Sexual Minority Status and Age of Onset of Adolescent Suicide Ideation and Behavior

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OBJECTIVES: To determine if sexual minority adolescents have earlier onset of suicidality and faster progressions from ideation to plan and attempt than heterosexual adolescents.

METHODS: A population-based longitudinal cohort of 1771 adolescents participated in the NEXT Generation Health Study. Participants reported sexual minority status (defined by sexual attraction) in 2010–2011 and retrospectively reported age at onset of suicidality in 2015–2016.

RESULTS: Sexual minority adolescents (5.8% of weighted sample) had higher lifetime risk of suicide ideation (26.1% vs 13.0%), plan (16.6% vs 5.4%), and attempt (12.0% vs 5.4%) than heterosexual adolescents. Survival analyses adjusted for demographic characteristics and depressive symptoms revealed positive associations of sexual minority status with time to first onset of suicide ideation (hazard ratio [HR] = 1.77; 95% confidence interval [CI] 1.03–3.06) and plan (HR = 2.69; 95% CI 1.30–5.56). The association between sexual minority status and age at onset of suicide attempt was stronger at age < 15 (HR = 3.26; 95% CI 1.25–8.47) than age ≥15 (HR = 0.59; 95% CI 0.21–1.66). The association between sexual minority status and progression from ideation to plan was stronger in the same year of first ideation (HR = 2.01; 95% CI 1.07–3.77) than ≥1 year after first ideation (HR = 1.33; 95% CI 0.26–6.77).

CONCLUSIONS: Sexual minority adolescents had earlier onset of suicidality and faster progression from suicide ideation to plan than heterosexual adolescents. The assessment of sexual minority status in routine pediatric care has the potential to inform suicide risk screening, management, and intervention efforts among early sexual minority adolescents.

WHAT’S KNOWN ON THIS SUBJECT: Sexual minority youth have greater risk for suicide ideation and behavior than heterosexual youth, but less is known about the timing of first suicidality. A better understanding of the timing of disparities can inform targeted, optimally timed suicide risk screening.

WHAT THIS STUDY ADDS: After we controlled for depressive symptoms, sexual minority adolescents had earlier onset of suicide ideation, plan, and attempt than heterosexual adolescents. Sexual minority adolescents also progressed faster from suicide ideation to plan, but not from plan to attempt, than heterosexual adolescents.

Dr Luk conducted the literature review, formulated the research questions and the statistical analyses, and wrote the first draft of the manuscript; Drs Goldstein, Yu, and Gilman contributed to the conceptualization of the study and the statistical analyses and critically revised the manuscript; Dr Haynie designed the parent study, supervised data collection, contributed to the conceptualization of the study, and critically revised the manuscript; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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Suicide is the second leading cause of death among youth aged 15 to 24 in the United States.\textsuperscript{3} Between 12.1% and 24.0% of US adolescents report lifetime suicide ideation, and 3.1% to 8.8% of adolescents report 1 or more lifetime suicide attempts.\textsuperscript{2,3} Data from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A) reveal that suicide ideation is rare before age 10 and increases sharply between ages 12 and 17 years.\textsuperscript{3} Suicide plan and attempt often develop after ideation, and risks of planning and attempting suicide tend to increase linearly from age 12 through late adolescence, leveling off in the 20s.\textsuperscript{3–6} Adolescents with suicide ideation are 12 times more likely to attempt suicide by age 30 years\textsuperscript{7} and are more likely have poorer adult functioning across financial, health, legal, and social domains.\textsuperscript{8} Thus, identification of risk factors for onset of suicidality could inform targeted and optimally timed suicide prevention efforts.

Sexual minority status, which has been variably defined in the literature on the basis of sexual identity, behavior, and/or attraction and commonly used to refer to lesbian, gay, and bisexual individuals, is strongly associated with suicide ideation and behavior.\textsuperscript{4,9} Relative to their heterosexual peers, sexual minority adolescents report more depressive symptomatology and are more likely to experience suicide ideation, plan, and attempt.\textsuperscript{10–12} The Youth Risk Behavior Survey (YRBS) is the principal data source used to study sexual orientation health disparities among US adolescents.\textsuperscript{13–18} Recent YRBS studies show that the proportion of adolescents who identified as sexual minorities increased from 7.3% in 2009 to 14.3% in 2017\textsuperscript{19} and that past-year prevalence of suicide ideation, plan, and attempt remained markedly high among sexual minority youth across the 23-year study period.\textsuperscript{20} In the 2015 YRBS, sexual minority adolescents were more likely than their heterosexual peers to consider suicide seriously (39.7% vs 14.8%), make a suicide plan (34.9% vs 11.9%), and attempt suicide (24.9% vs 6.3%) in the past year.\textsuperscript{21} Because data on age at onset of suicide ideation and behavior are unavailable in the YRBS,\textsuperscript{22} the examination of the timing of sexual orientation disparities in other recent nationally representative data sets would be valuable.

According to minority stress theory, lesbian, gay, bisexual, and transgender populations are at elevated risk for mental health problems because they face a more hostile and stressful social environment characterized by stigma, prejudice, and discrimination.\textsuperscript{23} As a result, individuals who identify as sexual minorities tend to have higher prevalence and earlier onset of self-injurious thoughts and behaviors than heterosexual individuals.\textsuperscript{24} In a longitudinal study of sexual minority youth, earlier age at first same-sex attraction was correlated with increased likelihood of lifetime and recent suicide attempt, and depressive symptoms constituted a key mediator of the associations between family support and victimization due to being or being perceived as lesbian, gay, bisexual, and transgender and suicide attempt.\textsuperscript{25} Therefore, although recent meta-analyses suggest that depression alone may not be sufficient for predicting suicide ideation and behaviors,\textsuperscript{24,26} it has substantial relevance for suicide prevention among sexual minority youth given the well documented sexual minority disparities in adolescent depressive symptoms.\textsuperscript{27,28} Effective screening practices in the pediatric primary care setting can help identify and refer at-risk youth to appropriate specialty treatment or services.\textsuperscript{29–31} Current recommendations from the US Preventive Services Task Force and the American Academy of Pediatrics promote universal screening for depression after age 12 years.\textsuperscript{32,33} Although there are unique challenges associated with the implementation of pediatric suicide risk screening,\textsuperscript{34} a growing number of brief screening tools have been developed to detect suicide risk in youth.\textsuperscript{35–37} Regardless of whether suicidality is detected within or outside the context of depression, an improved understanding of the timing of sexual minority disparities in suicide ideation and behaviors could inform the appropriate age at which suicide risk screening procedures should incorporate an assessment of sexual orientation to enhance clinical care.\textsuperscript{38}

Ideation-to-action theories of suicide outline typical progressions from suicide ideation to plan and from plan to attempt.\textsuperscript{39} Using a data source other than the YRBS, we examined prevalence of lifetime suicide ideation, plan, and attempt among sexual minority and heterosexual youth, investigated whether sexual minority youth had earlier onset of suicide ideation and behavior than their heterosexual peers, and tested whether sexual minority youth had faster progressions from suicide ideation to plan and from plan to attempt than their heterosexual peers, while controlling for depressive symptoms.

**METHOD**

**Sample**

The NEXT Generation Health Study (NEXT) is a 7-year longitudinal study of 2783...
10th-graders who were followed annually from 2009–2010 to 2015–2016. A 3-stage stratified design was used to recruit a nationally representative sample of US high school students. Self-report questionnaires were administered initially (wave 1) in classrooms, with annual online follow-ups. Adolescents who participated at wave 2, when sexual minority status was measured, and wave 7, when lifetime history of suicide ideation and behaviors was assessed, were included in the current study (N = 1771). Attrition analyses revealed that female participants were more likely than male participants to participate in wave 7; participation in wave 7 did not vary by sexual minority status, race and ethnicity, family affluence, or depressive symptoms at wave 2. Parents provided written consent for adolescent participation; when participants reached age 18, they provided consent. The study was approved by the Institutional Review Board of the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Measures

Sexual Minority Status (Wave 2)

Sexual minority status was determined by using a single item querying sexual attraction, a core dimension of sexual orientation that adolescents find relevant and easy to answer. Participants were asked, “Which of the following best describes your sexual orientation?” Response options included (1) attraction to the opposite sex, (2) attraction to the same sex, (3) attraction to both sexes, and (4) questioning. Adolescents who endorsed sexual attraction to the opposite sex only were coded as heterosexual adolescents, whereas the last 3 sexual minority subgroups were combined for analyses.

Suicide Ideation and Behavior (Wave 7)

Three separate questions adapted from the World Mental Health Survey version of the World Health Organization Composite International Diagnostic Interview were asked of all respondents, assessing lifetime suicide ideation, plan, and attempt: “Have you ever seriously thought about committing suicide?” “Have you ever made a plan for committing suicide?” and “Have you ever attempted suicide?” Participants who endorsed lifetime suicide ideation, plan, and/or attempt were asked to report retrospectively the ages at which they first had suicide ideation, plan, and/or attempt.

Demographic Covariates

Demographic covariates included age, race and ethnicity, and family affluence. Race and ethnicity were categorized into 4 groups: white, African American, Hispanic, and other. Participants’ family affluence was assessed by using the Health Behavior in School-Aged Children Family Affluence Scale, which asked about the number of family cars and computers, whether participants had their own bedrooms, and frequency of family holidays.

Depressive Symptoms (Wave 2)

The 8-item pediatric Patient-Reported Outcomes Measurement Information System scale, which does not include questions on suicidality, was used to measure depressive symptoms (α = .94). Sample items included “I felt like I couldn’t do anything right,” “I feel sad,” and “I thought that my life was bad.” Response options ranged from 0 (never) to 4 (almost always) in the last 7 days. T scores were assigned on the basis of published norms.

Analysis

Lifetime prevalence and mean ages at first suicide ideation, plan, and attempt were computed for the overall analytic sample and by sexual minority status. Survival analyses were conducted to test associations of sexual minority status with ages at first suicide ideation, plan, and attempt as well as with progressions from ideation to plan and from plan to attempt. The SAS LIFETEST procedure (SAS Institute, Inc, Cary, NC) was used to generate Kaplan-Meier survival curves by sexual minority status. The SAS SURVEYPHREG procedure (SAS Institute, Inc) was used to fit Cox survival models of time-to-event outcomes, adjusting for wave 2 age, race and ethnicity, family affluence, and depressive symptoms. Survival models were extended to evaluate time-varying associations between sexual minority status and suicide ideation and behaviors (at ages <15 vs ≥15 years because the median of onset ages was ~15 years) and between sexual minority status and progressions from suicide ideation to plan and from plan to attempt (in the same year versus 1 or more years since the first ideation or plan because more than half of these transitions occurred in the same year). All analyses accounted for the complex survey design of NEXT; all proportions reported were weighted by using the study’s sampling weight, which accounted for probability of selection into the study and for attrition over the follow-up period.

RESULTS

As shown in Table 1, the mean age of the adolescents was 17.2 years old at wave 2 and 22.6 years old at wave 7. The sample was 60.8% female and diverse with respect to race and ethnicity, and 5.8% of respondents were sexual minority adolescents. The lifetime prevalences of suicide ideation, plan,
and attempt in the overall sample were 13.8%, 6.0%, and 5.8%, respectively (Table 2). Sexual minority adolescents had higher lifetime prevalence of suicide ideation (26.1% vs 13.0%), plan (16.6% vs 5.4%), and attempt (12.0% vs 5.4%) than heterosexual adolescents. Mean ages at first suicide ideation, plan, and attempt were generally younger among sexual minority adolescents than heterosexual adolescents. Although subgroup sizes were smaller, these patterns generally held across adolescents reporting that they were attracted to the same sex, attracted to both sexes, and questioning (Supplemental Table 4) and among male and female participants (Supplemental Table 5).

TABLE 1 Demographic Characteristics of Participants in NEXT Included in the Current Study (N = 1771)

<table>
<thead>
<tr>
<th></th>
<th>Mean (SE)</th>
<th>Frequency</th>
<th>Weighted %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at wave 2</td>
<td>17.19 (0.01)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Age at wave 7</td>
<td>22.63 (0.01)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Sex</td>
<td>—</td>
<td>717</td>
<td>59.2</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>1054</td>
<td>80.8</td>
</tr>
<tr>
<td>Race and ethnicity</td>
<td>—</td>
<td>721</td>
<td>58.9</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>441</td>
<td>19.5</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>530</td>
<td>17.3</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>80</td>
<td>4.2</td>
</tr>
<tr>
<td>Family affluence</td>
<td>—</td>
<td>560</td>
<td>22.2</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>826</td>
<td>50.1</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>385</td>
<td>27.7</td>
</tr>
<tr>
<td>Family structurea</td>
<td>—</td>
<td>874</td>
<td>54.8</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>240</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>318</td>
<td>18.7</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>162</td>
<td>9.2</td>
</tr>
<tr>
<td>Parental educationb</td>
<td>—</td>
<td>615</td>
<td>31.5</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>614</td>
<td>40.5</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>398</td>
<td>20.0</td>
</tr>
<tr>
<td>Sexual minority status at wave 2</td>
<td>—</td>
<td>1630</td>
<td>94.2</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>141</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>78</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>30</td>
<td>0.9</td>
</tr>
<tr>
<td>Depressive symptoms at wave 2</td>
<td>—</td>
<td>51.11 (0.28)</td>
<td>—</td>
</tr>
</tbody>
</table>

a Because of missing data among 177 participants, valid weighted percentages are presented.

b Because of missing data among 144 participants, valid weighted percentages are presented.

and attempt in the overall sample were 13.8%, 6.0%, and 5.8%, respectively (Table 2). Sexual minority adolescents had higher lifetime prevalence of suicide ideation (26.1% vs 13.0%), plan (16.6% vs 5.4%), and attempt (12.0% vs 5.4%) than heterosexual adolescents. Mean ages at first suicide ideation, plan, and attempt were generally younger among sexual minority adolescents than heterosexual adolescents. Although subgroup sizes were smaller, these patterns generally held across adolescents reporting that they were attracted to the same sex, attracted to both sexes, and questioning (Supplemental Table 4) and among male and female participants (Supplemental Table 5).

TABLE 2 Lifetime Prevalence and Age at First Suicide Ideation, Suicide Plan, and Suicide Attempt for the Overall Sample and by Sexual Minority Status

<table>
<thead>
<tr>
<th></th>
<th>Overall (N = 1771)</th>
<th>Heterosexual (n = 1630)</th>
<th>Sexual Minority (n = 141)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Weighted % or Mean (SE)</td>
<td>n</td>
</tr>
<tr>
<td>Lifetime suicide ideation</td>
<td>No</td>
<td>1563</td>
<td>86.2%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>208</td>
<td>13.8%</td>
</tr>
<tr>
<td>Lifetime suicide plan</td>
<td>No</td>
<td>1679</td>
<td>94.0%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>92</td>
<td>6.0%</td>
</tr>
<tr>
<td>Lifetime suicide attempt</td>
<td>No</td>
<td>1690</td>
<td>94.2%</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>81</td>
<td>5.8%</td>
</tr>
<tr>
<td>Age at first suicide ideation</td>
<td>No</td>
<td>208</td>
<td>15.16 (0.20)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>92</td>
<td>15.83 (0.35)</td>
</tr>
<tr>
<td>Age at first suicide attempt</td>
<td>No</td>
<td>81</td>
<td>15.49 (0.34)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>81</td>
<td>15.49 (0.34)</td>
</tr>
</tbody>
</table>
Kaplan-Meier curves for time to first suicide ideation, plan, and attempt (constructed by using ages retrospectively reported at wave 7) in Fig 1 reveal marked differences between sexual minority and heterosexual participants beginning at age 10, the youngest age reportable on the survey. According to the Cox survival models (Table 3), sexual minority adolescents had earlier onsets of ideation, plan, and attempt than their heterosexual peers. Model 1 revealed associations of sexual minority status with ages at first ideation (hazard ratio [HR] = 1.77; 95% confidence interval [CI] 1.03–3.06) and plan (HR = 2.69; 95% CI 1.30–5.56) but not attempt. Model 2 examined these associations at ages <15 and ≥15 years. Sexual minority disparities in suicide ideation, plan, and attempt were largely phenomena of the youngest ages: HRs were markedly larger at age <15 than at age ≥15, and the HR for suicide attempt at younger ages (HR = 3.26; 95% CI 1.25–8.47) was significantly different from the HR at older ages (HR = 0.59; 95% CI 0.21–1.66) (P = .02).

Kaplan-Meier curves for progressions from ideation to plan and from plan to attempt also revealed pronounced differences between sexual minority and heterosexual youth (Fig 2). Of the 208 participants who reported suicide ideation, 42.5% (n = 91) progressed to developing a suicide ideation to plan progression, 57.5% (n = 117) progressed to developing a suicide plan to attempt progression.

**TABLE 3** Results From Survival Analyses Modeling the Effect of Sexual Minority Status on First Age at Suicide Ideation and Behavior and Progressions From Ideation to Plan and From Plan to Attempt

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Event</td>
<td>Censored</td>
<td>(Weighted %)</td>
</tr>
<tr>
<td></td>
<td>1771</td>
<td>208</td>
<td>1583</td>
<td>(86.2)</td>
</tr>
<tr>
<td>Time to first ideation</td>
<td>1.77</td>
<td>2.74</td>
<td>—</td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>(1.03–3.06)</td>
<td>(1.25–6.02)</td>
<td>—</td>
<td>(0.48–2.22)</td>
</tr>
<tr>
<td>Time to first plan</td>
<td>2.69</td>
<td>4.68</td>
<td>—</td>
<td>1.58</td>
</tr>
<tr>
<td></td>
<td>(1.30–5.56)</td>
<td>(1.81–12.07)</td>
<td>—</td>
<td>(0.53–4.67)</td>
</tr>
<tr>
<td>Time to first attempt</td>
<td>1.46</td>
<td>3.26</td>
<td>—</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>(0.68–3.22)</td>
<td>(1.25–8.47)</td>
<td>—</td>
<td>(0.21–1.66)</td>
</tr>
<tr>
<td>Progression from ideation to plan</td>
<td>2.01</td>
<td>1.33</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(1.07–3.77)</td>
<td>(0.26–6.77)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Progression from plan to attempt</td>
<td>1.08</td>
<td>1.02</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(0.61–1.91)</td>
<td>(0.18–5.85)</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Two models were conducted for each suicide outcome. In model 1, the time-invariant effect of sexual minority status on the suicide outcome was examined. In model 2, the time-varying effect of sexual minority status on the suicide outcome was examined. All models were adjusted for age, race and/or ethnicity, family affluence, and depressive symptoms. —, not applicable.

* Significant findings.
Of the 92 participants who reported a suicide plan, 63.8% (n = 57) progressed to a suicide attempt. Progression from suicide ideation to attempt without any plan was observed in 19 participants (Supplemental Table 6); because of the low frequency, we did not conduct survival analyses of this progression. As shown in Table 3, survival analyses examining the time-varying effect of sexual minority status on progression from ideation to plan similarly revealed stronger association during the same year (HR = 2.01; 95% CI 1.07–3.77) than after ≥1 year (HR = 1.33; 95% CI 0.26–6.77), indicating that sexual minority adolescents had faster progression from ideation to plan than heterosexual adolescents.

Sexual minority and heterosexual adolescents did not differ in the timing of progression from suicide plan to attempt.

**DISCUSSION**

The lifetime prevalences of suicide ideation, plan, and attempt in the NEXT sample (13.8%, 6.0%, and 5.8%, respectively) were comparable to those reported in the NCS-A sample (12.1%, 4.0%, and 4.1%). Consistent with previous meta-analyses, sexual minority adolescents were 2 to 3 times more likely to report lifetime suicide ideation (26.1% vs 13.0%), plan (16.6% vs 5.4%), and attempt (12.0% vs 5.4%) than their heterosexual peers. Because the YRBS assessed past-year but not lifetime prevalence or ages at onset of suicide ideation and behavior, direct comparisons of suicidality prevalences between NEXT and YRBS respondents are not possible. Nonetheless, the magnitude of disparities in past-year prevalence of suicide attempt was notably greater in the YRBS (24.9% for sexual minority adolescents versus 6.3% for heterosexual adolescents) than in the NEXT sample. The higher prevalence of suicide attempt among sexual minorities in the YRBS sample may be due to concurrent measurement of sexual orientation and suicidality and/or measuring of sexual identity rather than attraction. Coming out at an earlier age is a risk factor for...
suicide attempt. If adolescents who self-identify as sexual minority are more likely to come out than adolescents who have same-sex attraction alone, the resulting negative reactions from parents and friends may account for the more drastic sexual orientation disparity in the YRBS sample.

Because age at onset of suicidality was assessed in NEXT but not in YRBS, our results complement studies that utilized the YRBS sample and reveal earlier ages at onset of suicide ideation, plan, and attempt among sexual minority adolescents compared with their heterosexual peers. Potential contributors to sexual minority disparities identified in previous studies include child psychopathology and family conflict, negative family and school environment, perceived burdensomeness and social rejection, and stress associated with the coming out process. Accordingly, it would be beneficial for interventions to address minority status–related risk (eg, discrimination experiences) and promote protective factors (eg, family acceptance and affirming and supportive school environments).

Moreover, our results underscore the importance of intervention timing. Indeed, one explanation for the persistently large disparities in suicidality for sexual minority youth is the absence of developmentally timed interventions. Assessment of sexual orientation beginning in early to midadolescence may facilitate early identification of sexual minority adolescents at elevated suicide risk so that timely interventions can be provided.

Sexual minority adolescents also had faster progression from ideation to plan but not from plan to attempt. The lack of association between sexual minority status and progression from plan to attempt may be due to fewer adolescents with suicide plans and higher clinical severity among suicide planners. In a recent study of adolescents admitted to inpatient psychiatric services, sexual minority adolescents reported higher levels of suicide ideation but not behavior, and no sexual orientation disparities were found in depression, clinical impairment, or life satisfaction. More research is needed to understand mental health and treatment-related disparities among sexual minority youth in high-risk clinical samples. Conceptualized within the ideation-to-action theoretical framework, our findings highlight the importance of addressing sexual minority disparities before the onset of suicide ideation and before the progression from suicide ideation to plan.

Data from the NCS-A indicated that 66.4% of adolescents with suicide ideation received mental health specialty treatment in their lifetimes, but only 39.6% were treated before the onset of suicide behavior. Because sexual minority adolescents have earlier onset of suicide ideation and behaviors than heterosexual peers, there is an urgent need to develop and test psychosocial interventions tailored for sexual minority adolescents at earlier developmental stages.

Sexual minority disparities in mental health symptoms, including depression, anxiety, and traumatic distress, have been found in pediatric primary care, making it uniquely suited to identify at-risk sexual minority adolescents and connect them to appropriate resources and treatment. The American Academy of Pediatrics recommends providing culturally sensitive office-based care for sexual minority youth, which includes taking a confidential psychosocial history by using a gender-neutral approach and following prevention and screening guidelines as outlined in Bright Futures. To successfully implement these screening procedures, a behavioral health workforce embedded in the primary care setting could increase the capacity for culturally sensitive care and referral to treatment. Greater sensitivity to confidentiality and privacy concerns related to sexual minority status, as well as an openness to discuss minority stressors, can foster a supportive environment for sexual minority adolescents.

Study limitations include the classification of sexual minority status on the basis of a single item assessing sexual attraction at one time point. This item only categorized youth who experienced some same-sex attraction as sexual minority youth and did not capture asexual youth or the full spectrum of gender identity. Such classification of sexual minority youth did not account for the multidimensionality of sexual orientation and excluded alternative definitions based on sexual identity and behavior. Second, the number of sexual minority adolescents in NEXT was not large enough to conduct analyses between male and female participants separately, limiting our ability to examine sex differences in suicide risk associated with sexual minority status. Likewise, small cell sizes for sexual minority subgroups precluded formal analyses to test which subgroup had the highest risk for suicide ideation and behaviors. Larger samples are needed to overcome these limitations. Third, single-item measures of suicide ideation and behavior could lead to under- or over-endorsement of these items. For instance,
requiring suicide ideation to be serious may exclude adolescents with mild, transient, but clinically important ideation, whereas not requiring “intent to die” as part of the suicide attempt definition may lead to over-endorsement of this outcome.69,70 Fourth, the analytic sample consisted of 63.6% of the full NEXT cohort because of attrition and missing data on study variables. Lastly, retrospectively reported age at onset of suicidality could be prone to recall bias (eg, influenced by current distress), and the timing of suicide ideation and behavior could have preceded the assessment of sexual minority status. Prospective research measuring multiple dimensions of sexual orientation and suicide-related behaviors should begin in early adolescence so as to enable modeling of fluidity of sexual orientation over time. Regional and state differences in acceptance, legal protection, and access to culturally sensitive health care for sexual minority youth should also be examined.

Sexual minority disparities in suicide risk emerge early in, and in some instances before, adolescence and are substantially independent from depressive symptoms. Our study highlights the importance of early identification of sexual minority adolescents who experience elevated suicidality. The inclusion of sexual orientation assessment, psychosocial support, education for families, appropriate treatment referral in pediatric primary care, and consideration of using tele-behavioral health approaches to reach underserved sexual minority youth could inform suicide prevention.31,67 Use of evidence-based interventions that are well timed may help sexual minority adolescents navigate developmental, social, and psychological challenges. Clinical research is needed to evaluate whether developmentally timed interventions improve the effectiveness of suicide risk reduction efforts among sexual minority youth.60,63 Future studies that incorporate multiple levels of data to capture individual-level (eg, perceived burdensomeness, access to lethal means) and state-level characteristics (eg, legalization of same-sex marriage, antidiscrimination policies) can improve our understanding of risk and protective factors associated with suicidality among sexual minority youth.

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REFERENCES

7. Reinherz HZ, Tanner JL, Berger SR, Beardslee WR, Fitzmaurice GM.

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ABBREVIATIONS

CI: confidence interval
HR: hazard ratio
NCS-A: National Comorbidity Survey Replication–Adolescent Supplement
NEXT: NEXT Generation Health Study
YRBS: Youth Risk Behavior Survey
Adolescent suicidal ideation as predictive of psychopathology, suicidal behavior, and compromised functioning at age 30. *Am J Psychiatry.* 2006;163(7):1226–1232


52. Puckett JA, Woodward EN, Mereish EH, Pantalone DW. Parental rejection following sexual orientation disclosure: impact on internalized homophobia, social support, and mental health. LGBT Health. 2015;2(3):265–269


56. Hill RM, Pettit JW. Suicidal ideation and sexual orientation in college students: the roles of perceived burdensomeness, thwarted belongingness, and perceived rejection due to sexual orientation. Suicide Life Threat Behav. 2012;42(5):567–579


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