Population-Level Evaluation of School-Based Interventions to Prevent Problem Substance Use among Gay, Lesbian and Bisexual Adolescents in Canada

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Abstract

Objective—This study examined whether students' odds of recent substance use were lower in the presence of GSAs or explicit anti-homophobia policy that had been established at their school recently, or at least three years prior.

Methods—We analyzed a population-based sample of students in grades 8 through 12 from the British Columbia Adolescent Health Survey of 2008 (weighted N = 21,708). We used multinomial logistic regressions to test the hypothesized effects of GSAs and policies on substance use outcomes for LGB and 100% heterosexual students separately.

Results—Results indicated that GSAs and anti-homophobic bullying policies were linked to significantly lower odds of some but not all types of recent risky alcohol use, and past-year harms from alcohol or drug use, for LGB adolescents, but these were predominantly among girls, and almost exclusively in schools where the policies or GSAs had been established for at least three years.

Conclusions—Our findings suggest that these school-based strategies (GSAs and anti-homophobia policies) to reduce homophobia and foster school inclusion may be beneficial in reducing problem alcohol use among all students, not just sexual minority students.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

Keywords

school-based interventions; gay-straight alliances; sexual minority youth; substance use

Introduction

Sexual minority youth disproportionately experience mental health problems compared to heterosexual peers, including depressive symptoms (Almeida et al., 2009; Marshal et al., 2011) and higher rates of suicidal ideation and suicide attempts (Coker et al., 2010; Saewyc, 2011). For example, a meta-analysis documented that sexual minority youth were almost three times more likely than heterosexual youth to have attempted suicide (Marshal et al., 2011). Stress from stigma, discrimination, rejection and overt hostility may lead sexual minority youth to use alcohol or drugs to cope with their distress. In fact, studies have found significantly higher risk for substance use (Coker et al., 2010; Saewyc, 2011), with the odds of using tobacco, alcohol, or illicit drugs among sexual minority adolescents, on average, 190% higher than among heterosexual adolescents (Marshal et al., 2008).

Schools can be one of the commonly hostile or unsupportive environments experienced by sexual minority youth, and may contribute to these mental health disparities. Sexual minority adolescents are more likely than heterosexual peers to experience several types of violence, and to miss school because of fear (Friedman et al., 2011; Fedewa and Ahn, 2011). Studies have suggested that exposure to bullying and discrimination based on sexual orientation helps account for the link between minority orientation and adverse mental health outcomes (Almeida et al., 2009; Bontempo and D'Augelli, 2002; Williams et al., 2005). Thus, strategies to prevent mental health problems among sexual minority adolescents should include policies and programs that foster safe and supportive environments for youth of any orientation. School, where adolescents spend a significant portion of their time, is a key site for such interventions.

School-based gay-straight alliances (GSAs) may offer one strategy in risk reduction for sexual minority students. GSAs are student-led clubs with the purpose of providing support and advocating for sexual minority students and their straight allies, aimed at promoting positive school climates (Russell et al., 2009). Although research on the relationship between GSAs and student health is relatively limited, recent studies have provided promising evidence. Sexual minority youth attending a school with a GSA were less likely than those in a no-GSA school to experience at-school victimization (Goodenow et al., 2006; Heck et al., 2011), depressive symptoms (Heck et al., 2011; Toomey et al., 2011), suicidality (Walls et al., 2008), and substance use (Heck et al., 2011). The presence of GSAs was also associated with a greater sense of belonging to school and safety in school (Goodenow et al., 2006; Heck et al., 2011). In addition to GSAs, other support programs and anti-bullying policies have been associated with lower odds of suicide attempts (Goodenow et al., 2006).

All of the studies to date, however, have been correlational studies from cross-sectional surveys, where the timing of both the intervention and related risk behavior cannot be disentangled. As well, while GSAs and anti-bullying policies appear to have the potential to

improve school climate and reduce stress-related health risks, it may take time after the establishment of these programs for them to produce such effects. The length of time since GSAs or anti-homophobia policies have been implemented may influence health outcomes. Further, most studies have investigated only sexual minority youth, yet GSAs and anti-bullying policies may benefit heterosexual students as well, particularly those who are perceived to be lesbian, gay, or bisexual (LGB). In the present study, our ability to identify the year in which policies or GSAs were established across British Columbia, the west coast province of Canada, and focusing on recent substance use, can help ensure these population health interventions were implemented before the behavior they are presumed to influence. The purpose of this study, therefore, was to examine whether students' odds of recent substance use were lower in the presence of GSAs or explicit anti-homophobia policy that had been established at their school recently, or at least three years prior. We also tested whether there were comparable relationships between these population health interventions and recent substance use among heterosexual students in those schools.

Method

Sample

This study used data from students who participated in the 2008 British Columbia Adolescent Health Survey (BCAHS), administered to a cluster-stratified random sample of 1,760 classes in grades 7 to 12 in public schools across British Columbia, Canada. With sampling and post-survey weighting designed in consultation with Statistics Canada, the responses from the 29,315 participants were weighted to adjust for the differential probability of selection across school districts and health regions, actual response rates in each region, and to represent provincial enrollment. Detailed design and sampling for the BC AHS have been described elsewhere (cite Saewyc & Green, 2009 methodology fact sheet).

The present study included only those students who responded to a self-labeling measure defined by romantic attractions, with the response options of 100% heterosexual, mostly heterosexual, bisexual, mostly homosexual, 100% homosexual (gay/lesbian), and not sure. The 100% homosexual, mostly homosexual, and bisexual youth formed the lesbian, gay and bisexual (LGB) group for these analyses. The "not sure" group, about 4% of adolescents in the survey, was excluded because varying reasons for choosing that option, i.e., being unsure of attractions, or unsure what the question is asking, make it unclear what students meant (Saewyc et al, 2004); this is also the case for mostly heterosexual adolescents, which have been shown to differ from both heterosexual and LGB youth. Seventh graders were also excluded from this study because most of these students were enrolled in elementary or middle schools where GSAs and anti-homophobia policies have not been implemented anywhere in the province, and yet developmentally, alcohol or other substance use is also uncommon. The final weighted sample in this study included 21,708 students in grades 8 through 12.

Measures

Alcohol use—Binge drinking was defined as having five or more drinks of alcohol within a couple of hours. Among those who reported ever using alcohol, frequency of binge drinking in the past month was categorized as: 0 to 2 days, 3 to 5 days, and 6 or more days of binge drinking in the past month. Students were also asked about their alcohol use on the Saturday before filling out the survey. Responses were categorized as 0 drinks, 1 to 4 drinks, and 5 or more drinks last Saturday.

Marijuana use—Students who had ever used marijuana were assessed for use in the past month, categorized as 0 to 9 days, 10 to 19 days, and 20 or more days in the past month. In addition, students were asked about their marijuana use on the Saturday before they completed the survey.

Three or more harms associated with alcohol or drug use—Students were asked to check any or all of 13 potential problems that happened to them in the past year because of drinking alcohol or using drugs, such as passing out, conflict with parents, getting into a car accident, trouble with the police, etc. Response options also included “I did not use alcohol or drugs in the past year” and “I used alcohol or drugs but none of these happened.” For the present analyses, problem substance use was defined as experiencing three or more problems in the past year because of alcohol or drug use.

Procedures and Data Analyses

The presence of GSAs among secondary schools that participated in the 2008 was confirmed through telephone surveys, as well as the year the GSA was established. Schools with explicit homophobia-related anti-bullying policies were identified through an online list provided by the British Columbia Teachers’ Federation, with timing confirmed through an examination of the policies. Schools were classified into those with no GSA or policy, those with recently established GSAs or policies (implemented between 2005 and 2007), and those with longer-established GSAs or policies (3 or more years since implementation). The information about GSAs and the explicit school-district policies was linked to the BCAHS student data.

We compared LGB and 100% heterosexual students on demographics, school characteristics, and substance use measures using chi-square tests. We used multi-nomial logistic regressions to test the hypothesized effects of GSAs and policies on substance use outcomes for LGB and 100% heterosexual students separately. Given the known gender and maturational differences in substance use among adolescents by sexual orientation (Saewyc, 2011), we conducted analyses separately by gender, and controlling for grade.

Results

As seen in Table 1, LGB and heterosexual youth did not differ with respect to being enrolled in schools with GSAs or explicit anti-homophobia policies. However, rates of recent substance use did differ between orientation groups. Among both boys and girls, LGB youth were more likely than their heterosexual peers to report frequent binge drinking in the past

month (6 or more days), heavy marijuana use (20 or more days), and marijuana use last Saturday. Furthermore, both LGB boys and girls were more likely than their heterosexual peers to report multiple consequences resulting from their drug or alcohol use in the past year. Lesbian and bisexual girls were also more likely than their heterosexual peers to have had 5 or more drinks of alcohol last Saturday.

Timing of GSAs and Policies and Recent Alcohol Use

Table 2 shows the results related to recent alcohol use and binge drinking for sexual minority and heterosexual students. For LGB youth, there were no significant associations between high frequency of binge drinking in the past month and presence of GSAs or anti-homophobia policies (Table 2). Although odds ratios indicated lower odds of binge drinking 6 or more days among youth in schools with longer-established GSAs and policies compared to schools without GSAs, these were not statistically significant. However, lesbian and bisexual girls had significantly lower odds of using alcohol last Saturday in schools with longer-established GSAs, and also in schools with recently-established policies. There were no significantly lower odds of binge drinking last Saturday among LGB students in schools with GSAs or policies, although lower odds were observed for youth in schools with longer-term GSAs and policies compared to none.

Among heterosexual students, boys in schools with longer-established GSAs had lower odds of binge drinking on six or more days in the past month compared to those in schools with no GSAs, as did both boys and girls in schools with explicit anti-homophobia policies that had been in place for at least three years (Table 2). Heterosexual boys were also less likely to have had any alcohol last Saturday in schools with longer-established GSAs, but were slightly more likely to have drunk alcohol last Saturday in schools with anti-bullying policies that had been established more recently (between 2005 and 2007). The odds of heavy use of alcohol last Saturday (5 or more drinks) were lower for both boys and girls in schools with longer-established GSAs, and for girls but not boys in schools with longer-established policies.

Timing of GSAs and Policies and Recent Marijuana Use

Neither GSAs nor policies appeared to have positive influences on marijuana use for either LGB or heterosexual students. In fact, having a longer-established anti-homophobic bullying policies was associated with higher odds of marijuana use last Saturday for lesbian and bisexual girls (AOR=2.59), as was having a GSA for at least three years for heterosexual girls (AOR=1.45). No significant results were observed for boys. Furthermore, there were no significantly lowered odds of recent heavy marijuana use (20 or more days) among students in any group.

Timing of GSAs and Policies and Consequences of Substance Use

Although there were no significant links between the odds of negative consequences in the past year from alcohol or drug use and GSAs or anti-bullying policies for gay or bisexual boys, the odds of lesbian and bisexual girls reporting three or more problems from substance use were halved if they were from schools with longer-established GSAs (Table 3). There were no significant effects for lesbian or bisexual girls from recent or longer-established

anti-bullying policies. Heterosexual boys and girls were less likely to report multiple harms from substance use if they were from schools with GSAs in place for at least 3 years, but more recently-established GSAs were also beneficial for heterosexual girls. Longer-term explicit anti-homophobia policies in schools were associated with lower odds of harms from alcohol or drug use among heterosexual girls, but not boys.

Discussion

This is one of the first studies in which the timing of the intervention was incorporated into a population-level evaluation of school-based policies to reduce health disparities, specifically recent problematic substance use, among sexual minority adolescents. Results showed GSAs and anti-homophobic bullying policies were linked to significantly lower odds of some but not all types of recent risky alcohol use, and past-year harms from alcohol or drug use, for LGB adolescents, but these were predominantly among girls, and almost exclusively in schools where the policies or GSAs had been established for at least three years. As has recently been found in another study, the presence of GSAs or explicit anti-homophobia policies were more consistently linked to lower odds of problem drinking among heterosexual students, although again, more often for girls, and primarily in schools with longer-established policies.

Our findings suggest that these school-based strategies to reduce homophobia and foster school inclusion may be beneficial in reducing problem alcohol use among all students, not just sexual minority students. Given that as many as half of students who are harassed for being thought to be gay, lesbian or bisexual may actually identify as heterosexual (Saewyc, 2011), interventions that improve school safety and climate for sexual minority youth may reduce harassment and its effects for heterosexual students too. At the same time, the lack of beneficial effects (and counter-effects) for marijuana use among both heterosexual and sexual minority students may be due to norms around marijuana use across British Columbia; the general population has a relatively tolerant attitude toward marijuana use, and there have been regular public discussions about legalizing marijuana use.

The limited number of significant effects among LGB students may be due to power issues related to sample size. The relatively small number of LGB students distributed across more than 450 schools results in only 1 to 4 LGB students per school. With just 15 of the 50 participating school districts having implemented anti-homophobia policies at all, and most of them after 2005, this may have attenuated the power of the study to detect differences among students across schools; although not significant, their adjusted odds ratios were in the right direction, suggesting the interventions may be exerting the same beneficial effects as were found for heterosexual students.

Why would these effects be more consistent for girls? Gender socialization of girls may encourage them to focus on and derive more support from social relationships, including those forged within groups such as GSAs. Further research is needed, however, to identify the specific mechanisms by which GSAs and anti-bullying policies actually affect substance use and other health risks for LGB and heterosexual youth, especially how they may work differentially by gender.

Although our approach, focusing on recent substance use along with longer-established GSAs and policies helps disentangle the timing between interventions and outcomes, our data were still cross-sectional. Future research should incorporate longitudinal studies, or cohort trends within schools before and after a policy or GSA is enacted, to strengthen the causal links. The types of GSAs, and the extent to which policies were disseminated and enforced, were unable to be determined in our study; thus, the heterogeneity of schools across the province, their GSAs, and their policy enforcement may have influenced results. However, the evidence suggests these population-health interventions offer some benefits, regardless of sexual orientation, in helping to prevent problematic alcohol use among adolescents in school. Schools should consider incorporating GSAs and anti-homophobia policies in their repertoire of substance use prevention interventions.

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Table 1

Demographic & Other Characteristics of LGB & Heterosexual Youth

Number (weighted but not scaled)	Boys			Girls		
	LGB (n=359)	Heterosexual (n=10,408)	Test Statistic	LGB (n=364)	Heterosexual (n=10,577)	Test Statistic
GSA (%)						
No GSA	64.0	68.6		67.6	67.7	
GSA before 2005	13.3	13.5		13.4	14.1	
GSA between 2005 & 2007	22.7	17.8	<i>ns</i>	19.0	18.2	<i>ns</i>
Explicit anti-homophobia policy (%)						
No policy	78.6	81.4		80.6	80.1	
Policy before 2005	14.1	13.4		13.3	14.8	
Policy between 2005 & 2007	7.3	5.2	<i>ns</i>	6.1	5.1	<i>ns</i>
Regular binge drinking in the past month^a (%)						
0 to 2 days	72.1	79.0		77.5	82.6	
3 to 5 days	7.9	11.7		10.3	10.0	
6 or more days	20.0	9.3	$\chi^2(2)=21.94^{***}$	12.2	7.4	$\chi^2(2)=11.47^{**}$
Used any alcohol last Saturday ^a (%)	54.9	48.6	<i>ns</i>	56.9	47.8	$\chi^2(1)=11.38^{***}$
Number of drinks last Saturday^a (%)						
0 drinks	45.1	51.7		43.5	52.5	
1 to 4 drinks	13.4	14.2		15.0	18.0	
5 or more drinks	41.5	34.1	<i>ns</i>	41.5	29.4	$\chi^2(2)=23.55^{***}$
Used marijuana in the past month^b (%)						
0 to 9 days	60.5	77.8		71.5	89.3	
10 to 19 days	9.7	6.7		8.1	4.4	
20 or more days	29.8	15.5	$\chi^2(2)=21.61^{***}$	13.5	6.3	$\chi^2(2)=83.41^{***}$
Used marijuana last Saturday ^b (%)	59.8	45.4	$\chi^2(1)=9.87^{**}$	51.3	30.9	$\chi^2(1)=47.00^{***}$
3 or more post-substance use problems in the past year^c	37.7	18.8	$\chi^2(1)=41.05^{***}$	38.8	21.1	$\chi^2(1)=67.49^{***}$

Notes:

* $p < .05$.

 $p < .01$.

 $p < .001$.

- a* Among those who had ever used alcohol
- b* Among those who had ever used marijuana
- c* Among those who used alcohol or drugs

Timing of GSA, Explicit Anti-Homophobia Policy, and Binge Drinking in the Past Month and Last Saturday Use of Alcohol^a

Table 2

	LGB			Heterosexual		
	AOR	95% CI		AOR	95% CI	
		lower	upper		lower	upper
6 or more days vs. 0 day binge drinking in past month						
Boys						
GSA before 2005	0.21	0.03	1.29	0.73 *	0.54	0.99
GSA between 2005 & 2007	0.64	0.22	1.97	0.87	0.68	1.12
Policy before 2005	0.40	0.11	1.40	0.52 ****	0.37	0.74
Policy between 2005 & 2007	1.10	0.30	4.04	1.24	0.87	1.76
Girls						
GSA before 2005	0.72	0.25	2.01	0.80	0.58	1.12
GSA between 2005 & 2007	1.25	0.55	2.85	0.97	0.74	1.25
Policy before 2005	0.46	0.15	1.48	0.38 ****	0.25	0.57
Policy between 2005 & 2007	0.42	0.08	2.25	0.68	0.43	1.09
Any alcohol use last Saturday						
Boys						
GSA before 2005	0.63	0.24	1.64	0.79 **	0.66	0.93
GSA between 2005 & 2007	1.40	0.59	3.31	0.99	0.86	1.15
Policy before 2005	0.44	0.19	1.01	0.87	0.74	1.03
Policy between 2005 & 2007	1.14	0.37	3.51	1.26 *	1.01	1.57
Girls						
GSA before 2005	0.47 *	0.24	0.91	0.89	0.75	1.06
GSA between 2005 & 2007	1.13	0.63	2.02	1.13	0.98	1.29
Policy before 2005	0.65	0.35	1.21	0.75 ****	0.64	0.88
Policy between 2005 & 2007	0.41 *	0.17	0.97	0.93	0.75	1.16
5 or more drinks vs. 0 drinks last Saturday						
Boys						

	LGB			Heterosexual		
	AOR	95% CI	lower	AOR	95% CI	lower
<i>GSA</i>						
GSA before 2005	0.52	0.18	1.52	0.76**	0.63	0.91
GSA between 2005 & 2007	1.27	0.51	3.17	1.00	0.86	1.17
Policy before 2005	0.47	0.19	1.15	0.86	0.72	1.04
Policy between 2005 & 2007	1.12	0.34	3.71	1.26	0.99	1.62
Girls						
GSA before 2005	0.52	0.25	1.05	0.80*	0.66	0.98
GSA between 2005 & 2007	1.09	0.58	2.05	1.06	0.90	1.24
Policy before 2005	0.67	0.34	1.32	0.67***	0.56	0.82
Policy between 2005 & 2007	0.47	0.19	1.18	0.87	0.67	1.13

Notes:

* $p < .05$.

** $p < .01$.

*** $p < .001$.

^a Among those who had ever used alcohol.

Reference categories: No GSA; No explicit anti-homophobia policy.

Adjusted for grade.

Table 3

Three or More Harms Associated with Alcohol or Drug Use in Past Year

	LGB		Heterosexual	
	AOR	95% CI	AOR	95% CI
Boys				
GSA before 2005	1.23	0.48 3.16	0.73**	0.59 0.91
GSA between 2005 & 2007	1.48	0.67 3.23	0.95	0.79 1.13
Policy before 2005	0.83	0.35 1.95	0.89	0.73 1.09
Policy between 2005 & 2007	0.78	0.25 2.44	0.92	0.69 1.21
Girls				
GSA before 2005	0.50*	0.26 0.98	0.82*	0.67 1.00
GSA between 2005 & 2007	0.89	0.52 1.55	0.84*	0.71 0.99
Policy before 2005	0.57	0.30 1.08	0.71***	0.58 0.86
Policy between 2005 & 2007	0.77	0.33 1.78	0.99	0.77 1.28

Notes:

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Reference categories: No GSA; No explicit anti-homophobia policy.

Adjusted for grade.