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Substance Use and Sexual Orientation Among East and Southeast Asian Adolescents in Canada

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Abstract

The purpose of this study was to examine the relationship between substance use and sexual orientation among Asian adolescents in Canada. We analyzed an East and Southeast Asian subsample of a province-wide, school-based survey (weighted N = 51,349). Compared to heterosexual adolescents of the same gender, gay, lesbian, bisexual, and mostly heterosexual adolescents were more likely to use alcohol, marijuana, or other illicit drugs. Particularly, sexual minority girls were at increased risk for substance use. The findings suggest the need for substance use prevention interventions that are sensitive to gender, sexual orientation, and culture.

Keywords

adolescents; Asian; sexual orientation; substance use

Introduction

Sexual Orientation, Stigma, and Substance Use

Adolescence is the time of life when sexual identity, including sexual orientation, begins to develop. While most adolescents will be attracted only to people of the opposite gender, some may find themselves attracted to the same or both genders. Most young people become aware of their sexual orientation during adolescence. The majority will identify as heterosexual; approximately 2–4 % will identify as lesbian, gay, or bisexual (LGB). For example, 2% to 3% of Canadian students in the British Columbia Adolescent Health Survey (BC AHS) and 4% of students in the Seattle Teen Health Risk Surveys self-identified as LGB (Saewyc, Skay, Richens et al., 2006; Saewyc, Poon, Homma, & Skay, 2008). A moderate-sized school-based survey of a school district in southern Ontario reported that 4% of high school students reported either same-gender or bisexual attractions (Busseri, Willoughby, Chalmers, & Bogaert, 2008). Similarly, 3.5% of adolescents in the Guam Youth Risk Behavior Survey (YRBS) (Pinhey & Millman, 2004) and 4% in the Massachusetts YRBS (Massachusetts Department of Education, 2006) reported their sexual orientation as LGB.

Previous studies have documented that compared to heterosexual teens, LGB teens are at significantly higher risk for harassment, violence, and sexual abuse (Bontempo & D'Augelli, 2002; Saewyc, Skay, Richens, et al., 2006; Saewyc, Bearinger, Blum, & Resnick, 1999; Saewyc, Skay, Pettingell, et al., 2006). As well, an increased risk for substance use, including injection drugs that may lead to HIV transmission and infection, has been identified (Blake et al., 2001; Bontempo & D'Augelli; Busseri et al., 2008; Faulkner & Cranston, 1998; Garofalo, Wolf, Kessel, Palfrey, & DuRant, 1998; Goodenow, Netherland,

& Szalacha, 2002; Goodenow, Szalacha, Robin, & Westheimer, 2008; Robin et al., 2002; Russell, Driscoll, & Truong, 2002; Ziyadeh et al., 2007). A meta-analysis of substance use and sexual orientation (Marshal et al., 2008) showed that LGB teens were 1.9 times more likely to be engaged in substance use than heterosexual teens.

A reason for the link between sexual orientation and higher substance use is often hypothesized to be the increased stigmatization, victimization, and harassment that LGB adolescents experience (Rosario, Schrimshaw, & Hunter, 2004). LGB youth face substantial challenges when coping with society's negative attitudes toward sexual minority group members (Rosario, Hunter, & Gwadz, 1997). They are often subjected to discrimination, verbal insults, violence, and social exclusion, which may lead to feelings such as rejection, isolation, low self-esteem, and depression. Many youth who suffer from such emotions may turn to substances to ease these feelings and to escape from the stressors (Poon & Ho, 2002). For example, Bontempo and D'Augelli (2002) found that while LGB students reported higher levels of alcohol and drug use than heterosexual students, the differences were significantly larger when students experienced more incidents of victimization at school. Busseri and colleagues (2008) found that LGB students were more likely than their exclusively or mostly heterosexual peers to be victimized by their peers, which contributed to be greater involvement in high risk behaviors, including substance use. A history of sexual abuse may also in part account for greater prevalence of substance use among LGB adolescents. Longitudinal studies have shown that exposure to sexual abuse in childhood can predict substance use among adolescents and young adults (Bailey & McCloskey, 2005; Fergusson, Boden, & Horwood, 2008), and surveys across North America have documented a higher rate of sexual abuse reported by LGB students compared to heterosexual students (Saewyc, Skay, Pettingell, et al., 2006).

Gender differences in substance use have been examined in several studies. Population-based adolescent surveys generally indicate that substance use is more common among male adolescents (Centers for Disease Control and Prevention [CDC], 2008; Poulin & Elliott, 2007; Tonkin et al., 2004); however, the effect of sexual orientation on adolescent substance use was stronger for females than for males (Marshal et al., 2008).

Substance Use Among Asian Adolescents in North America

Despite a number of studies on adolescent substance use, little research on this issue has focused on Asian adolescents in North America. Only a handful of studies have investigated substance use in a general Asian American adolescent population. The 2000 National Household Survey on Drug Abuse (NHSDA) found that among Asian American adolescents, 7% used alcohol in the past month; 4% engaged in binge drinking (i.e., drinking five or more drinks on the same occasion on at least one day) in the past month; 17% reported lifetime marijuana or other illicit drug use; and 6% were recent drug users (Substance Abuse and Mental Health Services Administration, 2008). In a secondary analysis of combined data from the 1991, 1993, 1995 and 1997 national YRBSSs, among Asian American and Pacific Islander (AAPI) boys, 28% reported recent alcohol use; 16% were recent binge drinkers; 12% reported recent marijuana use; and 3% were recent cocaine users (Grunbaum, Lowry, Kann, & Pateman, 2000). For AAPI girls, the rates were 25%, 10%, 7%, and 1%, respectively.

Scant research exists on substance use among Asian adolescents in North America; even less has examined the relationship between substance use and sexual orientation for this ethnic group of teens. To our knowledge, there is only one study that explored substance use among Asian American LGB youth. Using longitudinal data from the National Longitudinal Study of Adolescent Health (Add Health), Hahm and colleagues (Hahm, Wong, Huang, Ozonoff, & Lee, 2008) compared substance use among AAPI adolescents and young adults

who were grouped into two sexual orientation groups based on self-reports in young adulthood: a) exclusively heterosexual, who self-identified as “100% heterosexual” and b) sexual minority, who self-identified as “mostly heterosexual,” “bisexual,” “mostly homosexual,” or “100% homosexual.” For both males and females, exclusively heterosexual and sexual minority adolescents did not differ in binge drinking, lifetime marijuana use, and lifetime other drug use, with the only exception being that sexual minority girls had a lower prevalence of binge drinking. However, when AAPI participants became young adults, all but one type of substance use (binge drinking among males) exhibited higher prevalence among sexual minority groups than among their exclusively heterosexual peers. While an association between sexual orientation and substance use was not found during adolescence, it is important to remember that in Hahm et al.’s study, sexual orientation during adolescence was defined retrospectively based on self-labeling in young adulthood, and combined adolescents who subsequently identified as mostly heterosexual with those who identified as LGB. The few studies to include a mostly heterosexual identity option suggest that such lumping is inappropriate, with differences in risk profiles from mostly heterosexual versus LGB adolescents (e.g., Austin, Ziyadeh, Fisher et al., 2004; Saewyc et al., 2004). As well, because they outnumber the LGB adolescents, the mostly heterosexual group would have dominated the results of Hahm and colleagues’ analyses. Further, the relatively small number of AAPI adolescents in the original Add Health sample, inevitably lessened by attrition in longitudinal studies, raises concerns about power, and how representative a retrospectively applied self-labeling is for documenting substance use disparities among AAPI sexual minority youth during their teen years.

“Mostly Heterosexual” Adolescents

As noted above, sexual minority adolescents who self-identify as “mostly heterosexual” have seldom been studied, despite being a larger group of adolescents than their LGB peers in population-based surveys. In the BC AHS, for example, 6% to 7 % of adolescents described themselves as mostly heterosexual compared to 2% to 3% as LGB (Saewyc, Skay, Richens, et al., 2006; Saewyc, Poon, et al., 2008). In the Add Health study, 3% of male young adults and 11% of female young adults self-identified as mostly heterosexual whereas 2% of males and 4% of females reported LGB identity (Savin-Williams & Ream, 2007). Of AAPI young adults in the same dataset, mostly heterosexual and LGB respondents accounted for 6% and 3%, respectively (Hahm et al., 2008).

Who are the mostly heterosexual? Austin and colleagues (2007) explored how youth interpreted the term “mostly heterosexual.” Participants who self-identified as mostly heterosexual stated that they selected this option because they felt attracted to people of the opposite gender more frequently or more strongly than to those of the same gender. A study of college women found that “mostly straight” women were distinct from both exclusively straight and lesbian or bisexual women (Thompson & Morgan, 2008). “Mostly straight” women indicated higher levels of same-sex attraction and sexual fantasy than “exclusively straight” women, and were less same-sex oriented than lesbian and bisexual women.

In the past few years, the limited number of studies that included mostly heterosexual adolescents has identified health disparities between them and other orientation groups. Mostly heterosexual boys and girls were more likely than their heterosexual peers to report binge eating (Austin, Ziyadeh, Kahn et al., 2004); binge drinking (Corliss, Rosario, Wypij, Fisher, & Austin, 2008; Ziyadeh et al., 2007); and both lifetime and recent tobacco use and weekly tobacco use (Austin, Ziyadeh, Fisher et al., 2004). Compared to heterosexual young women, mostly heterosexual young women were more likely to engage in risky sexual behavior and have a history of childhood sexual abuse (Austin, Roberts, Corliss, & Molnar, 2008). Saewyc and colleagues (Saewyc, Skay, Richens, et al., 2006) found that mostly heterosexual adolescents engaged in a fewer number of HIV-risk behaviors than LGB

adolescents. The lower levels of HIV-risk behaviors among mostly heterosexual students than among LGB students might be associated with lower prevalence of sexual abuse experience among mostly heterosexual students, which was observed in another study (Saewyc, Skay, Pettingell, et al., 2006). A second possible explanation is that mostly heterosexual teens might have more protective factors than LGB teens. Compared to bisexual adolescents, mostly heterosexual adolescents felt more connected with school and family, both of which are known to be strong factors that protect youth from engaging in risky behaviors (Saewyc et al., 2009).

Asian Sexual Minority Adolescents and Stigma

Much is still unknown about substance use and sexual orientation among Asian adolescents in North America, including “mostly heterosexual” Asian teens, and particularly in Canada. Given Asian groups are one of the largest set of ethnic minorities in Canada, it is important to document the relationship between sexual orientation and substance use among this group of teens, so that support programs, including culturally-appropriate substance use prevention strategies, can be developed. Sexual minority Asian Canadian teens may struggle with multiple minority status, and may be isolated from both Asian and LGB communities. Non-heterosexual identity, attraction, and behavior are generally unacceptable in many Asian cultures (Operario, Han, & Choi, 2008). LGB Asians may feel they would bring shame on their families, and their families would be excluded from communities due to their son or daughter’s sexual orientation (Homma & Saewyc, 2007; Poon & Ho, 2002); as a result, LGB Asians may distance themselves from their families. However, within most LGB communities, which predominantly consist of European-heritage people, LGB Asians may feel rejected or discriminated against because of racial stereotypes, such as Asian gay and bisexual (GB) males being as sexually unattractive, or Asian lesbian and bisexual (LB) females being seen as too androgynous (Chung & Katayama, 1998; Foo, 2002; Nemoto et al., 2003; Operario et al., 2008). The lack of social support for Asian LGB adolescents may contribute to reduced psychological health; one study of Asian American LGB adolescents found that that lower levels of perceived family caring and negative perceptions of school climate were associated with decreased psychological well-being (Homma & Saewyc, 2007). Those teens with decreased psychological and social health may turn to alcohol or drugs to relieve stress.

The Current Study

To examine the relationship between substance use and sexual orientation among East and Southeast Asian adolescents in Canada, research objectives were two-fold: (a) to document the prevalence of substance use and problems associated with substance use among East and Southeast Asian adolescents, and (b) to examine differences in substance use and substance use-related problems by sexual orientation. Hypotheses tested in this study were as follows:

1. LGB adolescents would be more likely than their heterosexual peers to report substance use.
2. Mostly heterosexual adolescents would be more likely than their heterosexual peers to report substance use.
3. LGB adolescents who have ever used substances would be more likely than their heterosexual peers to report problems associated with substance use.
4. Mostly heterosexual adolescents who have ever used substances would be more likely than their heterosexual peers to report problems associated with substance use.

Methods

Sample

This secondary analysis used data from students who participated in the 2003 BC AHS, a province-wide survey of public school students in grades 7 through 12 in British Columbia (Tonkin et al., 2004). The paper-and-pencil questionnaire contained 140 questions, including demographic items, physical and emotional health, health and risk behaviors (e.g., substance use, sexual behavior, and exercise), and experiences, relationships, and risk exposures in family, school, and community lives. Most survey items were adapted from other large-scale adolescent health surveys such as YRBS, which was first administered in 1989 (CDC, 2009), Add Health, Wave I, conducted in 1995 – 1996 (University of North Carolina Population Center, n.d.), and the Monitoring the Future study of substance use, which has been conducted regularly since 1974 (University of Michigan, 2010). The AHS questionnaire was field-tested with youth prior to the survey.

Of 40,040 students enrolled in more than 1,500 classrooms selected through cluster-stratified random sampling, 30,588 (76.4%) students completed the survey. The data were weighted to adjust for differential probability of sampling and differential response rates, so that they represented the approximately 290,000 public school students in grades 7 to 12 throughout the province during the 2002 – 2003 school year. The survey procedures have been described in detail elsewhere (Saewyc, Taylor, Homma, & Ogilvie, 2008).

The present study included only adolescents who described themselves as “East Asian (e.g., Chinese, Japanese, Korean etc.)” or “Southeast Asian (e.g., Cambodian, Filipino, Indonesian, Vietnamese etc.),” referred to as Asian in this study, and who responded to the orientation self-labeling question (weighted N = 58,378). The majority (79.2%) of these students self-identified as “100% heterosexual (attracted to persons of the opposite sex),” 6.1% as “mostly heterosexual,” 2.6% as either “bisexual (attracted to both males and females),” “mostly homosexual,” or “100% homosexual (“gay/lesbian”; attracted to persons of the same sex),” which were combined as LGB for our analyses, and 12.0% chose “not sure.” Those who answered “not sure” are a group that is difficult to characterize. There may be multiple reasons why a respondent chose “not sure”; they might not be sure yet about their orientation, or they might not be sure about what the question was asking (Saewyc et al., 2004). Therefore, the “not sure” group was excluded from analyses. The final Asian Canadian sample (weighted N = 51,349) consisted of 52.4% male adolescents and 47.6% female adolescents. Most of them selected only East Asian as their ethnic background, and over half of students were born outside of Canada. Table 1 summarizes the characteristics of the sample by gender and sexual orientation.

Measures

Alcohol use—Lifetime alcohol use was assessed by a single question: “Have you ever had a drink of alcohol other than a few sips?” One drink of alcohol was defined as one bottle/can of beer, four ounces of wine, or one ounce of hard liquor. Respondents who had ever had alcohol were also asked the number of days they have had at least one drink of alcohol during the past 30 days. Seven response options ranged from “0 days” to “all 30 days.” Responses who reported lifetime alcohol use were dichotomized into less than three days and three or more days. Binge drinking referred to having five or more drinks of alcohol in a row (i.e., within a couple of hours) in the past 30 days. Adolescents who reported engaging in binge drinking on one or more days during the past 30 days were classified as a binge-drinker.

Marijuana and other drug use—Lifetime marijuana use was assessed by asking if students had ever used marijuana. The survey also asked if students ever used the following drugs: cocaine, hallucinogens, mushrooms, inhalants, amphetamines, heroin, injected drugs, steroids without a doctor's prescription, and prescription pills without a doctor's consent. Adolescents who reported having ever used any of these drugs were coded as using drugs other than marijuana.

Problems related to substance use—Participants were asked to mark all problems that happened in the past year because of drinking alcohol or using drugs. Thirteen problems included: a) passed out, b) got into a car accident, c) got injured, d) poor school work or marks, e) argued with family members, f) got into a physical fight, g) damaged property, h) lost friends, i) got in trouble with police, j) broke up with a boyfriend or girlfriend, k) had to get treatment for alcohol or drug abuse, and l) had sex when did not want to. 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." Those who reported one or more problems that happened in the past year were categorized as having problems associated with substance use.

Data Analysis

Differences in the prevalence of substance use by orientation were analyzed by chi-square tests. In addition, multivariate logistic regressions were performed to test the four hypotheses, and included covariates to control for potential confounders. For example, as described in Table 1, mean ages differed by sexual orientation, with LGB teens being the oldest on average, so age was included as a covariate to control for the effect of maturation on likelihood of substance use (CDC, 2008). Similarly, immigrants are at lower risk of substance use than those who were born in North America (Blake, Ledsy, Goodenow, & O'Donnell, 2001); however, as they stay longer in North America, their substance use rates become similar to those of native-born people. In an analysis of NHSDA data, compared to U.S.-born adolescents, those who had lived in the U.S. for less than 10 years were at lower risk of recent substance use, while foreign-born adolescents who have lived in the U.S. for 10 or more years were at equal risk (Gfroerer & Tan, 2003). Therefore, the length of stay in Canada, dichotomized into less than 11 years and 11 or more years, was included as a confounding factor. Because of gender differences in substance use rates and the effect of sexual orientation on substance use in the general adolescent population (CDC, 2008; Marshal et al., 2008; Poulin & Elliott, 2007; Tonkin et al., 2004), all analyses were conducted separately by gender with an alpha level of 0.01.

Results

The vast majority (93%) of Asian Canadian males self-identified as 100% heterosexual, 5% as mostly heterosexual, and 2% as gay or bisexual (Table 1). For females, 87% of the respondents described themselves as 100% heterosexual, 9% as mostly heterosexual, and 4% as lesbian or bisexual. Table 2 shows prevalence rates of substance use and its consequences by sexual orientation. Over half of GB males and LB females, and mostly heterosexual females had ever had a drink of alcohol in their life while less than half of male and female heterosexual teens and mostly heterosexual males reported having done so.

For both males and females, students who had lived in Canada for more than 10 years were at elevated risk of using alcohol, marijuana, and other drugs (Table 3). Among those who reported substance use in the past year, females with more than 10-year residence in Canada were more likely to have one or more problems associated with substance use. The opposite

was found for male students; those who had lived in Canada for more than 10 years were less likely to report substance-related problems.

As presented in Table 3, after controlling for age and the length of residence in Canada, both LGB and mostly heterosexual groups were more likely than heterosexual students to have ever used alcohol in their life. Results on alcohol use during the past 30 days were different by gender and orientation. Among those who reported ever using alcohol, compared to heterosexual Asian students, mostly heterosexual and Asian GB males were at lower risk of drinking alcohol on three or more days in the past 30 days; on the other hand, mostly heterosexual Asian females were at higher risk. Asian LB females who reported lifetime alcohol use were equally likely as their heterosexual peers to drink alcohol on three or more days in the past 30 days. No significant differences in binge drinking were observed among either males or females who have ever used alcohol.

Compared to heterosexual Asian males, a higher prevalence of lifetime marijuana use was reported among Asian GB males, whereas a similar prevalence was found among mostly heterosexual Asian males (Table 2). GB males were more than twice as likely to have ever used marijuana (Table 3). Mostly heterosexual males were not different from heterosexual males their same age on lifetime use of any drug other than marijuana; GB males were nearly twice as likely as their heterosexual peers to report other drug use. For Asian female students, differences in lifetime drug use were consistent. Both marijuana use and other drug use were more prevalent among mostly heterosexual and LB groups than among heterosexual students. In particular, greater disparities were observed for other drug use. Compared to heterosexual females, mostly heterosexual and LB females were about three times as likely to have ever used at least one drug other than marijuana. In summary, the first and second hypotheses were supported for females but only partially for males.

Thirty six percent of male students and 34% of female students used alcohol, marijuana, or other drugs in the past year. Mostly heterosexual males, but not GB males, were more likely than heterosexual males to have used substances in the past year (Table 3). However, odds of having one or more problems related to substance use did not differ by sexual orientation among males who reported past-year substance use. For females, mostly heterosexual teens were more likely to report substance use in the past year than heterosexual teens. Among female students who used substances in the past year, mostly heterosexual students had the highest rate of experiencing substance-use related problems (Table 2). This group was about twice as likely as female heterosexual teens to report at least one problem. In contrast, LB females who used substances in the past year were not different from their heterosexual counterparts in substance-related problems, although LB females were more likely than heterosexual females to be substance users in the past year. The third hypothesis was not supported for either females or males whereas the fourth hypothesis was supported only for females.

Discussion

The present study compared prevalence of substance use and problems associated with substance use between Asian heterosexual and non-heterosexual (mostly heterosexual, and gay, lesbian, or bisexual) adolescents attending schools in British Columbia, Canada. Though substance use was not prevalent among Asian Canadian students compared to the general population of students in BC (Tonkin et al., 2004), both male and female Asian LGB adolescents were at increased risk of ever using alcohol, marijuana, and other drugs than their heterosexual counterparts. This result is consistent with past research on substance use among LGB teens (e.g., Marshal et al., 2008). As with LGB youth in previous studies (Bailey & McCloskey, 2005; Bontempo & D'Augelli, 2002; Busseri et al., 2008; Fergusson

et al., 2008), Asian LGB teens may be more subjected to violence and harassment, which in turn may contribute to higher prevalence of substance use (Poon, Saewyc, Homma, Barney, & Skay, 2006). Moreover, ethnic-minority LGB teens may face problems arising from their double minority status, including the feeling of isolation from and discrimination in their ethnic communities and LGB communities (Kumashiro, 2001; Savin-Williams, 1999). Extra-developmental tasks such as developing and integrating ethnic identity and sexual identity (Savin-Williams, 1999) may also add a burden to ethnic-minority LGB adolescents. In addition, cultural beliefs about non-heterosexual orientations as a 'White, Western phenomenon' or a 'White disease' (Chan, 1989; Kumashiro, 2001) could lead to a denial of the existence of Asian sexual minorities. Asian LGB teens who try to avoid bringing shame on the family are unlikely to come out, resulting in a lack of social support. The emotional pain, invisibility, and lack of support may lead Asian LGB teens to substances to cope.

Compared to heterosexual females, mostly heterosexual females reported greater substance use on almost all variables. The disparities in substance use between heterosexual and mostly heterosexual Asian females are consistent with previous research in other ethnic groups (Corliss et al., 2008; Ziyadeh et al., 2007). Of particular concern is the elevated risk of experiencing problems associated with substance use found only among mostly heterosexual females. Substance use-related problems listed in the survey varied in severity, and included immediate risks that can be caused by a single episode of heavy use, such as unwanted sexual intercourse (Read, Merrill, Kahler, & Strong, 2007). However, negative consequences of substance use are usually most strongly predicted by binge drinking and daily substance use (Poulin & Elliott, 2007). Moreover, heavy binge drinkers experience higher levels of alcohol-related problems than both non-heavy binge drinkers and non-binge drinkers (Read, Beattie, Chamberlain, & Merrill, 2008). Our findings provided additional evidence of higher prevalence of risk behaviors among mostly heterosexual females relative to heterosexual females. Because of the limited research on this orientation group, we still do not fully understand who "mostly heterosexual" teens are, and what puts them at increased risk for various health-compromising behaviors (Ziyadeh et al., 2007). The results of this and past studies suggest that stigma associated with non-heterosexuality may potentially affect health even among adolescent girls who do not identify themselves as bisexual or lesbian. Future research could examine whether mostly heterosexual adolescents experience stigma, and whether or how stigma, if any, influences their health and behavior.

In contrast to the results for mostly heterosexual females, both mostly heterosexual and GB males reported higher prevalence only of lifetime alcohol use and past-year substance use compared to their heterosexual peers. Among those who reported lifetime alcohol use, mostly heterosexual males had lower prevalence of using alcohol on three or more days in the past 30 days than heterosexual males. In addition, GB males reported greater prevalence of substance use than heterosexual males for three of the seven substance-use variables, whereas LB females reported greater prevalence of substance use than heterosexual females on four of the variables (see Table 3). Our findings echo those of earlier studies that have found greater disparities in substance use for sexual minority females than for males compared to their heterosexual peers (Corliss et al., 2008; Hahm et al., 2008; Ziyadeh et al., 2007). One possible reason for the differences in female substance use by sexual orientation may be that since adolescent boys, regardless of orientation, are generally more likely than girls to use substances (CDC, 2008; Tonkin et al., 2004), sexual orientation may not make as much difference for boys as for girls. Another possible reason may be that a sexual-minority Asian girl experiences multiple layers of stress and oppression due to heterosexism, racism, and sexism (Hahm et al., 2008). In other studies, we have documented higher rates of reported discrimination, verbal harassment, and sexual violence among the general population of sexual minority female teens compared to their sexual minority male peers, both in BC schools and among sexual minority street-involved youth (Saewyc et al., 2007;

Saewyc, Skay, Pettingell, et al., 2006; Smith et al., 2007). Although these have not included a focus on Asian adolescents, it is likely that similar gender differences may exist for Asian LGB adolescents.

This study has limitations that should be considered. First, the BC AHS, a school-based survey of adolescents, did not include those who were absent from school on the survey date or those who had dropped out. LGB teens are often overrepresented among this population (Goodenow, Szalacha, & Westheimer, 2006). Second, gay or lesbian teens and bisexual teens were combined into one group, partly because of sample sizes. Although compared to heterosexual teens, both gay or lesbian and bisexual teens are frequently more likely to use substances, results have not always shown similar rates of substance use in few studies that disaggregated the two groups (e.g., Russell et al., 2002; Saewyc et al., 2007). Third, our study aggregated East Asian and Southeast Asian adolescents though Asians are heterogeneous with respect to language, religions, and cultural values. Of East and Southeast Asian youth in BC, nearly 70% were of Chinese or Taiwanese origin (Statistics Canada, 2008). The results of this study may not be generalizable to other regions where ethnic composition is different from BC. Asian students in this study may have varied experiences of substance use (or non-use) based on their country of origin, immigration experiences, and generational status, not just their orientation. It is crucial to acknowledge the heterogeneity of the adolescents in our sample. Finally, our study used an existing adolescent health survey that assessed a broad range of youth's health, behaviors, and environments. The original survey was not designed specifically for substance use and sexual orientation issues. In addition, due to the low rates of marijuana use among our Asian sample, we could not report stable estimates of recent marijuana use among ever-users. We were thus limited in the number of variables examined in this study.

This study is one of very few studies about Asian sexual-minority teens. We need further research to better understand this group including those who self-identify as "mostly heterosexual." Sexual orientation alone is not sufficient to explain teen substance use. Future research should explore, for example, the extent to which violence and harassment increase the risk of substance use or what factors buffer the effects of sexual orientation on substance use.

A number of implications for health promotion arise from this study. Substance use prevention programs should be designed for Asian Canadian teens, particularly sexual minority teens. Strategies should be sensitive to gender, sexual orientation (gay, lesbian, bisexual, or mostly heterosexual), and culture. It may be important to raise public awareness of the issues and concerns of ethnic- and sexual-minority adolescents in school, ethnic communities, and society. Health care providers and youth workers should recognize that more students describe themselves as mostly heterosexual than LGB, but they also may be at increased risk of substance use compared to heterosexual students.

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Table 1

Characteristics of the Sample

	Heterosexual	Mostly Heterosexual	Lesbian/Gay/Bisexual	
n (%)				
Male	25,007 (93.0)	1,385 (5.1)	509 (1.9)	
Female	21,234 (86.9)	2,187 (8.9)	1,027 (4.2)	
Mean age, years				
Male	15.2	15.4	16.1	F (2, 26898) = 59.56 ^{**}
Female	15.0	15.3	15.9	F (2, 24445) = 131.12 ^{**}
Lived in Canada for less than 11 years, %				
Male	48.1	72.3	51.5	χ^2 (2) = 308.48 ^{**}
Female	43.1	54.8	68.5	χ^2 (2) = 343.62 ^{**}

Note. All data were weighted.

^{**}
 $p < 0.001$.

Table 2

Prevalence Rates of Substance Use and Problems Related to Substance Use Among Asian Canadian Adolescents by Sexual Orientation

	Heterosexual	Mostly Heterosexual	Lesbian/Gay/Bisexual	χ^2 (2)
Male, %	(n = 25,007)	(n = 1,385)	(n = 509)	
Ever used alcohol	41.9	44.5	60.1	70.77 **
Used alcohol on 3 or more days in the past 30 days ^a	22.8	17.9	16.3	14.75 *
Binge drinking in the past 30 days ^a	29.6	25.0	28.5	5.88
Ever used marijuana	18.7	14.0	41.3	188.07 **
Ever used any drug other than marijuana	14.6	16.1	25.9	52.06 **
Used alcohol or drugs in the past year	35.5	38.1	47.3	33.89 **
1 or more problems related to substance use in the past year ^b	36.0	37.2	35.7	0.32
Female, %	(n = 21,234)	(n = 2,187)	(n = 1,027)	
Ever used alcohol	38.0	51.7	54.7	252.58 **
Used alcohol on 3 or more days in the past 30 days ^a	21.9	30.0	24.4	37.46 **
Binge drinking in the past 30 days ^a	28.0	26.6	28.6	1.18
Ever used marijuana	14.6	27.0	21.0	242.98 **
Ever used any drug other than marijuana	15.0	36.7	33.9	824.23 **
Used alcohol or drugs in the past year	33.0	42.1	44.7	125.11 **
1 or more problems related to substance use in the past year ^b	38.2	53.5	28.8	99.17 **

Note. All data were weighted.

^a Among those who had ever used alcohol

^b Among those who used alcohol or drugs in the past year

* $p < 0.01$.

** $p < 0.001$.

Table 3

Odds Ratios and 99% Confidence Intervals for Substance Use and Problems Related to Substance Use Among Asian Canadian Adolescents

	Age	Living in Canada for > 10 years	Mostly Heterosexual ^a	Lesbian, Gay, or Bisexual ^a
Male				
Ever used alcohol	1.42 ** (1.40, 1.45)	1.78 ** (1.66, 1.91)	1.19 * (1.02, 1.38)	1.75 ** (1.36, 2.25)
Used alcohol on 3 or more days in the past 30 days ^b	1.28 ** (1.23, 1.33)	1.18 ** (1.04, 1.33)	0.73 * (0.55, 0.97)	0.57 ** (0.38, 0.85)
Binge drinking in the past 30 days ^b	1.25 ** (1.21, 1.29)	1.41 ** (1.26, 1.58)	0.83 (0.64, 1.06)	0.83 (0.60, 1.17)
Ever used marijuana	1.50 ** (1.46, 1.54)	3.62 ** (3.30, 3.98)	0.90 (0.73, 1.12)	2.62 ** (2.01, 3.43)
Ever used any drug other than marijuana	1.16 ** (1.13, 1.19)	1.12 * (1.02, 1.22)	1.11 (0.91, 1.35)	1.82 ** (1.39, 2.38)
Used alcohol or drugs in the past year	1.56 ** (1.52, 1.59)	2.06 ** (1.92, 2.21)	1.25 ** (1.06, 1.46)	1.24 (0.96, 1.60)
1 or more problems related to substance use in the past year ^c	0.97 (0.94, 1.01)	0.85 ** (0.76, 0.95)	1.01 (0.79, 1.29)	1.02 (0.72, 1.45)
Female				
Ever used alcohol	1.46 ** (1.43, 1.49)	2.55 ** (2.36, 2.75)	1.90 ** (1.67, 2.15)	2.01 ** (1.68, 2.40)
Used alcohol on 3 or more days in the past 30 days ^b	1.15 ** (1.10, 1.20)	1.94 ** (1.68, 2.23)	1.71 ** (1.42, 2.06)	1.21 (0.92, 1.58)
Binge drinking in the past 30 days ^b	1.22 ** (1.17, 1.26)	1.66 ** (1.45, 1.89)	1.01 (0.84, 1.22)	1.01 (0.78, 1.30)
Ever used marijuana	1.42 ** (1.38, 1.47)	5.62 ** (5.00, 6.32)	2.53 ** (2.17, 2.94)	1.87 ** (1.49, 2.35)
Ever used any drug other than marijuana	1.08 ** (1.06, 1.11)	1.49 ** (1.36, 1.64)	3.39 ** (2.99, 3.85)	3.03 ** (2.53, 3.63)
Used alcohol or drugs in the past year	1.40 ** (1.37, 1.43)	2.26 ** (2.09, 2.44)	1.52 ** (1.34, 1.73)	1.60 ** (1.34, 1.91)
1 or more problems related to substance use in the past year ^c	0.91 ** (0.87, 0.94)	1.57 ** (1.38, 1.79)	2.09 ** (1.73, 2.52)	0.76 (0.56, 1.01)

Note. All data were weighted.

^aThe reference group was heterosexual students

^bAmong those who had ever used alcohol

^cAmong those who used alcohol or drugs in the past year

* $p < 0.01$.

** $p < 0.001$.