. doi:10.3200/JACH.54.2.103-107.
- Dearing R, Maddux J, Tangney J. Predictors of psychological help seeking in clinical and counseling psychology graduate students. *Prof Psychol Res Pract*. 2005;36:323–9. doi:10.1037/0735-7028.36.3.323.
- American Foundation for Suicide Prevention 2013 The Interactive Screening Program. Retrieved August 28, 2013 from <https://www.afsp.org/preventing-suicide/our-education-and-prevention-programs/the-interactive-screening-program>.
- Haas A, Koestner B, Rosenberg J, Moore D, Garlow SJ, Sedway J, et al. An interactive web-based method of outreach to college students at risk for suicide. *J Am Coll Heal*. 2008;57:1522. doi:10.3200/JACH.57.1.15-22.
- Garlow SJ, Rosenberg J, Moore JD, Haas AP, Koestner B, Hendin H, et al. Depression, desperation, and suicidal ideation in college students: Results from the American Foundation for Suicide Prevention College Screening Project at Emory University. *Depression Anxiety*. 2008;25:482–8. doi:10.1002/da.20321.
- Moutier C, Norcross W, Jong P, Norman M, Kirby B, McGuire T, Ayanian J, Ford D, Henke R, Rost K, Zaslavsky A, et al. The Suicide Prevention and Depression Awareness Program at the University of California, San Diego School of Medicine. *Academic Medicine* 2012; 87. doi: 10.1097/ACM.0b013e31824451ad.

24. Kaslow NJ, Garcia-Williams A, Moffitt L, McLeod M, Zesiger H, Ammirati R, et al. Building and maintaining an effective campus-wide coalition for suicide prevention. *J Coll Stud Psychother.* 2012;26:121–39. doi:10.1080/87568225.2012.659160.
25. Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: Validity of a brief depression severity measures. *J Gen Intern Med.* 2001;16:606–13. doi:10.1046/j.1525-1497.2001.016009606.x.
26. Gibb BE, Andover M, Beach SRH. Suicidal ideation and attitudes toward suicide. *Suicide Life Threat Behav.* 2006;36:12–8. doi:10.1521/suli.2006.36.1.12.
27. Hirsch JK, Visser PL, Chang EC, Jeglic EL. Race and ethnic differences in hope and hopelessness as moderators of the association between depressive symptoms and suicidal behavior. *J Am Coll Heal.* 2012;60:115–25. doi:10.1080/07448481.2011.567402.
28. Kisch J, Leino EV, Silverman MM. Aspects of suicidal behavior, depression, and treatment in college students: Results from the spring 2000 National College Health Assessment Survey. *Suicide Life Threat Behav.* 2005;35:3–13. doi:10.1521/suli.35.1.3.59263.
29. Klibert J, Langhinrichsen-Rohling J, Luna A, Robichaux M. Suicide proneness in college students: Relationships with gender, procrastination, and achievement motivation. *Death Stud.* 2011;35:625–45. doi:10.1080/07481187.2011.553311.
30. Konick LC, Guitierrez PM. Testing a model of suicide ideation in college students. *Suicide Life Threat Behav.* 2005;35:181–92. doi:10.1521/suli.35.2.181.62875.
31. Mackenzie S, Wiegel JR, Mundt M, Brown DL, Saewyc E, Helligstein E, et al. Depression and suicide ideation among students accessing campus health care. *Am J Orthopsychiatry.* 2011;81:101–7. doi:10.1111/j.1939-0025.2010.01077.x.
32. Nadorff MR, Nazem S, Fiske A. Insomnia symptoms, nightmares, and suicidal ideation in a college student sample. *Sleep* 2011; 34, 93–98. doi: Retrieved from <http://www.journalsleep.org>.
33. Van Orden KA, Witte TK, Cukrowicz KC, Braithwaite SR, Selby EA, Joiner Jr TE. The interpersonal theory of suicide. *Psychol Rev.* 2010;117:575–600. doi:10.1037/a0018697.
34. Wilcox HC, Arria AM, Caldeira KM, Vincent KB, Pinchevsky GM, O'Grady KE. Prevalence and predictors of persistent suicide ideation, plans, and attempts during college. *J Affect Disord.* 2010. doi:10.1016/j.jad.2010.04.017.
35. Reed DA, Shanafelt TD, Satele DW, PowerDV, Eacker A, Harper W, et al. Relationship of pass/fail grading and curriculum structure with well-being among preclinical medical students: A multi-institutional study. *Academic Medicine* 2011; (86). doi: 10.1097/ACM.0b013e3182305d81.