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Suicidal Behaviors and Help-Seeking Attitudes Among Deaf and Hard-of-Hearing College Students

Meghan L. Fox, Psy.D,
University of Rochester, Rochester, NY, USA;

Tyler G. James, MS, CHES,
State University System of Florida, Tallahassee, FL, USA;

Steven L. Barnett, MD
National Center for Deaf Health Research, University of Rochester Medical Center National, Rochester, NY, USA.

Abstract

Objective: The objective of this study was to examine the prevalence of suicidal ideation, suicide attempts, and help-seeking attitudes among D/HH and hearing college students.

Method: A total of 500,860 students completed the ACHA-NCHA-IIb (Fall 2011-Spring 2015). Survey administration and sampling methods differed across institutions. We randomly selected hearing students to have a 1:1 ratio of D/HH and hearing students (analytic $N = 12,056$). The mean age was 20.3 years, and the sample was predominantly white (68%) and female (65%). Multinomial and binary logistic regressions determined the relation between hearing status, suicide ideation and attempt, and help-seeking.

Results: D/HH college students were more likely than hearing college students to have seriously considered suicide or attempted suicide in their lifetime, but not in the past year. In adjusted analyses, D/HH college students were more likely than hearing college students to have attempted suicide in the past year (OR 2.42, 95% CI 1.85, 3.17). There were no differences between D/HH and hearing groups in help-seeking attitudes.

Conclusions: Findings from this national data set indicate that D/HH college students are more likely to consider or attempt suicide. These results underscore the need for focused suicide risk prevention interventions with this population.

Suicide is the second leading cause of death among college and university students in the United States (Turner, Leno, & Keller, 2013), leading to suicide prevention being a collegiate and national public health priority (American College Health Association, 2012). Among the myriad of factors related to increased risk of suicidal behavior, several studies

Address correspondence to Meghan L. Fox, University of Rochester, 300 Crittenden BlvdBox PYSCH, Rochester, NY 14642, USA; meghan_fox@urmc.rochester.edu.

suggest that deaf and hard-of-hearing (D/HH) people are at higher risk for past suicide behaviors than hearing people (Barnett et al., 2011; Dudzinski, 1998; Turner, Windfuhr, & Kapur, 2007). However, more recent data focused on college students are needed to help justify tailored suicide prevention programs for D/HH college students who may be at higher risk.

D/HH populations experience characteristics associated with suicide behaviors, such as relatively higher presence of psychiatric disorders (Boyechko, 1992; Critchfield et al., 1987; Silverman, 2006), higher rates of untreated psychopathology (Watt & Davis, 1991), higher risk of substance abuse (De Leo, Hickey, Meneghel, & Cantor, 1999; Kapur, 2006; Marcus, 1991; NHS Centre for Reviews & Dissemination, 1998), lower educational attainment (Holt, Hotto & Cole, 1994; Kapur, 2006; Lewis, Stephens & McKenna, 1994), higher rates of physical, emotional, and sexual abuse (Knutson, Johnson, & Sullivan, 2004; Kvam, 2004; Kvam, Loeb & Tambs, 2006; Sullivan & Knutson, 2000), and increased socioeconomic deprivation including unemployment (Boyechko, 1992; Leigh, Robins, & Welkowitz, 1988; Leigh, Robins, Welkowitz, & Bond, 1989; Watt & Davis, 1991). In addition, D/HH individuals face unique barriers including lack of role models, alienation from family and peers, self-image problems, parent and child separation, relationship troubles (Critchfield et al., 1987), hearing-related medical problems (e.g., tinnitus, Usher syndrome) (De Leo, Hickey, Meneghel & Cantor, 1999), language development problems, acculturation stress (Dudzinski, 1998), and fund of information deficits (Pollard, 1998). Despite the increase risk factors of suicidal behavior among D/HH individuals, literature is scant about their help-seeking attitudes and how they try to access help when they are suicidal. Literature on health care utilization and barriers to mental health service helps to conceptualize help-seeking attitudes that D/HH people may have about seeking help when suicidal. Adults deaf since birth or early childhood have fewer physician visits than general population adults (Barnett & Franks, 2002), and more than half of D/HH adults are unable to locate accessible mental health services—viewing mental health institutions and practitioners to be authoritarian, restrictive, and prejudiced (Steinberg, Sullivan, & Loew, 1998). Given social barriers to engaging in health care, such as low-income status, less education, and being un- or underinsured—paired with literacy and linguistic barriers, and provider behavior (e.g., noncompliance with federal accessibility law, parental and ethnocentric attitudes toward deafness as a disability (Harmer, 1999), and language-discordant health care communication (McKee, Barnett, Block & Pearson, 2011))—D/HH people have unmet mental health care needs (Deaf Connections, 2006; Kvam et al., 2006) and may be less apt to seek help when suicidal.

D/HH college students may be at increased risk for suicide. Past research regarding suicide behaviors with D/HH college students indicate variable rates of suicide ideation and attempts. At a single U.S. institution, 30% of D/HH college students reported having attempted suicide during their lifetime and 18% had attempted suicide during the previous year (Boyechko, 1992). During their lifetime, 40% of D/HH college students reported having felt that life was not worth living and 44% had experienced suicide thoughts (Boyechko, 1992). Other research, focusing on incoming D/HH and hearing freshmen, compared data to the American College Health Association (ACHA, 2017)-National College Health Assessment (National Center for Deaf Health Research, 2006) and found that the

prevalence of past-year suicide ideation among incoming D/HH freshmen was higher than the NCHA reference group (12% and 10.7%). The prevalence of past-year suicide attempt among incoming D/HH freshmen was 2.7 times higher than the incoming hearing freshmen at the same university (8.3% and 3.1%, respectively) and 4 times higher than the NCHA group (2.0%). D/HH female students entering college had a 3.3 times higher suicide attempt rate than hearing women (Samar et al., 2007). While this should be considered with attention to limitations regarding sample (e.g., size, restriction to specific years in college, and unique context with improved access to health care for D/HH people), measurement, and datedness, it does provide insight into suicide behavior among D/HH college students; however, more research is needed to understand this public health challenge at a broader scale. Thus, we analyzed recent data from a national sample to examine the prevalence of suicide ideation, suicide attempts, and help-seeking attitudes among D/HH and hearing college students.

METHODS

Data Source

The ACHA-NCHA Form IIb was a risk factor surveillance survey conducted by the ACHA between Fall 2011 and Spring 2015 to identify public health priorities for college populations. Colleges and universities throughout the United States administer the survey in either the fall or spring semester using a variety of administration methods and sampling strategies; thus, the ACHA-NCHA-IIb is not a random sample of college students, but is considered a national reference group (www.acha-ncha.org). We selected the ACHA-NCHA-IIb because it included the most recently revised item of D/HH status (“Do you have the following – Deafness/Hearing loss”) while pre-Fall 2011 surveys asked this item in the context of a disabling medical condition (“Do you have any of the following disabilities or medical conditions—Deaf/Hard of Hearing”).

Sample

A total of 500,860 college students completed the survey, with 2.0% identifying as D/HH. We segmented the sample to include only traditionally aged college students (i.e., 18 to 24 years old) as this is consistent with similar and related literature in the field (Blosnich & Bossarte, 2012). We performed listwise deletion for cases missing on the variables of interest (total sample = 360,381; D/HH = 6,028). Similar to analyses focused on other low prevalence populations in the ACHA-NCHA data set (Blosnich & Bossarte, 2012), we used analytic methods to address potential statistical overpowering of the large comparison group (i.e., hearing students). Accordingly, we took a simple random sample without replacement of 6,028 individuals in the hearing group; the probability of selection was 0.017. To ensure the random subsample was representative of hearing students in the traditionally aged reference group, we computed effect sizes for differences in race, age, and gender between respondents who were and were not selected. Differences among racial categories had very small effect sizes ($\varphi_C < 0.005$); thus, our random subsample was determined to be representative of the larger sample of hearing 18- to 24-year olds. Our final analytic sample was 12,056 students (50% D/HH). The mean age was 20.3 years ($SD = 1.7$ years). The majority of the sample was female (65.2%) and White (67.8%; Table 1); there were no large effect differences in race, age, or gender between D/HH and hearing groups.

Measures

D/HH Status.—D/HH or hearing status was determined based on respondents selecting they had "Deafness/Hearing loss" among a list of other conditions including ADHD, chronic illness, learning disabilities, and blindness.

Suicide Ideation and Attempt.—Students were asked when they last "seriously considered suicide" (i.e., suicide ideation) or "attempted suicide" (i.e., "No, never," "No, not in the last 12 months," "Yes, in the last 2 weeks," "Yes, in the last 30 days," and "Yes, in the last 12 months." We collapsed response categories for students who attempted or seriously considered suicide to indicate the following: (1) never engaged in the behavior of interest, (2) engaged in the behavior in the past 12 months (i.e., the last two weeks, the last 30 days or in the past 12 months), and (3) engaged in the behavior longer than 12 months ago; thus, students who were in response category 2 or 3 had engaged in the behavior in their lifetime (i.e., "ever").

Help-Seeking Attitudes.—Students were asked if they were interested in receiving suicide prevention information from their college/university. In addition, students were asked "if in the future [they] were having a personal problem that was really bothering [them], would [they] consider seeking help from a mental health professional?" Response options for both items were "yes" or "no."

Covariates.—Covariates included age, gender, racial/ethnic identity, and having mental health diagnosis or treatment in the past 12 months. Participants could "select all that apply" for the race/ethnicity question, allowing students to select more than one racial category (i.e., White, Black/African American, Hispanic/Latino/Latina, Asian/Pacific Islander, American Indian/Alaskan Native/Native Hawaiian, Biracial/Multiracial, and Other). To maintain consistency across categories, students who identified with two or more racial/ethnic categories were coded as "multiracial." Due to the small size of the indigenous American sample (i.e., American Indian, Alaskan Native, or Native Hawaiian), we combined those students with the "Other" category.

Statistical Analysis

Data were analyzed using SAS software version 9.4 for Windows (SAS Institute Inc., Cary, NC, USA). We describe demographic characteristics of the sample using means and percentages. Chi-square tests with Cramer's V (φ_C) effect sizes were computed to test for differences in psychological variables of interest between D/HH and hearing students. We computed adjusted odds ratios (aOR) of suicide attempt and suicide ideation, and help-seeking attitudes using multinomial and binary logistic regression. Prior to conducting logistic regressions, we evaluated all model assumptions. Due to small sample size, we removed students who identified as transgender ($n = 83$) from all logistic regression analyses. We Bonferonni corrected all p-values to account for potential Type I statistical error, setting the p-value of significance at the 95% confidence level equal to .0015.

RESULTS

A higher proportion of D/HH students reported ever having seriously considered suicide (35.1% vs. 21.8%) and having ever attempted suicide (17.2% vs. 8.3%) compared with hearing students (Table 2). More D/HH students (15.9%) seriously considered suicide in the past 12 months, compared to 8.2% of hearing students; similarly, a higher proportion of D/HH students reported suicide attempt in the past 12 months (4.0% vs. 1.3%). In addition, more D/HH students reported having received diagnosis or treatment for a psychiatric condition in the past 12 months (42.3% vs. 26.8%). The size of these differences was of weak effect (φ_c range 0.14 to 0.16).

D/HH students had higher aOR of reporting suicide ideation than hearing students (Table 3), both in the past year (aOR = 1.91; 95% CI: 1.69 to 2.16) and more than 12 months ago (aOR = 1.49; 95% CI: 1.34,1.65).

Similarly, D/HH students had higher aORs than hearing students of having attempted suicide (Table 4), in the past year (aOR = 2.42; 95% CI: 1.85 to 3.17) and more than 12 months ago (aOR = 1.74; 95% CI: 1.53 to 1.98).

There were no differences in the proportion of D/HH and hearing students reporting considering seeking mental health help, or interest in suicide prevention information. A majority of D/HH (70.6%) and hearing (71.9%) college students agreed that they would consider seeking help from a mental health professional in the future if they experienced a personal problem that was “really bothering [them]”; while a minority of D/HH and hearing students (43.6% and 42.0%, respectively) endorsed, they were interested in receiving suicide prevention information from their college or university. When adjusting for relevant covariates, there were no significant differences between D/HH and hearing students on these two constructs (see Table 5).

DISCUSSION

The purpose of this study was to examine the prevalence of suicide ideation, suicide attempt, and help-seeking attitudes among traditionally aged D/HH and hearing college students. A higher proportion of D/HH students than hearing students reported considering suicide, attempting suicide, and having received diagnosis or treatment for a psychiatric condition in the past 12 months. D/HH students had higher odds, when adjusting for demographic covariates, of reporting suicide behaviors than hearing students. This research confirms findings reported by others, using a larger data set. Our findings regarding past-year ideation and attempts are similar in magnitude to others’ minority–majority comparisons with NCHA data (Blosnich & Bossarte, 2012.

Our findings that D/HH and hearing students were similar regarding their interest in suicide prevention information or consideration of seeking mental health care in the future was unexpected, given that many D/HH people experience barriers to health care and health information. This openness to information and mental health care likely represents a strength we can use to develop tailored interventions to prevent suicide with D/HH college students.

Theoretical Considerations

Considerations of theories such as the interpersonal theory of suicide (IPTS) (Joiner, 2005; Van Orden et al., 2010) and others (e.g., conceptual model of health-related quality of life (QoL; Kushalnagar et al., 2014) helps in conceptualizing and understanding reasons behind suicidal thoughts and behavior risk among D/HH college students as well as possible protective factors for future research. This discussion warrants further research and conversations with D/HH persons and Deaf communities.

Early childhood experiences of some D/HH college students are likely associated with risk factors for suicide. Over 90% of D/HH people are born to hearing parents (Mitchell & Karchmer, 2004) and approximately 88% of these parents do not learn sign language (Rainer et al., 1969; Rawlings, 1973). The result can be a lack of direct and indirect family communication and associated poor parent–child communication and attachment. For some, these attachment experiences can influence IPTS constructs of perceived burdensomeness and thwarted belongingness. Being aware of these common lived experiences is an important step in the development of strength-based prevention programs. Also important is understanding the common D/HH experiences of community and connection, built on shared language, culture, and experiences. For example, many D/HH people have positive experiences and connections with others from having attended a Deaf residential school, or being members of a Deaf club. Others may have experienced detachment in early parent–child relationships because of separation from the family to attend a Deaf residential school outside of the family home. Research with D/HH persons found that social participation and feeling included in group conversations as well as being recognized and accepted as a deaf member in their environment were related to QoL (Kushalnagar et al., 2014). Research has also shown that having a deaf parent is associated with benefit to a deaf child (Hall, Smith, Sutter, DeWindt & Dye, 2018; Yoshinaga-Itano, Sedey, Wiggin & Chung, 2017). Deaf mentor programs provide an alternative way to connect a family, comprised of hearing parents with a D/HH child, with a D/HH adult role model. Deaf mentors also connect these families with Deaf communities, and expose them, often for the first time, to the experience of the resilience, connectedness, and belongingness found in those communities. Exposure and access to these Deaf mentor programs can be limited based on geographical location and other reasons. Research is needed to understand how access and engagement with Deaf mentor programs may or may not impact connections within the child's family of origin, and the child's ability to connect and foster positive and lasting social relationships outside the family.

Implications for Suicide Prevention Intervention Development with D/HH College Students

Prior to the Americans with Disabilities Act (ADA) of 1990, D/HH college students clustered in few schools that were adept at educating and working with D/HH persons. In the more than 25 years since the implementation of the ADA, this has changed, with more D/HH people in college and more colleges with D/HH students. A college may have one or few D/HH students, and may have few resources for faculty, staff and clinicians on campus to successfully work with D/HH students. D/HH and hearing researchers should work together with campus populations to identify and understand strengths and help-seeking behaviors upon which to build programs to specifically address and prevent suicide and

suicide-related behaviors with D/HH people. Language accessible and culturally appropriate measures and methods are essential for this research.

Limitations

These results should be considered in context to the limitations of the survey. D/HH persons are likely to be underrepresented in this data set because D/HH persons are underrepresented in college, and because the ACHA-NCHA-IIb item likely does not identify all D/HH students. The item used to determine D/HH status potentially introduces challenges in classification, as individuals may self-diagnose or people who think of D/HH as an identity might not select “deafness/hearing loss” as it frames the option from a health condition lens. These classification challenges could impact the studied effect. Also, the survey does not collect information about the nature of the hearing loss, cultural identity, primary language (e.g., English, American Sign Language), and the presence of other D/HH people in the family of origin; these factors may moderate the relation between D/HH status and suicide behaviors and risks. NCHA sampling is not random and our results may not be generalizable to the entire college student population in the United States.

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TABLE 1

Sample Characteristics, by Hearing Status

	D/HH (*n* = 6,028)	Hearing (*n* = 6,028)	Total (*N* = 12,056)
Demographics			
Age (range 18–24)	M = 20.4 years (*SD* = 1.7)	M = 20.3 years (*SD* = 1.7)	M = 20.3 years (*SD* = 1.7)
Race/Ethnicity			
White	70.4% (4,245)	65.1% (3,923)	67.8% (8,168)
Black/African American	2.4% (148)	3.9% (238)	3.2% (386)
Hispanic	5.0% (300)	6.9% (417)	5.9% (717)
Asian or Pacific Islander	7.7% (463)	11.0% (664)	9.3% (1,127)
American Indian, Alaskan	0.6% (34)	0.3% (21)	0.5% (55)
Native, Native Hawaiian			
Biracial/Multiracial	12.4% (747)	11.1% (672)	11.8% (1,419)
Other	1.5% (91)	1.5% (93)	1.5% (184)
Gender			
Male	37.4% (2,255)	30.9% (1,863)	34.2% (4,118)
Female	61.4% (3,700)	68.9% (4,155)	65.2% (7,855)
Transgender	1.2% (73)	0.2% (10)	0.7% (83)

All effect size differences were of very weak effect (≤0.07).

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TABLE 2

Psychological Characteristics of Interest, by Hearing Status

	D/HH (*n* = 6,028)	Hearing (*n* = 6,028)	Total (*N* = 12,056)
Seriously considered suicide* (<φ_c = 0.15)			
Never	64.9% (3,910)	78.2% (4,715)	71.5% (8,625)
Not in the past 12 months	19.2% (1,158)	16.6% (819)	16.4% (1,977)
In the past 12 months	15.9% (960)	8.2% (494)	12.1% (1,454)
Lifetime prevalence (i.e., not “Never”)	35.1% (2,118)	21.8% (1,313)	28.5% (3,431)
Attempted suicide* (<φ_c = 0.14)			
Never	82.8% (4,991)	91.7% (5,526)	87.2% (10,517)
Not in the past 12 months	13.2% (798)	7.1% (425)	10.1% (1,223)
In the past 12 months	4.0% (239)	1.3% (77)	2.6% (316)
Lifetime prevalence (i.e., not “Never”)	17.2% (1,037)	8.3% (502)	12.8% (1,539)
Psychiatric diagnosis or treatment, past 12 months* (<φ_c = 0.16)	42.3% (2,550)	26.8% (1,615)	34.5% (4,165)
Consider seeking help from mental health professional in future	70.6% (4,258)	71.9% (4,337)	71.3% (8,595)
Interested in information related to suicide prevention	43.6% (2,629)	42.0% (2,531)	42.8% (5,160)

*Significant at 95% confidence level after Bonferonni correction.

Cramer’s V effect size = φ_C.

TABLE 3

Factors Related to Suicide Ideation: Multinomial Logistic Regression

Variable	aOR (95% CI)
Outcome: Suicide ideation (>12 months ago) vs. never considered suicide	
Intercept	N/A
Male gender (ref. Female)	0.92 (0.82 to 1.02)
Age (centered)	1.01 (0.98 to 1.04)
Black (ref. White)	0.96 (0.70 to 1.32)
Hispanic (ref. White)	1.09 (0.87 to 1.37)
Asian/Pacific Islander (ref. White)	1.40 * (1.17 to 1.67)
Multiracial (ref. White)	1.50 * (1.29 to 1.75)
Native/Other (ref. White)	1.24 (0.87 to 1.78)
Mental health treatment/diagnosis, past 12 months (ref. No)	3.31 * (2.99 to 3.68)
D/HH (ref. Hearing)	1.49 * (1.34 to 1.65)
Outcome: Suicide ideation (in the past 12 months) vs. never considered suicide	
Intercept	N/A
Male gender (ref. Female)	1.05 (0.92 to 1.19)
Age (centered)	0.92 * (0.89 to 0.95)
Black (ref. White)	1.66 (1.2 to 2.28)
Hispanic (ref. White)	1.32 (1.03 to 1.7)
Asian/Pacific Islander (ref. White)	1.53 * (1.24 to 1.89)
Multiracial (ref. White)	1.59 * (1.34 to 1.89)
Native/Other (ref. White)	1.50 (1.01 to 2.23)
Mental health treatment/diagnosis, past 12 months (ref. No)	5.13 * (4.54 to 5.80)
D/HH (ref. Hearing)	1.91 * (1.69 to 2.16)

* Significant at 95% confidence level after Bonferroni correction.

Model sample excludes transgender students ($n = 83$).

TABLE 4

Factors Related to Suicide Attempt: Multinomial Logistic Regression

Variable	aOR (95% CI)
Outcome: Suicide attempt (>12 months ago) vs. never attempted suicide	
Intercept	N/A
Male gender (ref. Female)	0.80 * (0.70 to 0.92)
Age (centered)	0.99 (0.96 to 1.03)
Black (ref. White)	1.63 (1.156 to 2.308)
Hispanic (ref. White)	1.37 (1.05 to 1.79)
Asian/Pacific Islander (ref. White)	1.64 * (1.32 to 2.03)
Multiracial (ref. White)	1.35 * (1.12 to 1.62)
Native/Other (ref. White)	1.59 (1.06 to 2.39)
Mental health treatment/diagnosis, past 12 months (ref. No)	4.17 * (3.66 to 4.75)
D/HH (ref. Hearing)	1.74 * (1.53 to 1.98)
Outcome: Suicide attempt (in the past 12 months) vs. never attempted suicide	
Intercept	N/A
Male gender (ref. Female)	1.57 * (1.23 to 2.00)
Age (centered)	0.92 (0.86 to 0.99)
Black (ref. White)	3.48 * (2.04 to 5.94)
Hispanic (ref. White)	1.84 (1.12 to 3.01)
Asian/Pacific Islander (ref. White)	2.40 * (1.62 to 3.56)
Multiracial (ref. White)	1.69 (1.21 to 2.35)
Native/Other (ref. White)	2.85 * (1.53 to 5.34)
Mental health treatment/diagnosis, past 12 months (ref. No)	8.54 * (6.43 to 11.36)
D/HH (ref. Hearing)	2.42 * (1.85 to 3.17)

* Significant at 95% confidence level after Bonferroni correction.

Model sample excludes transgender students ($n = 83$).

TABLE 5

Factors Related to Help-Seeking Attitudes: Logistic Regressions

Variable	Interest in Receiving Suicide Prevention Information[a] aOR (95% CI)	Consider Seeking Mental Health in Future aOR[b] (95% CI)
Male gender (ref. Female)	0.70 * (0.65 to 0.76)	0.59 * (0.55 to 0.65)
Age	0.98 (0.96 to 1.00)	1.06 * (1.03 to 1.08)
Black (ref. White)	1.31 (1.06 to 1.62)	0.58 * (0.47 to 0.72)
Hispanic (ref. White)	1.86 * (1.59 to 2.18)	0.85 (0.72 to 1.01)
Asian/Pacific Islander (ref. White)	1.47 * (1.29 to 1.67)	0.72 * (0.63 to 0.82)
Multiracial (ref. White)	1.32 * (1.18 to 1.49)	0.96 (0.85 to 1.1)
Native/Other (ref. White)	0.95 (0.73 to 1.25)	0.63 * (0.48 to 0.84)
Mental health treatment/diagnosis, past 12 months (ref. No)	1.23 * (1.13 to 1.33)	1.92 * (1.74 to 2.12)
D/HH (ref. Hearing)	0.98 (0.91 to 1.06)	0.88 (0.81 to 0.96)
Suicide ideation, lifetime	2.16 * (1.94 to 2.39)	0.96 (0.9 to 1.04)
Suicide attempt, lifetime	1.00 (0.87 to 1.14)	0.77 * (0.67 to 0.90)

[a] "Are you interested in receiving information on the following topic from your college or university?—Suicide prevention"

[b] "If in the future you were having a personal problem that was really bothering you, would you consider seeking help from a mental health professional?"

* Significant at 95% confidence level after Bonferroni correction.

Model sample excludes transgender students (n = 83).