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Prevalence of Substance Use among Lesbian, Gay, and Bisexual High School Students in 2019 vs. 2021

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ABSTRACT

Background: Studies suggest that LGBTQ+ (lesbian, gay, bisexual, transgender, queer/questioning, plus) youth are at increased risk of engaging in alcohol and substance use. The COVID-19 pandemic forced many students to isolate in 2020 and 2021, and the impacts of this have been purported to be detrimental. This study examines the prevalence of alcohol and substance use among lesbian, gay, and bisexual (LGB) U.S. high school students before the pandemic in 2019 versus 2021.

Methods: This cross-sectional descriptive study used results from the 2019 Youth Risk Behavior Survey (YRBS) and the 2021 Adolescent Behavior and Experiences Survey (ABES). The 2019 YRBS included 13,677 questionnaires from 136 schools, and the 2021 ABES included 7,705 questionnaires from 128 schools. We selected 15 questions concerning alcohol and substance use common to both surveys and compared results for LGB students in 2019 versus 2021.

Results: We found a decrease in prevalence for all 15 alcohol and substance-use-related questions from 2019 to 2021. The most statistically significant differences were observed in E-cigarette use, marijuana use, and obtaining an illegal drug on school property.

Conclusions: The results suggest substantial decreases in alcohol and substance use among LGB high school students from 2019 to 2021. These decreases have occurred in the context of the pandemic and reported increases in mental health problems among this population. These outcomes should prompt further research into how social interactions at school (or the lack thereof) among LGBTQ+ youth contribute to patterns of alcohol and substance use.

Keywords: Substance Use, LGBTQ youth, COVID-19, mental health, adolescent health

INTRODUCTION

At the beginning of the COVID-19 pandemic, many students were mandated to return home and transition to a virtual learning environment for the majority of 2020 and early 2021. As a result, social isolation became the hallmark of the pandemic for most school-aged children and adolescents; the mental, social, and physical health impacts of this transition have been purported to be detrimental

(The Human Rights Campaign Foundation [HRC], n.d.; Mereish, 2019). Factors of interest related to substance use during home-bound social isolation are the immediate availability of substances within a neighborhood, use among friends, and home environment (National Institute on Drug Abuse [NIDA], 2014). With the suggestion that mental health was negatively impacted during the COVID-19 pandemic, further analysis of the impacts on teenage substance use

behavior is required, as it has been shown that up to 50% of individuals with substance use disorders also experience mental illness (Chacon et al., 2021; Loades et al., 2020; NIDA, 2014). Further investigation into sexual and gender minority (SGM) youth, a particularly vulnerable population, is necessary as the Centers for Disease Control and Prevention (CDC) reported a rise in the prevalence and incidence of substance use in the adult population as a direct result of the emotional toll of the pandemic (Czeisler et al., 2022).

Previous research has shown that substance use is typically initiated during adolescence. Initiation of substance use during adolescence is thought to be fueled by one or more of the following desires: to fit in, to feel good, to cope with emotions, or to experiment (NIDA, 2014). Additionally, the initiation of substance use can be influenced by social, financial, and environmental factors. Lesbian, gay, bisexual, transgender, queer/questioning, plus (others) (LGBTQ+) youth are particularly at risk for engaging in substance use and misuse. This demographic has been found to engage with tobacco, alcohol, and illicit drugs at higher rates than their heterosexual, cisgender peers (Mereish, 2019). For example, a 2012 report by the Human Rights Campaign found that LGBT youth are "more than twice as likely as non-LGBT youth to experiment with alcohol and drugs" (p. 6, HRC, n.d.). This significant difference is possibly related to the continuous stigma and discrimination LGBTQ+ youth may face at home, school, work, or in the community (Rhode Island Prevention Resource Center, n.d.).

The Youth Risk Behavior Survey (YRBS) is a valuable tool the CDC provides to measure health-related behaviors among children and adolescents. The YRBS is distributed to high school students in grades 9 through 12 every two years. This survey tracks behaviors like substance use that may result in long-term poor health. The 2021 YRBS distribution

was delayed due to the COVID-19 pandemic; instead, the CDC developed and distributed the Adolescent Behaviors and Experiences Survey (ABES). The CDC has described the ABES as "the first nationally representative look at the effects of the COVID-19 pandemic on the health of our nation's youth" (Division of Adolescent and School Health [DASH], n.d.-a, About ABES section). Thus, the 2019 YRBS and 2021 ABES provide essential data regarding the prevalence of substance use among high school students before and during the COVID-19 pandemic. This study will contribute to the expanding literature addressing the health of adolescent sexual minorities in the context of substance use.

Knowing that adolescents experienced significant alterations to their social and educational environments during COVID-19, we seek to elucidate any potential impact these had on substance use behaviors. The purpose of this study is to answer the research question: What were the changes in the prevalence of substance use among LGB high school students between 2019 and 2021? We hypothesized an increase in the prevalence of substance use among LGB high school students between 2019 and 2021. We believe the detrimental impact of social isolation on mental health may explain increased substance use in this at-risk population. This study is significant because while there is a growing body of literature regarding the effects of the COVID-19 pandemic on substance use in SGM adults, limited data exist regarding how substance use patterns changed in SGM youth. Ultimately, we hope this study can assist in developing evidence-based public health strategies for substance use reduction and provide direction for future studies to identify possible factors contributing to substance use in this population.

METHODS

Sample

This cross-sectional descriptive study was conducted using results from the 2019 YRBS and 2021 ABES. The results of these surveys are publicly available through the CDC. The national YRBS has 99 questions monitoring six categories of health-related behaviors contributing to death and disability in young adults, including substance use. Importantly, the survey includes demographic questions about sexual orientation and allows students to identify as heterosexual, gay, lesbian, or bisexual. The CDC conducts the YRBS every two years. Due to the COVID-19 pandemic, the 2021 YRBS was postponed. Instead, the CDC conducted the ABES, a 110-question online survey that U.S. high school students completed in early-mid 2021. The ABES contained the same questions as the YRBS, with an additional 11 questions about the effects of the COVID-19 pandemic.

The YRBS 2019 reported results from 13,677 questionnaires completed by students in grades 9 through 12 from 136 high schools in the United States (DASH, n.d.-b). The ABES 2021 reported results from 7,705 questionnaires completed by students in grades 9 through 12 from 128 high schools in the United States (DASH, n.d.-a).

Measures

These questionnaires addressed "current" and "lifetime" substance use behaviors. The current (defined as ≥ 1 day during the 30 days before the survey) substance use behaviors we analyzed in this study include 1) marijuana use, 2) alcohol use, 3) binge drinking, 4) prescription opioid misuse, 5) electronic vapor product use, and 6) cigarette use. The lifetime (defined as ever used) substance use behaviors we analyzed in this study include 1) marijuana use, 2) synthetic marijuana use, 3) cocaine use, 4) methamphetamine use, 5) heroin use, 6) prescription opioid misuse, 7) injection drug use, 8) cigarette use, and

9) electronic vapor product use.

Analysis

We selected 15 questions concerning alcohol and substance use standards for both surveys and then isolated results for LGB students for these questions. The CDC reported results as the percentage of respondents who answer "yes" to a given question, with a 95% confidence interval. For each question, the relative change in prevalence in 2019 versus 2021 was determined, and independent sample *t*-tests were completed to identify if there was a statistically significant difference in alcohol and substance use in 2019 versus 2021. This allowed us to evaluate how the reported prevalence of alcohol and substance use behaviors in this population changed from before the COVID-19 pandemic to early-mid 2021.

RESULTS

There was an absolute decrease in prevalence for all 15 alcohol and substance use-related questions from the 2019 YRBS to the 2021 ABES among LGB students (Table 1). Using a 95% confidence interval, a statistically significant decrease was observed for 13 of these questions, while "Ever used synthetic marijuana" and "Ever used inhalants" did not demonstrate significant decreases. The most prominent relative decreases included "Ever used cocaine" (73% decrease), "Ever used ecstasy" (69% decrease), and "Were offered, sold, or given an illegal drug on school property" (62% decrease). The most statistically significant differences ($p < .0001$) were observed for "Currently used an electronic vapor product," "Ever" and "Currently used marijuana," and "Were offered, sold, or given an illegal drug on school property." Sex, race/ethnicity, sexual identity, and grade demographics of survey participants are recorded in Table 2.

DISCUSSION

This study has several strengths. The YRBS survey regularly undergoes evaluation and revision by experts within and

outside of the CDC, with the most recent update being in 2013. Since its inception in 1991, the CDC has removed questions deemed problematic and revised the wording for other questions to improve the reliability of the survey. Each survey employed a two-stage cluster sample design to yield a representative sample of high school students in the United States (Brener et al., 2013). The ABES employed a three-stage cluster sampling approach to obtain a nationally representative sample, anticipating a lower response rate due to COVID-19 limitations (Rico et al., 2022). The sample response sizes for the 2019 YRBS and 2021 ABES were relatively large at 13,872 and 7,705, respectively.

The limitations of this study are largely secondary to the limitations of the YRBS and ABES surveys. First, these surveys rely on self-reporting, and results are thus subject to over and underreporting by respondents. Additionally, Minnesota, Oregon, and Washington do not participate in these CDC surveys. Finally, these surveys focus on behaviors that contribute to morbidity and mortality among youth but do not provide information on the underlying determinants of such behaviors (Brener et al., 2013).

Alcohol and substance use in LGBTQ+ youth and the factors contributing to them represent an important area of ongoing research. Previous studies have demonstrated higher rates of substance use in this population; psychosocial factors, including increased mental health problems and harassment at home or school, are thought to contribute to this disparity (Mereish, 2019). Sociocultural factors offer another potential explanation for increased substance use in this population. Felner et al. (2020) found that LGBTQ+ spaces such as gay bars and Pride events often provide environments of “normative substance use” and that substance use is accepted, even encouraged, in particular social contexts as a means to connect with other LGBTQ+ individuals. Thus, increased mental health

problems and potential harassment experienced by LGBTQ+ youth may not fully account for increased substance use in this population. However, it is important to recognize that this observation of “normative substance use” does not apply to all LGBTQ+ spaces. Studies have shown that community-based organizations and other supportive environments for LGBTQ+ youth can be a protective factor against the development of substance use in this population (Fish et al., 2019; Eisenberg et al., 2020).

The results of this study illustrate substantial decreases in alcohol and substance use among LGB high school students in the United States from 2019 to 2021. Interestingly, these decreases have occurred in the context of the COVID-19 pandemic, along with reported increases in mental health problems among this population. A December 2021 literature review in *The Lancet* revealed that more than 50% of SGM youth reported increased anxiety or depressive symptoms during the pandemic (Ormiston & Williams, 2022). Substance use has decreased parallel to increases in mental health issues in this population from 2019 to 2021. This suggests that factors outside of mental health play a significant role in alcohol and substance use among LGBTQ+ youth.

The social distancing protocols implemented during the pandemic led to decreased time spent at school and decreased in-person social interactions. Social isolation may have reduced students' access to alcohol and drugs. The large decrease in students who reported being offered, sold, or given an illegal drug on school property from 2019 to 2021 is consistent with the fact that many students did not attend school in person during the COVID-19 pandemic. Not attending school in person may have also been a factor in the other decreases observed.

Additionally, the isolation of the pandemic undoubtedly interrupted the social networks and peer influences that

shape adolescents' school experiences. A large body of research demonstrates the importance of peer influence in the development of adolescent substance use. A 2021 systematic review described *peer selection* and *peer socialization* as significant mechanisms in adolescent substance use (Henneberger et al., 2021). Adolescents interested in experimenting with alcohol or drugs or already doing so will tend to select peers who engage in these same behaviors as friends. Furthermore, adolescents who socialize with peers who use alcohol and drugs will tend to assimilate their behavior to fit in. With an increased number of adolescent individuals being confined to their homes and cut off from peers during the pandemic, it is likely that behaviors shifted away from peer-influenced substance use.

Other factors that may have contributed to decreases in alcohol and substance use in this population are increased parental oversight and awareness of adolescent behavior. Previous studies have shown that parental monitoring is a protective factor against adolescent substance use (Nawi et al., 2021). Because students spent more time at home during the COVID-19 pandemic, this presumably led to increased interaction with parents or caregivers and subsequent decreases in alcohol and substance use.

CONCLUSION

Overall, these results should prompt further research into how social interactions at school (or the lack thereof) of LGBTQ+ youth contribute to patterns of alcohol and substance use in this population. The observation that substance use decreased in response to a period of social isolation suggests that in-person social interactions and peer influences may have a more considerable impact on substance use than psychological factors (e.g., mental health issues). By identifying such sociocultural factors, we can recognize potential points of intervention. This also raises the question

regarding how online social interactions and social media usage influence alcohol and substance use in this population. Furthermore, it will be necessary to monitor how substance use data changes in the next few years. Future data may reveal whether there will be a rebound in alcohol and substance use as students return to "normal life" after the pandemic and reconnect with peers in person. Of note, current data regarding these risk behaviors in trans youth are virtually nonexistent. Thus, further research in this population is of particular importance. We ultimately hope to highlight the prevalence of alcohol and substance use in LGBTQ+ youth and the potential factors that contribute to it.

DECLARATION OF INTEREST

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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Table 1

Changes in Prevalence of Alcohol and Substance Use in Lesbian, Gay, and Bisexual High School Students in 2019 vs. 2021

Survey Question	2019 YRBS	2021 ABES	% Change	p value
Ever used an electronic vapor product	56.0	45.2	-19.3%	.0026**
Currently used an electronic vapor product	34.1	20.9	-38.7%	< .0001***
Currently drank alcohol	33.9	26.4	-22.1%	.022*
Currently were binge drinking	15.6	9	-42.3%	.0037**
Ever used marijuana	49.6	35.7	-28.0%	< .0001***
Currently used marijuana	31.1	18.5	-40.5%	< .0001***
Ever used synthetic marijuana	11.6	8.1	-30.2%	.0935
Ever took prescription pain medicine without a doctor's prescription	23.9	16	-33.1%	.0079**
Currently took prescription pain medicine without a doctor's prescription	12.0	6.8	-43.3%	.0053**
Ever used cocaine	7.0	1.9	-72.9%	.0036**
Ever used inhalants	14.8	13.7	-7.4%	.6249
Ever used ecstasy	6.2	1.9	-69.4%	.014*
Ever used hallucinogenic drugs	12.1	6	-50.4%	.0086**
Ever used select illicit drugs (cocaine, inhalants, heroin, methamphetamines, ecstasy, or hallucinogens)	27.8	17.5	-37.1%	.0007***
Were offered, sold, or given an illegal drug on school property	30.3	11.3	-62.7%	< .0001***

Note. * $p < .05$, ** $p < .01$, *** $p < .0001$

Table 2

Youth Risk Behavior Survey (2019) and Adolescent Behaviors and Experiences Survey (2021) Student Demographics

Demographic Characteristics	2019 YRBS*	2021 ABES†
	No. (%)	
Sex		
Female	6,885 (49.4)	3,999 (50.4)
Male	6,641 (50.6)	3,678 (49.6)
Race and ethnicity		
Black, non-Hispanic	2,040 (12.2)	1,189 (12.9)
Hispanic or Latino	3,038 (26.1)	2,038 (25.4)
White, non-Hispanic	6,668 (51.2)	3,461 (49.8)
Other‡	1,493 (10.6)	944 (11.9)
Sexual Identity		
Heterosexual	10,853 (84.4)	5,539 (77.5)
Gay, lesbian, or bisexual	1,531 (11.1)	977 (13.2)
Other or questioning	591 (4.5)	648 (9.3)
Grade		
9	3,637 (26.6)	2,144 (26.7)
10	3,717 (25.5)	1,949 (25.5)
11	3,322 (24.2)	1,858 (24.3)
12	2,850 (23.5)	1,731 (23.6)

Note. *Among the 13,872 submitted questionnaires, 195 failed data validation and were excluded from analysis, resulting in 13,677 usable questionnaires.

† Among 7,998 submitted questionnaires, 293 failed data validation and were excluded from analysis, resulting in 7,705 usable questionnaires.

‡ Other includes American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander