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Suicide ideation and behavior and ATOD use among bisexual high school students

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ABSTRACT

Background: Research has indicated that sexual minorities have higher prevalence rates for ATOD use and suicide ideation and behavior compared to heterosexual youth. Yet, most studies to date have combined gay, lesbian, and bisexuals into one category. This study sought to assess the uniqueness of bisexuality to assess the risk of ATOD use and suicide ideation and behavior among bisexual high school students.

Methods: Data for this study were derived from the 2019 Centers for Disease Control's Youth Risk Behavior Survey (YRBS). Chi-square analysis was conducted to determine the prevalence of ATOD use and suicide ideation and behavior. Logistic regression was then used to estimate the association between ATOD use and suicide ideation and behavior among bisexual adolescents.

Results: This study found that ever use an electronic vape product, non-medical use of prescription drugs, and current alcohol and marijuana use were significant predictors for suicide ideation and behavior.

Conclusions: Based on our results, we believe that it is important to address the relationship of substance use as a risk factor for suicide and ideation and behavior of bisexual adolescents, as bisexual adolescents may need more emotional support as they come to understand their sexual identity.

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Introduction



Alcohol, tobacco, and other drug use (ATOD) among adolescents in the United States is at an alarming rate. According to the Centers for Disease Control and Prevention (CDC), 24.1% of adolescents have tried cigarettes, 6% are current cigarette smokers, and 32.7% are current users of electronic vaping products. Additionally, 15% of adolescents have used alcohol before the age of 13 and 29.2% report current alcohol use. Also, 36.8% of adolescents report ever use of marijuana with 21.7% being a current user and 3.9% reporting ever use of cocaine and 1.8% ever use of heroin (CDC, 2019). These risk behaviors can result in a host of social issues, such as unintentional pregnancy (Connery et al., 2014; Shafique et al., 2022), unintentional injury (Delker et al., 2016), and may be used as a coping method for depression and other mental health issues (Bromana et al., 2019; Lee et al., 2017; Lee-Winn et al., 2018).

Depression is also an issue among adolescents in the United States. Research has found that 17% of adolescents between the ages of 12 to 17 experienced a major depressive episode in the past year (NIMH, 2020). Depression in turn may contribute to thoughts of harming oneself (Gart & Kelly, 2015). Adolescent suicide is a serious public health issue and is the third leading cause of death (21.5%) among adolescents and young adults in the US (CDC, 2022). According to the CDC, 18.8% of high school students (grades 9–12) have considered suicide, 15.7% made a suicide plan, and 8.9% have attempted suicide (CDC,

2019). Suicide has a tremendous impact on society and it is important to identify factors that may predispose someone to take their own life.

ATOD has been identified as a risk factor for suicide. Studies have found that suicidal thoughts and attempts are significantly associated with alcohol and drug use among adolescents (Labuhn et al., 2021; Sellers et al., 2019). Research has found that adolescents who use alcohol and/or illicit drugs are significantly more likely to have suicidal ideation prevalence rates and suicide attempts compared to adolescent non-users (Fresan et al., 2022; Gart & Kelly, 2015; Schauer et al., 2020). Specifically, among adolescents who reported suicidal thoughts, 41% and 34% were current alcohol and marijuana user and 9% had tried cocaine. Among adolescent who had attempted suicide, 45.2% and 40% were current users of alcohol and marijuana and 15.5% had tried cocaine (CDC, 2019). As such, the data suggests that substance use may be one contributing factor for suicide ideation and attempts.

Another contributing factor for suicide that has been explored is sexual identity. Compared with their heterosexual peers, sexual minorities report elevated rates of suicidal ideology and attempts (Liu et al., 2020; Scoggins et al., 2022). Specifically, data from the national Youth Risk Behavior Survey (YRBS) indicates that 46.8%, 40.2%, and 23.4% of sexual minorities have considered, made a plan, or attempted suicide in 2019. This is in comparison to the findings that 14.5%, 12.1%, and 6.4% of heterosexual youth considered,

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made a plan, or attempted suicide (CDC, 2019). These rates are significantly different between the two groups and indicate a health disparity.

Research has indicated that sexual minorities (lesbian, gay, bisexual) have higher prevalence rates for ATOD use and higher prevalence rates for suicide ideation and attempt compared to heterosexual youth (Caputi, 2018; Dermody, 2017; Kecojevic et al., 2017). Yet, most studies to date have combined gay, lesbian, and bisexuals into one category. Research on sexual minority groups often do not make a distinction between the health and life experiences of bisexually identified youth groups and gay and lesbian groups. Additionally, bisexually men have received little study outside of the area of the HIV/AIDS pandemic. Past research has indicated that bisexuals males are often treated as an extension of gay males (Sandfort & Dodge, 2008). As such, this study sought to assess the uniqueness of bisexuality to assess the risk of ATOD use and suicide ideation among those reporting bisexual identity among a nationally representative sample of high school students.

Materials and methods

Subjects

Participants for this study consisted of an almost equal distribution of grade with about 25% per 9th through 12th grade. The sample was equal between sexes. Whites made up the majority of the sample (48.8%) followed by African-Americans (15.4%), and Hispanic (15.3%). The mean age was 15.4. Bisexual identity was reported by 9.6% ($n = 1151$) of the sample.

Procedures

Data for this study were derived from the 2019 Youth Risk Behavior Survey (YRBS). A total of 13,677 participants completed the YRBS in 2019. This national study is conducted every odd year by the CDC and measures alcohol, tobacco, and other drug use, dietary behaviors, physical activity, sexual behaviors, unintentional injury and violence, and other health priorities such as mental health in order to determine health-risk behaviors among high school students. The YRBS is a cross-sectional survey administered among representative samples of students in the United States. The YRBS includes school-based national, state, and local data conducted among representative samples of students in grades 9–12. The sampling frame for the 2019 national YRBS consisted of all regular public and private schools with students in at least one of grades 9–12 in the 50 states and the District of Columbia. The CDC's Institutional Review Board approved the procedure for data collection prior to conducting the study. Before survey administration, parental permission was obtained. A detailed description of the methodology used for the YRBS has been published elsewhere (Underwood et al., 2020).

Measures and data analysis

First, in order to describe the sample, frequencies were conducted of all demographic variables. These items included race, gender, age, and grade in school. Secondly, chi-square analysis was conducted with suicide ideation and behavior (i.e., seriously considered, made a plan, attempted suicide) and ATOD use variables. The ATOD variables assessed in this analysis included ever used cigarettes, electronic vape product, marijuana, cocaine, inhalants, heroin, meth, and non-medical use of prescription pain medication. Other ATOD use variables included current cigarette, electronic vape product, alcohol and marijuana use. Additionally, first use of cigarettes, alcohol, and marijuana before the age of 13 were assessed. Lastly, current use of alcohol, electronic vape product, and binge drinking were assessed. These variables were dichotomous. Next, logistic regression was used to estimate the association between ATOD use and suicide ideation and behavior among bisexual youth to determine whether ATOD use was a risk factor for seriously considering, making a plan, and attempting suicide.

Results

Of the total sample of students who completed the YRBS in 2019, 9.6% ($n = 1151$) reported being bisexual. Of those who reported bisexual identity, 48.9%, 41.9%, and 25.2% considered, made a plan, or attempted suicide.

The results of this study found that those bisexual students who considered suicide were significantly more likely to have ever used an electronic vape product, be a current user of marijuana, and to have used non-medical pain prescription drugs without a doctor's prescription. Specifically, these students were 1.72 times more likely to have used an electronic vape product (67.2%), 1.60 times more likely to be a current marijuana user (57.4%), and 3.08 times more likely to have used non-medical pain prescription without a doctor's prescription (35.2%) compared to those bisexual students who had not considered suicide. Similar results were found for made a plan to commit suicide. Specifically, these students were 1.59 times more likely to have ever used an electronic vape product (66.7%), 1.75 times more likely to be a current drinker (44.4%), and 2.28 times more likely to have used non-medical pain prescription without a doctor's prescription (34.4%) compared to those bisexual students who had not made a plan to commit suicide. Lastly, similar results were found for attempted suicide. Specifically, these students were 2.01 times more likely to be a current cigarette user (18.1%), 1.79 times more likely to be a current user of alcohol (48.5%), and 2.55 times more likely to have use non-medical pain prescription without a doctor's prescription (40.9%) compared to those bisexual students who had not attempted suicide (Tables 1 and 2).

Discussion

The purpose of this study was to assess the risk of ATOD use and suicide ideation and behavior among a nationally representative sample of high school students who reported bisexual

Table 1. Percentage of ATOD use among bisexual students who considered, made a plan, or attempted suicide.

Variable		Considered %	Made a Plan %	Attempted %
Ever tried cigarettes	Yes	44.0	43.3	50.5
	No	25.2	27.9	29.8
First cigarette by age 13	Yes	16.9	15.9	21.7
	No	9.6	10.7	9.8
Current cigarette use	Yes	13.3	13.8	18.1
	No	6.3	6.6	7.0
Ever use of electronic vape product	Yes	67.2	66.7	68.5
	No	48.9	51.0	54.3
Current use of electronic vape product	Yes	41.9	42.2	46.4
	No	27.1	28.3	30.8
First alcohol use by age 13	Yes	27.0	27.0	33.0
	No	18.2	18.8	18.5
Current alcohol use	Yes	42.1	44.4	48.5
	No	27.2	27.2	30.4
Current binge drinker	Yes	18.0	19.2	21.5
	No	11.2	10.8	11.8
Ever tried marijuana	Yes	57.4	58.0	66.8
	No	44.3	45.3	47.7
Tried marijuana by the age of 13	Yes	12.1	10.7	18.8
	No	7.1	7.6	6.7
Current marijuana use	Yes	37.8	37.8	45.1
	No	24.6	26.3	27.5
Non-medical use of prescription pain medication	Yes	35.2	34.4	40.9
	No	16.8	18.9	19.6
Ever tried cocaine	Yes	8.2	8.6	12.5
	No	4.6	3.9	4.1
Ever tried inhalants	Yes	18.0	19.9	21.8
	No	11.7	10.6	12.2
Ever tried heroin	Yes	3.3	2.9	5.2
	No	3.6	2.8	2.4
Ever tried meth	Yes	4.5	4.7	7.5
	No	3.6	2.9	2.6

Table 2. Odds ratio and 95% C.I. of the relationship between ATOD use and suicide ideation and behavior among bisexual youth.

Variable	Considered	Made a Plan	Seriously Considered
Ever tried cigarettes	1.45 (0.86–2.44)	1.16 (.69–1.92)	1.21 (0.68–2.16)
First cigarette by age 13	0.60 (0.27–1.32)	.48 (.22–1.06)	0.64 (0.27–1.49)
Current cigarette use	1.06 (0.49–2.27)	1.64 (.78–3.44)	2.01 (1.06–3.80)*
Ever use of electronic vape product	1.72 (1.20–2.48)*	1.59 (1.11–2.28)*	1.45 (0.80–3.54)
Current use of electronic vape product	0.79 (0.47–1.33)	.74 (.41–1.48)	0.86 (0.47–1.55)
First alcohol use by age 13	0.75 (0.46–1.24)	1.17 (.72–1.89)	1.14 (0.65–1.98)
Current alcohol use	1.24 (0.74–2.07)	1.75 (1.19–2.57)*	1.32 (0.74–2.28)
Current binge drinker	0.99 (0.51–1.90)	.78 (.41–1.48)	0.88 (0.44–1.77)
Ever tried marijuana	0.92 (0.55–1.51)	.86 (.51–1.42)	0.84 (0.44–1.58)
Tried marijuana by the age of 13	1.79 (0.79–4.03)	1.30 (.60–2.81)	1.81 (0.78–4.17)
Current marijuana use	1.60 (1.06–2.42)*	1.30 (.76–2.22)	1.79 (1.16–2.77)*
Non-medical use of prescription pain medication	3.08 (2.01–4.72)*	2.28 (1.52–3.43)*	2.55 (1.64–3.97)*
Ever tried cocaine	2.93 (0.68–12.65)	2.84 (.77–1.30)	2.50 (1.55–4.01)
Ever tried inhalants	1.19 (0.65–2.16)	1.47 (.83–2.63)	1.11 (0.34–3.55)
Ever tried heroin	0.18 (0.12–2.82)	.38 (.25–6.08)	0.96 (0.50–1.82)
Ever tried meth	1.14 (0.23–5.43)	.94 (.22–4.03)	1.82 (0.43–7.60)

identity. The results of this study found that ever use an electronic vape product, current alcohol use, current marijuana use, and non-medical use of prescription drugs were significant predictors for suicide ideation and behavior among bisexual youth.

Studies have found higher rates of suicidal ideation and behavior in sexual minority (i.e., gay, lesbian, bisexual) youth but these studies combined sexual minority into one category (Baams et al., 2015; Barnett et al., 2019; Stuart-Maver et al., 2021). Liu et al. (2020) found that sexual minorities were approximately twice as likely to have considered, made a plan, and attempted suicide compared to their heterosexual counterparts. A 2015 meta-analysis assessing substance use among sexual minority youth found that sexual minorities

who engaged in substance use had double the risk of suicide ideation compared to heterosexual youth (Darvishi et al., 2015). Other studies have found similar results, in that sexual minorities who engaged in substance use were more likely to have considered, made a plan, and attempted suicide compared to heterosexual youth (Caputi, 2018; Dermody, 2017).

The current study found that various ATOD use behaviors were significant predictors of suicide ideation and behavior among bisexual youth. This study is unique in that we focused on one specific group, bisexuals, whereas most studies combine gay, lesbian, bisexual into one classification. Our research adds to the growing body of literature that indicates great disparities among bisexually identified individuals, even when compared to their lesbian and gay counterparts (Dodge

et al., 2016; Feinstein & Dyer, 2017; Helms & Waters, 2016). Additionally, this study used a nationally representative sample of youth. More needs to be known about the factors they may influence suicide ideation and behavior among those reporting bisexual identity. Adolescents who report bisexual identity may need more emotional and social support to address such issues as loneliness and stress as they come to understand their sexuality. Research has found that bisexuals experience greater amount of stressors in their lives due to social stigma and discrimination compared to heterosexuals and other sexual minorities (Mereish et al., 2017; Pompili et al., 2014; Pyra et al., 2014; Ross et al., 2018) which may influence the use of various substances which in turn may cloud one's judgment (Gart & Kelly, 2015; Zhang & Wu, 2014). More research is needed to explore the emotional aspect of bisexuality to determine how to best address the risk behaviors in these youth.

The results of this study must be considered in light of several limitations. First, the study was cross-sectional. Thus, the temporality of associations cannot be determined. Second, this study was self-reported behaviors of high school students. There is no way to ensure the accuracy of the responses such as under or over reporting behaviors, however, the questions have been shown to demonstrate good test-retest reliability (Underwood et al., 2020). Lastly, these data apply to teens who attend school. They are not representative of all persons in the age group.

Conclusions

The results of this study found a relationship between certain ATOD use variables and suicide ideation and behavior among bisexual adolescents. Based on our results, we believe that it is important to address the relationship of substance use as a risk factor for suicide ideation and behavior of bisexual teens. Youth that identify as bisexual may need more emotional support as they come to understand their sexual identity. Future studies should focus on assessing differences by age, race, and gender to determine if there are differences among subpopulations of adolescents.

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