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Original article

# Sexual Identity, Adverse Childhood Experiences, and Suicidal Behaviors

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#### ABSTRACT

**Purpose:** The objective of this study was to examine the influence of sexual identity and adverse childhood experiences (ACEs) on suicidal behaviors in a population-based sample of high school students.

**Methods:** A two-stage cluster random sampling design was used to recruit 5,108 students from 97 high schools. A total of 4,955 students (97%) provided information that allowed for classification of sexual identity into three groups: (1) lesbian, gay, or bisexual (LGB) (10%); (2) not sure (4.6%); and (3) heterosexual (85.4%). Five measures of childhood abuse and household dysfunction were summed, and the ACE score was categorized as 0, 1, 2, and 3–5 ACEs. Weighted logistic regression was used to assess the influence of sexual identity, ACEs, and their interaction on suicide ideation and attempts in the past 12 months.

**Results:** Compared with heterosexual students, those who were LGB and were not sure had higher odds of suicide ideation and attempts. There was also a graded relationship between cumulative ACE exposure and suicidal behaviors. Although sexual identity/ACE interaction was not observed, LGB/not sure students who experienced a high number of ACEs were disproportionately affected. Compared with heterosexual students with 0 ACE, LGB/not sure students with 0 ACE (adjusted odds ratio [AOR] = 3.32, 95% confidence interval [CI] = 1.96–5.61), 1 ACE (AOR = 6.58, 95% CI = 4.05–10.71), 2 ACEs (AOR 13.50, 95% CI = 8.45–21.58), and 3–5 ACEs (AOR = 14.04, 95% CI = 8.72, 22.62) had higher odds of suicide ideation. A similar pattern was observed for suicide attempts. **Conclusions:** LGB and students not sure of their sexual identity with greater exposure to ACEs have disproportionately high levels of suicide ideation and attempts. Trauma-informed interventions for these populations are warranted.

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### IMPLICATIONS AND CONTRIBUTIONS

Adolescent research exploring the independent and interacting influence of sexual identity and adverse childhood experiences on suicidal behaviors is limited. This study found that lesbian, gay, or bisexual students and students who are not sure of their sexual identity with greater adverse childhood experience exposure have disproportionately high odds of suicide ideation and attempts.

**Conflicts of Interest:** The authors have no conflicts of interest to disclose. The results presented in this paper were the basis of an oral presentation at the 144th Annual Conference of the American Public Health Association, Denver, CO, in October 2016.

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Suicide is the second leading cause of death among adolescents and young adults (10–24 years) in the U.S. [1], and there is evidence that suicide rates are increasing in this age group [2]. Population-based studies demonstrate that adolescents who self-identify as lesbian, gay, or bisexual (LGB) report significantly higher rates of suicidal behaviors than their heterosexual peers [3,4]. In 2015, sexual identity was added as a core variable to the national Youth Risk Behavior Survey (YRBS), resulting in the largest number of states and school districts that have assessed sexual

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identity among high school students to date (25 states and 19 large urban school districts). The 2015 YRBS found that the prevalence of suicide ideation was nearly three times higher and the prevalence of suicide attempts was more than four times higher among LGB students than among heterosexual students. Suicidal behaviors were also consistently higher among students who were not sure of their sexual orientation than among those who self-identified as heterosexual [3].

Sexual identity remains significantly associated with suicidal behaviors after controlling for known risk factors such as depression and substance use [4–6], suggesting that other risk factors may explain the disproportionate rates of suicidal behaviors among sexual minority youth. The minority stress model hypothesizes that the stigma, prejudice, and discrimination experienced by LGB individuals contribute to chronic stress and poor mental health outcomes, including suicidal behaviors [7]. Most studies with LGB youth have focused on exposure to sexual minority-related victimization [8–10] and being bullied or victimized at school [11–13] and have generally found support for the minority stress model. However, exposure to victimization and other stressors within the family is common for LGB youth [14] and may also contribute to suicidal risk behaviors [15–18].

Adverse childhood experiences (ACEs) can be defined as childhood abuse, neglect, and a range of household dysfunctions [19]. Population-based research has documented a higher prevalence of ACEs among sexual minority adults [20,21], and there is a demonstrated dose-response relationship between ACEs and attempted suicide throughout the life span [22,23]. Studies with adult populations have also explored the role of a limited number of ACEs in the relationship between sexual identity and suicidal risk behaviors. One study used cross-sectional data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) and found that the association between LGB identity and attempted suicide among adults was significantly mediated by childhood sexual abuse and physical abuse for women and sexual abuse for men [17]. Another longitudinal study with a nationally representative sample of young adults (18-27 years) showed that exposure to childhood adversity (defined as any exposure to childhood physical abuse, childhood sexual abuse, housing instability, or intimate partner violence) partially explained the relationship between LGB identity and suicidality [18].

Although mediation analyses are important for understanding the possible mechanism by which LGB identity influences suicide risk, an equally important and unexplored question is whether ACEs interact with sexual identity to influence suicidal behaviors. Understanding whether sexual minority adolescents who have an elevated exposure to ACEs are disproportionately at risk of suicidal behaviors is essential for developing effective suicide prevention strategies for sexual minority populations. Furthermore, previous research exploring the role of ACEs in the relationship between sexual identity and suicidal behaviors has relied on samples of adult and young adult populations and has focused only on childhood abuse [17] or broad measures of any childhood adversity [18]. Children are often exposed to multiple forms of abuse and household dysfunction, and there is evidence that cumulative exposure to adversities may have a greater impact on health outcomes than individual stressors [24]. In the present study, we examined the independent and interacting influence of sexual identity and cumulative exposure to ACEs on recent suicide ideation and attempts in a populationbased sample of 4,955 high school students.

#### Methods

Participants and procedures

The YRBS is a national survey designed by the Centers for Disease Control and Prevention (CDC) to monitor priority healthrelated behaviors among high school students. Data for our analyses were obtained from the 2015 Nevada YRBS. A twostage cluster random sampling design was used to ensure a representative sample of students in grades 9–12 from regular, charter, and alternative public schools throughout the state. The first sampling stage grouped 16 school districts into 7 regions, which align with the statewide prevention coalition structure. In the second sampling stage, second periods or required English classes were randomly selected from all schools for survey administration. Half of the school districts required active parental permission and half required passive parental permission. After parental permission was obtained, the questionnaire was administered to students in all selected classes. Students could choose not to participate and could skip any questions they did not feel comfortable answering. Overall, 5,108 youths from 97 schools completed the questionnaire. The overall response rate (a combination of school and student participation) was 65%. The study was approved by the university's institutional review board, and the local school district institutional review board approval was obtained when required.

#### Measures

Sexual identity. In 2015, the CDC added sexual identity as a core YRBS variable [3]. Students were asked, "Which of the following best describes you?" Responses included heterosexual (straight), gay or lesbian, bisexual, and not sure. Three comparison groups were used for the analyses: (1) LGB, (2) not sure, and (3) heterosexual.

Adverse childhood experiences. The CDC YRBS survey includes a core measure of lifetime sexual abuse: "Have you ever been physically forced to have sexual intercourse when you did not want to?" Additionally, four state-added variables were adapted from the Behavioral Risk Factor Surveillance System (BRFSS) ACE module [20,21] to assess the lifetime prevalence of (1) physical abuse by an adult—"Have you ever been hit, beaten, kicked, or physically hurt in any way by an adult? (Do not include being spanked for bad behavior)"; (2) household domestic violence-"Have you ever seen or heard adults in your home slap, hit, kick, punch, or beat each other up?"; (3) household mental illness— "Have you ever lived with someone who was depressed, mentally ill, or suicidal?"; and (4) household substance abuse—"Have you ever lived with someone who was a problem drinker or alcoholic or abused street or prescription drugs?" Responses to all ACE questions were dichotomized as yes versus no. Two household dysfunction questions (household mental illness and household substance use) included a response of "don't know." Consistent with previous research with adults using the BRFSS ACE module [19,20], don't know responses were coded as missing for these questions. The five ACE questions were summed to create a total ACE score (range 0–5). The ACE score was further categorized as 0, 1, 2, and 3-5 ACEs.

Suicide risk behaviors. A standardized YRBS question was used to assess suicide ideation, "During the past 12 months, did you ever

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