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Elevated alcohol and sexual risk behaviors among young Thai lesbian/bisexual women

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Abstract

BACKGROUND—Little empirical data have been published about drinking or sexual behaviors among Thai lesbians. We examine the association of sexual identity with established indicators of alcohol- and sexual-related health behaviors among female bar patrons.

METHODS—We conducted a cross-sectional study among women (N=121) aged 18–24 who frequented popular drinking establishments in Chiang Mai, Thailand. We used general linear modeling techniques to estimate associations between sexual identity and positive alcohol expectancy, harmful drinking, age at sexual debut, and number of lifetime sexual partners.

RESULTS—Nearly one-third of women aged 18–24 recruited from Chiang Mai drinking venues identified as lesbian/bisexual. As compared to their heterosexual counterparts, lesbian/bisexuals reported higher positive alcohol expectancy scores, more harmful drinking, earlier age at sexual debut, and higher number of lifetime sexual partners. In adjusted models, lesbian/bisexual identity was associated with higher positive alcohol expectancy (β=1.94 points; 95% CI: 0.75,3.13), earlier age at sexual debut (β = −0.85 years; 95% CI:−1.46,−0.23), and higher number of lifetime sexual partners (Rate Ratio=1.7; 95% CI:1.22, 2.37).

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Contributors

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Conflict of Interest

All of the authors declare no conflict of interest.

CONCLUSION—Lesbian/bisexual women in this study engaged in multiple behaviors that are potentially harmful to health, which may in turn place this group at heightened risk for alcohol abuse and sexually transmitted infections in Thailand. The clustering of alcohol- and sexual-related risk behaviors, and its consequences for health outcomes in this population, should be explored in future research and may be an important point of intervention.

Keywords

Lesbian health; Adolescent women; Alcohol use; Sexual health risk; Thailand

1. INTRODUCTION

Throughout the world, alcohol use, unsafe sex, and illegal drug use account for 13% of the disease burden among adolescents and young adults (Gore et al., 2011). There is mounting evidence that these risk behaviors are elevated among adolescent sexual minorities compared to their heterosexual counterparts (Ziyadeh et al., 2007; Kann et al., 2011). Differences in substance-use behaviors between sexual minority and heterosexual youth persist into adulthood (McCabe et al., 2009; Bauer et al., 2010), potentially rendering sexual minorities more vulnerable to a disproportionate share of substance-use harms throughout life.

In Thailand, increasingly liberal norms around sexual activity and alcohol consumption may be exposing women to new behavioral health risks. Throughout the 1990s, young Thai men began replacing previously common patronage of commercial sex workers with sexual relationships with girlfriends (Ford and Kittisukasthit, 1994; Nelson et al., 1996; VanLandingham and Trujillo, 2002). Young Thai women became more open to premarital sexual relationships despite longstanding taboos on sexual experience outside of marriage (Ford and Kittisukasthit, 1994; Morrison, 2004; Thato et al., 2008). While only 9%–13% of unmarried adolescent women reported having sex in studies conducted in the early 1990s (Prasarktkul et al., 1989; Podhista et al., 2001), 43%–50% reported having sex in studies of similarly aged women over the past fifteen years (van Griensven et al., 2001; Rasamimari et al., 2007). The increasing proportion of women reporting premarital sex may be indicative of a declining age at sexual debut in this setting (Lertpiriyasuwat et al., 2003; Liu et al., 2006).

Similar to sexual experience, alcohol use is on the rise among young Thai women (Thamarangsi, 2006). The rise in alcohol consumption has implications for other risk-taking behaviors, such as sex. Alcohol consistently has been found to influence risk-taking during first-time sexual encounters (Halpern-Felsher et al., 1996). Past-year consumption of alcohol was associated with greater likelihood of ever having sexual intercourse among Thai high school and vocational college students aged 10–22 years (Assanangkornchai et al., 2009). Among female Thai vocational students aged 15–21 years, consuming more than three drinks at a single sitting in the past three months was related to younger age at sexual initiation (Liu et al., 2006). There is limited information regarding the relationship between alcohol consumption and sexual behaviors beyond the student population in Thailand.

Studies in the U.S. indicate that women who have sex with women (WSW) are more likely to engage in higher alcohol use, such as binge drinking, as compared to heterosexual women (Ziyadeh et al., 2007; Hahm et al., 2008; Bauer et al., 2010). Although studies estimate that between 9–29% of Thai young women identify as lesbian (O-Prasertsawat and Petchum, 2004; van Griensven et al., 2004; Celentano et al., 2008), little is known about the behavioral risks of self-identified lesbian/bisexual women in Thailand. Of Thai vocational school students aged 15–21 years, lesbian/bisexual women were more likely to consume

more than three drinks at a single sitting compared to their heterosexual peers (van Griensven et al., 2004). In a study of Thai female methamphetamine users and their peers aged 18–25 years, women with same-sex partners reported having drunk alcohol in the past week more frequently than women with a single male partner, but nearly as frequently as women with multiple male partners (German et al., 2008). These findings suggest that sexual identity may play a role in drinking behavior among Thai women.

Associations between alcohol consumption, sexual risk behaviors, and sexual identity may be partially explained by using Expectancy Theory, which predicts that individuals "consume alcohol in a way that delivers the effects they expect" (Jones et al., 2001). The belief that alcohol will affect sexual behaviors in specific ways (e.g., enhancement of pleasure, increased disinhibition) may influence risk-taking behaviors after consuming alcohol, and may also provide impetus for consuming alcohol before sex (Dermen et al., 1998; Newman et al., 2005). U.S. adolescent girls who identified as lesbian/bisexual had higher alcohol expectancy scores than their heterosexual peers (Ziyadeh et al., 2007), indicating that sexual identity may influence alcohol expectancy.

Average per capita alcohol consumption in Thailand among adults aged 15 and older is nearly three times that of the WHO South-East Asia Region (World Health Organization, 2011). Concern regarding youth drinking motivated The Government of Thailand to create a more restrictive policy environment around alcohol consumption for young people through the Alcohol Beverage Control Laws, 2008. These laws raised the legal age to purchase alcohol from 18 to 20 years; restricted youth-focused alcohol advertising at sporting events, concerts and other venues where youth gather; and limited hours and banned certain localities (e.g., near schools and temples) for alcohol sales. Against this backdrop, we conducted a study among 18–25 year-old patrons of drinking establishments in Chiang Mai city, the majority of whom reported harmful alcohol consumption (Limaye et al., 2011). The current study examines the association of sexual identity with established indicators of alcohol- and sexual-related health behaviors among female patrons: positive alcohol expectancy, harmful drinking, age at sexual debut, and number of lifetime sexual partners.

2. METHODS

2.1 Sample

Data are from a cross-sectional sample of youth in Chiang Mai City attending drinking establishments who participated in a survey to assess changes in alcohol-related sexual risk behaviors after the implementation of the Alcohol Beverage Control Laws, in effect since February 2008. Venue-based sampling was used to recruit participants. In February 2010, trained ethnographers identified popular drinking venues to recruit young people who patronized five categories of drinking establishments: Thai alcohol stalls, discotheques, karaoke bars, restaurants, and bars. The target sample was designed to be proportionate to the relative clientele volume, estimated through time-day interval sampling, at each site.

Ethnographers identified and trained clients and employees at each site to act as peer recruitment assistants who then approached clients. Clients fitting the age criteria and interested in participating were directed to the study office for screening and recruitment. Those between the ages of 18–25 who agreed to a Chlamydia test were eligible. A total of 300 participants who completed the survey and submitted a Chlamydia test result were compensated with 200 Baht ($6.20 USD).

The current analysis was restricted to N=121women who identified as heterosexual, lesbian or bisexual, thereby excluding 18 women who did not respond to the sexual history section (17 had never had sexual intercourse, 1 refusal) and 161 men sampled in the parent study.

2.2 Data collection

Local, trained interviewers administered a structured questionnaire in Thai regarding sexual identity, alcohol expectancies, current and past alcohol use, methamphetamine and other drug use, and sexual history to each participant. Data collection was conducted between March and June of 2010. The study was approved by the Institutional Review Board at Johns Hopkins Bloomberg School of Public Health and the Human Experimentation Committee at the Research Institute for Health Sciences, Chiang Mai University.

2.3 Measures

The primary variable of interest was sexual identity, defined using a single item in which participants were asked to identify their sexual preference. Women who identified as "homosexual" (Thai: *Mee pet sumpan gub pet deaw gun;* literally: "have sexual relations with same gender") or "bisexual" (Thai: *Mee pet sumpan gub tung song pet;* literally: "have sexual relations with both genders") were categorized as "lesbian/bisexual," and women who identified as "heterosexual" (Thai: *Mee pet sumpan gub pet trong kham;* literally: "have sexual relations with opposite gender") were categorized as "heterosexual".

Primary outcomes of interest included two alcohol (positive alcohol expectancy and harmful drinking) and two sexual (age at sexual debut and lifetime number of sexual partners) related risk behaviors. The first outcome, alcohol expectancy, was measured using 13 items adapted from the Alcohol Expectancy Scale (Brown et al., 1987), which reflect beliefs about the personal consequences of alcohol use. Sample items included: "drinking gives me more confidence in myself" and "drinking increases my aggressiveness." Respondents were asked to "agree" or "disagree" with each item. All of the items to which the respondent "agreed" to positive expectations regarding alcohol were summed into a positive alcohol expectancy score (Kuder-Richardson-20 = 0.75). The second outcome was harmful drinking, defined as a score above 16 on the Alcohol Use Disorders Identification Test (AUDIT), reflecting "a pattern which increases the risk of harmful [drinking] consequences for the user or others (Babor et al., 1989)." The AUDIT is a 10-item instrument used to screen for risky drinking that has been validated in Thailand (Lapham et al., 1999). The third outcome was age at first sexual intercourse; the fourth and final outcome was the total number of lifetime combined male and female sexual partners. For the sexual-risk outcomes, sexual intercourse was defined as vaginal, anal, or oral sex.

Other substance-related variables of interest included age at drinking initiation, the frequency of drinking and drunkenness (days in the past month), standard drinks per day as calculated from a detailed inventory of alcohol consumption ("What Is a Standard Drink?," n.d.), ever use of methamphetamine, and ever use of any other drugs. Other sexual-related risk measures included gender-identification as a "tomboy" [a masculine/butch lesbian (Ojanen, 2009)], reporting both male and female sexual partners in their lifetime, having sexual intercourse while intoxicated in the past three months, and report of any casual sex partners in the past three months.

Socio-demographic variables included current age, religion (Buddhist versus other), primary residence in the past five years (living with relatives versus alone or with friends), high school completion, whether currently studying (versus working or unemployed), and average monthly income from all sources in the past three months (categorized into tertiles).

2.4 Data analysis

The distribution of socio-demographic variables and substance- and sexual-related risk behaviors was computed for the total sample of women and for each sexual identity group. Differences between the groups for binary variables were assessed using chi-square tests,

while differences for continuous variables were assessed using Wilcoxon rank sum tests; corresponding p-values are reported.

General linear models were used to examine the bivariate and adjusted association between sexual identity and the four outcomes (positive alcohol expectancy, harmful drinking, age at sexual debut, and lifetime sexual partners), controlling for other risk behaviors and socio-demographic characteristics. The distribution of each outcome guided the modeling approach. The alcohol expectancy score and age at sexual debut were modeled using ordinary linear regression. Harmful drinking was defined as a dichotomous outcome using the >16 cutoff on the AUDIT score (Babor et al., 1989), and prevalence ratios (PRs) for this outcome were modeled using Poisson regression with robust variance estimation (Zou, 2004). The number of lifetime sexual partners (male and female combined) was modeled as a count to obtain rate ratios (RRs) using the negative-binomial distribution (Gardner et al., 1995). A maximum of ten variables were included in any single outcome model, yielding a minimum sample-to-variable ratio of 12. All statistical analyses were performed using SAS 9.3 software (SAS Institute Inc, Cary, North Carolina).

3. RESULTS

3.1 Demographic characteristics

Table 1 displays background characteristics of the study sample (N=121). Roughly one-third of participants identified as lesbian/bisexual (n=34 lesbians; n=3 bisexual; n=37combined lesbian/bisexual). Participants were a median of 20 years old (interquartile range [IQR]: 19–21), while lesbian/bisexuals were significantly younger than heterosexual women (18 vs. 20 years; $p<0.01$). Overall, 93% of women had either completed high school or were currently studying, with lesbian/bisexuals significantly less likely to be in or have completed high school (81% vs. 99%; $p<0.01$). Lesbians were also significantly more likely to be in the lowest income tertile compared to heterosexual women (65% vs. 32%; $p<0.01$).

3.2 Risk behaviors and sexual identity

The distribution of risk behaviors among the study population is presented in Table 2. Lesbian/bisexuals reported initiating drinking alcohol at a statistically significantly younger median age compared to their heterosexual counterparts (15 vs. 16 years, $p<0.01$). While lesbian/bisexuals report consuming over twice as many standard drinks per day compared to heterosexual women, this difference did not reach statistical significance. No statistically significant differences were reported in the frequency of drinking (median=8 days; IQR: 3–13.5) or drunkenness (median=2; IQR: 0–5.5) in the past month. Lesbian/bisexuals reported a significantly higher positive alcohol expectancy score than heterosexual women (9 vs. 6 points; $p<0.01$), and were more likely than heterosexual women to be classified as harmful drinkers on the AUDIT (57% vs. 31%; $p<0.01$). Nineteen percent of participants reported ever using methamphetamine, which was more frequently reported among lesbian/bisexuals compared to heterosexual women (32% vs. 13%; $p=0.01$). Sexual risk behaviors were also more commonly reported among lesbian/bisexual participants. The median age of sexual debut was three years earlier for lesbian/bisexuals compared to heterosexual women (15 vs. 18 years; $p<0.01$). Nearly forty percent of lesbian/bisexuals identified as tomboys. While bisexual behavior over the lifetime was reported by both groups, this was much more common among lesbian/bisexuals (27% vs. 4%; $p<0.01$). The number of lifetime sexual partners was also substantially higher among lesbian/bisexuals (6 vs. 2 partners; $p<0.01$). Reports of casual sex in the past three months was higher among lesbian/bisexuals (20% vs. 6%; $p=0.04$), though sex while drunk in the past three months was not statistically different between the two groups.

3.3 Regression analysis of lesbian/bisexual sexual identity and risk behaviors

Table 3 displays the results of the four regression analyses. The mean positive alcohol expectancy score was higher among lesbian/bisexuals, harmful drinkers, and those who began drinking before age 15, in the bivariate analyses. In the adjusted model, lesbian/bisexuals (β = 1.94; 95% CI: 0.75,3.13) and harmful drinkers (β =1.43; 95% CI: 0.36,2.49) scored higher on positive alcohol expectancy. For harmful drinking, lesbian/bisexual identity and ever use of methamphetamine were both significantly associated in bivariate models, though only methamphetamine users reported a statistically significantly higher prevalence of harmful drinking (PR = 2.19; 95% CI: 1.37,3.48) in the adjusted model. Lesbian/bisexuals, those who initiated drinking earlier than 15 years, ever methamphetamine users, harmful drinkers, and those with greater than the median alcohol expectancy score of seven were significantly more likely to report both earlier age at sexual debut and higher rates of lifetime sexual partners in bivariate models. In the adjusted model describing age at sexual debut, lesbian/bisexual identity (β= −0.85 years; 95% CI:−1.46,−0.23) and initiating drinking earlier than 15 years (β = −1.10 years; 95% CI: −1.65,−0.54) were statistically significant independent variables. For the number of lifetime sexual partners, lesbian/bisexual identity (RR=1.70; 95% CI:1.22, 2.37) and ever use of methamphetamine (RR=1.83; 95% CI: 1.26, 2.66) were associated with a higher relative rates of combined male and female lifetime sexual partners after accounting for age at sexual debut, current age, and other risk factors.

4. DISCUSSION

The current study is among the few to examine alcohol- and sexual-related risk behaviors among women frequenting drinking establishments in Northern Thailand. We found substantial representation by young lesbian/bisexuals among this population. Lesbian/bisexuals were more likely to engage in harmful drinking. Lesbian/bisexual patrons were on average younger than female heterosexual patrons, potentially placing them at risk for heavier lifetime drinking; evidence from the U.S. suggests that drinking among lesbians, compared to heterosexual women, is less likely to decline with age (Hughes and Wilsnack, 1997). Elevated alcohol use among lesbians is consistent with findings in the U.S. (Bloomfield, 1993; Burgard et al., 2005; Hughes, 2005; Bauer et al., 2010), while sexual risk behaviors among lesbians have received less attention (Bauer et al., 2010). We found that lesbian/bisexuals began having sex at younger ages than heterosexual women, and that lesbian/bisexuals also had more lifetime sexual partners after adjusting for age at sexual debut, current age, and other background characteristics.

Lesbian/bisexual identity was significantly associated with higher positive expectancy scores in this sample, independent of demographic characteristics and other substance-related risk factors. Positive expectancy reflects more favorable beliefs regarding the consequences of consuming alcohol (e.g., “drinking helps me feel whatever way I want to feel”), and is hypothesized to be a motivating factor for consumption (Jones et al., 2001). We also found that higher positive expectancy was related to harmful drinking across the sample, which is consistent with the limited literature on alcohol expectancy and drinking among high school students in Thailand (Newman et al., 2005, 2006). In addition to reporting higher alcohol expectancy scores, lesbian/bisexuals were simultaneously more likely to report harmful drinking. The association between lesbian/bisexual identity and harmful drinking was attenuated and no longer statistically significant after adjusting for expectancy and other risk behaviors. This may reflect an inter-dependence of expectancy, other risk behaviors, and harmful alcohol consumption. Although the evidence for the effectiveness of intervening on expectancies in order to change behavior is inconsistent (Jones et al., 2001), the expectancy paradigm may be an informative lens to understand the social patterning of beliefs about the consequences of drinking by sexual identity. In a

British cohort study, positive alcohol expectancy at age 16 was associated with a greater likelihood of problem drinking, using the CAGE instrument, at age 35 (Patrick et al., 2010), suggesting that these beliefs may have a lasting impact on future consumption of young people.

Lesbian/bisexuals in our sample reported their first sexual experience to be a mean of approximately 1 year earlier than heterosexual women, and report 1.7 times the number of sexual partners (combining both male and female), after considering background characteristics and substance-related risk behaviors. While 4% of heterosexual women report having same-sex partners, bisexual behavior was reported by 27% of the lesbian/bisexuals, placing them at potential risk for acquiring infections from both same-sex and heterosexual partnerships. Nearly 40% of the lesbian/bisexuals in our sample identified as tomboys, or masculine/"butch" lesbians. These tomboys may be at greater risk for heavier alcohol consumption and sexually transmitted infections from oral sex due to their masculine gender identity (Ojanen, 2009).

Sexual risks are not often acknowledged within the lesbian community engaging exclusively in female-female partnerships (Marrazzo et al., 2002; Bailey et al., 2003). Previous clinical studies indicate that WSWs are indeed at risk for sexually transmitted infections, such as bacterial vaginosis, genital warts, and candida species, through their sexual partnerships with women and men (Fethers et al., 2000; Bailey et al., 2004). A study among US lesbians revealed a low perceived risk for STDs when having same-sex encounters (Marrazzo et al., 2005), and WSWs in the US were less likely to undergo STD testing (Bauer and Welles, 2001). To our knowledge, there is no comparable information regarding sexual health beliefs, disease risk, or practices among lesbians in Thailand.

Our findings must be interpreted in light of the study limitations, which are primarily the small, non-randomly selected sample and cross-sectional study design. The study was not powered to examine associations of sexual identity and behavioral outcomes, as data were collected to evaluate the efficacy of policy intervention that increased the legal age of drinking. Because the data are cross-sectional, we were unable to establish temporal ordering and instead emphasize correlations to illustrate risks for future investigation among this population. All data were self-reported, which is subject to reporting bias. Our study population was defined by public drinking venues, which limits generalizability of findings to women who socialize in these settings. Conversely, a strength of the study is its ability to offer a glimpse into the risk profile of self-identified Thai lesbian/bisexuals, a group that has been only peripherally recognized by public health researchers. Despite the small sample size, we found associations between lesbian/bisexual identity and multiple alcohol- and sexual-related risk behaviors that were statistically robust to adjustment.

The high prevalence of harmful drinking and greater positive alcohol expectancy among lesbian/bisexuals provides evidence that female sexual minorities may be a high-risk group for alcohol abuse in the Thai setting. Similarly, earlier sexual debut, higher number of lifetime sexual partners, and more frequent bisexual relationships may place lesbian/bisexuals at higher risk for sexually transmitted infections. Given that one-third of the women recruited from drinking establishments identified as lesbian/bisexual, there may be potential for venue-based strategies to target this sub-population, particularly those who are legally under-age. Future research should be directed at understanding the clustering of alcohol- and sexual-related risk behaviors, and their consequences on health outcomes, among Thai lesbian/bisexual women.

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References

Assanangkornchai S, Mukthong A, Intanont T. Prevalence and patterns of alcohol consumption and health-risk behaviors among high school students in Thailand. Alcohol Clin Exp Res. 2009; 33:2037–2046. [PubMed: 19740137]

Babor TF, de la Fuente JR, Saunders JB, Grant M. AUDIT: The Alcohol Use Disorders Identification Test Guidelines for use in primary health care. Addiction. 1989; 88:791–804. [PubMed: 8329970]

Bailey JV, Farquhar C, Owen C, Mangtani P. Sexually transmitted infections in women who have sex with women. Sex Transm Infect. 2004; 80:244–246. [PubMed: 15170014]

Bailey JV, Farquhar C, Owen C, Whittaker D. Sexual behaviour of lesbians and bisexual women. Sex Transm Infect. 2003; 79:147–150. [PubMed: 12690139]

Bauer GR, Jairam JA, Baidoobonso SM. Sexual health, risk behaviors, and substance use in heterosexual-identified women with female sex partners: 2002 US National Survey of Family Growth. Sex Transm Dis. 2010; 37:531–537. [PubMed: 20502395]

Bauer GR, Welles SL. Beyond assumptions of negligible risk: sexually transmitted diseases and women who have sex with women. Am J Public Health. 2001; 91:1282–1286. [PubMed: 11499119]

Bloomfield K. A comparison of alcohol consumption between lesbians and heterosexual women in an urban population. Drug Alcohol Depend. 1993; 33:257–269. [PubMed: 8261890]

Brown SA, Christiansen BA, Goldman MS. The Alcohol Expectancy Questionnaire: an instrument for the assessment of adolescent and adult alcohol expectancies. J Stud Alcohol. 1987; 48:483–491. [PubMed: 3669677]

Burgard SA, Cochran SD, Mays VM. Alcohol and tobacco use patterns among heterosexually and homosexually experienced California women. Drug Alcohol Depend. 2005; 77:61–70. [PubMed: 15607842]

Celentano DD, Sirirojn B, Sutcliffe CG, Quan VM, Thomson N, Keawvichit R, Wongworapat K, Latkin C, Taechareonkul S, Sherman SG, Aramrattana A. Sexually transmitted infections and sexual and substance use correlates among young adults in Chiang Mai, Thailand. Sex Transm Dis. 2008; 35:400–405. [PubMed: 18362863]

Dermen KH, Cooper ML, Agocha VB. Sex-related alcohol expectancies as moderators of the relationship between alcohol use and risky sex in adolescents. J Stud Alcohol. 1998; 59:71–77. [PubMed: 9498318]

Fethers K, Marks C, Mindel A, Estcourt CS. Sexually transmitted infections and risk behaviours in women who have sex with women. Sex Transm Infect. 2000; 76:345–349. [PubMed: 11141849]

Ford NJ, Kittisukasthit S. Destinations unknown: the gender construction and changing nature of the sexual expressions of. AIDS Care. 1994; 6:517. [PubMed: 7711086]

Gardner W, Mulvey EP, Shaw EC. Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. Psychol Bull. 1995; 118:392–404. [PubMed: 7501743]

German D, Sherman SG, Latkin CA, Sirirojn B, Thomson N, Sutcliffe CG, Aramrattana A, Celentano DD. Young Thai women who use methamphetamine: intersection of sexual partnerships, drug use, and social networks. Int J Drug Policy. 2008; 19:122–129. [PubMed: 18191393]

Gore FM, Bloem PJ, Patton GC, Ferguson J, Joseph V, Coffey C, Sawyer SM, Mathers CD. Global burden of disease in young people aged 10–24 years: a systematic analysis. Lancet. 2011; 377:2093–2102. [PubMed: 21652063]

Hahm HC, Wong FY, Huang ZJ, Ozonoff A, Lee J. Substance use among Asian Americans and Pacific Islanders sexual minority adolescents: findings from the National Longitudinal Study of Adolescent Health. J Adolesc Health. 2008; 42:275–283. [PubMed: 18295136]

Halpern-Felsher BL, Millstein SG, Ellen JM. Relationship of alcohol use and risky sexual behavior: a review and analysis of findings. J Adolesc Health. 1996; 19:331–336. [PubMed: 8934293]

Hughes TL. Alcohol use and alcohol-related problems among lesbians and gay men. Annu Rev Nurs Res. 2005; 23:283–325. [PubMed: 16353369]

Hughes TL, Wilsnack SC. Use of alcohol among lesbians: research and clinical implications. Am J Orthopsychiatry. 1997; 67:20–36. [PubMed: 9034019]

Jones BT, Corbin W, Fromme K. A review of expectancy theory and alcohol consumption. Addiction. 2001; 96:57–72. [PubMed: 11177520]

Kann L, O'Malley Olsen E, McManus T, Kinchen S, Chyen D, Harris W, Wechsler H. Sexual identity, sex of sexual contacts, and health-risk behaviors among students in grades 9–12: youth risk behavior surveillance, selected sites, United States, 2001–2009. MMWR. 2011; 60:1–133. [PubMed: 21659985]

Lapham SC, Brown P, Suriyawongpaisal P, Skipper BJ, Chadbunchachai W, Paisarnsilp S. Measurements, instruments, scales, and tests: use of AUDIT for alcohol screening among emergency room patients in Thailand. Subst Use Misuse. 1999; 34:1881–1895. [PubMed: 10540976]

Lertpiriyasuwat C, Plipat T, Jenkins RA. A survey of sexual risk behavior for HIV infection in Nakhonsawan, Thailand, 2001. AIDS. 2003; 17:1969–1976. [PubMed: 12960830]

Limaye RJ, Srirojn B, Sintupat K, Manowanna S, Aramrattana A, Patel S, Thomson N, Celentano DD, Sherman SG. Thai youth bar patrons and harmful alcohol consumption: an underrecognised public health issue. Drug Alcohol Rev. 2011; 31:357–358. [PubMed: 22150788]

Liu A, Kilmarx P, Jenkins RA, Manopaiboon C, Mock PA, Jeeyapunt S, Uthaivoravit W, van Griensven F. Sexual initiation, substance use, and sexual behavior and knowledge among vocational students in Northern Thailand. Int Fam Plan Perspect. 2006; 32:126–135. [PubMed: 17015242]

Marrazzo JM, Coffey P, Bingham A. Sexual practices, risk perception and knowledge of sexually transmitted disease risk among lesbian and bisexual women. Perspect Sex Reprod Health. 2005; 37:6–12. [PubMed: 15888397]

Marrazzo JM, Koutsky LA, Eschenbach DA, Agnew K, Stine K, Hillier SL. Characterization of vaginal flora and bacterial vaginosis in women who have sex with women. J Infect Dis. 2002; 185:1307–1313. [PubMed: 12001048]

McCabe SE, Hughes TL, Bostwick WB, West BT, Boyd CJ. Sexual orientation, substance use behaviors and substance dependence in the United States. Addiction. 2009; 104:1333–1345. [PubMed: 19438839]

Morrison L. Traditions in transition: young people's risk for HIV in Chiang Mai, Thailand. Qual Health Res. 2004; 14:328–344. [PubMed: 15011901]

Nelson KE, Celentano DD, Eiumtrakol S, Hoover DR, Beyrer C, Suprasert S, Kuntolbutra S, Khamboonruang C. Changes in sexual behavior and a decline in HIV infection among young men in Thailand. N Engl J Med. 1996; 335:297–303. [PubMed: 8663861]

Newman I, Shell D, Innadda S, Li T. Alcohol Expectancies among a Sample of Thai High School Students. J Public Health (Thai). 2005; 35:87–97.

Newman IM, Shell DF, Li T, Innadda S. Buddhism and adolescent alcohol use in Thailand. Subst Use Misuse. 2006; 41:1789–1800. [PubMed: 17118816]

NIAAA. NIAAA [WWW Document]. What Is a Standard Drink?. 2011. URL http://pubs.niaaa.nih.gov/publications/practitioner/pocketguide/pocket_guide2.htm

Ojanen TT. Sexual/gender minorities in Thailand: identities, challenges, and voluntary-sector counseling. Sex Res Soc Pol. 2009; 6:4–34.

O-Prasertsawat P, Petchum S. Sexual behavior of secondary school students in Bangkok metropolis. J Med Assoc Thai. 2004; 87:755–9. [PubMed: 15521229]

Patrick ME, Wray-Lake L, Finlay AK, Maggs JL. The long arm of expectancies: adolescent alcohol expectancies predict adult alcohol use. Alcohol Alcohol. 2010; 45:17–24. [PubMed: 19808940]

Podhista C, Xenos P, Varangrat A. The risk of premarital sex among Thai youth: individual and family influences. East-West Center Working Papers, Population Series, #. 2001:108–5.

Prasarktkul, P.; Chamratrithirong, A.; Bennett, A.; Jitwatanapataya, L.; Isarabhakdi, P. Rural Adolescent Sexuality and the Determinants of Provincial Urban Premarital Adolescent Sex. Mahidol University, Institute for Population and Social Resaerch; Thailand: 1989.

Rasamimari A, Dancy B, Talashek M, Park CG. Predictors of sexual behaviors among Thai young adults. J Assoc Nurses AIDS Care. 2007; 18:13–21. [PubMed: 17991595]

Thamarangsi T. Thailand: alcohol today. Addiction. 2006; 101:783–787. [PubMed: 16696622]

Thato R, Jenkins RA, Dusitsin N. Effects of the culturally-sensitive comprehensive sex education programme among Thai secondary school students. J Adv Nurs. 2008; 62:457–469. [PubMed: 18476946]

van Griensven F, Kilmarx P, Jeeyapant S, Manopaiboon C, Korattana S, Jenkins R, Uthaivoravit W, Limpakarnjanarat K, Mastro T. The Prevalence of Bisexual and Homosexual Orientation and related health risks among adolescents in Northern Thailand. Arch Sex Behav. 2004; 33:137–147. [PubMed: 15146146]

van Griensven F, Supawitkul S, Kilmarx PH, Limpakarnjanarat K, Young NL, Manopaiboon C, Mock PA, Korattana S, Mastro TD. Rapid assessment of sexual behavior, drug use, human immunodeficiency virus, and sexually transmitted diseases in Northern Thai youth using audio-computer-assisted self-interviewing and noninvasive specimen collection. Pediatrics. 2001; 108:e13. [PubMed: 11433092]

VanLandingham M, Trujillo L. Recent changes in heterosexual attitudes, norms and behaviors among unmarried Thai men: a qualitative analysis. Int Fam Plan Perspect. 2002; 28:6–15.

World Health Organization. Global Status Report on Alcohol and Health. WHO; Geneva: 2011.

Ziyadeh NJ, Prokop LA, Fisher LB, Rosario M, Field AE, Camargo CA Jr, Bryn Austin S. Sexual orientation, gender, and alcohol use in a cohort study of U.S. adolescent girls and boys. Drug Alcohol Depend. 2007; 87:119–130. [PubMed: 16971055]

Zou G. A modified Poisson regression approach to prospective studies with binary data. Am J Epidemiol. 2004; 159:702–706. [PubMed: 15033648]

Table 1

Sample characteristics (N=121)

	Total N (%)	Lesbian/bisexual n (%)	Heterosexual n (%)	p-value
Overall	121	37(29)	84(71)	
Median age (IQR)	20(18–21)	18(18–19)	20(19–21.5)	<0.01
Buddhist	116(96)	36(97)	80(95)	0.60
Lives with relatives (versus with friends or alone)	65(54)	19(51)	46(55)	0.73
Completed or currently in high school	113(93)	30(81)	83(99)	<0.01
Monthly income tertile				
< 4500 Baht (<150 USD)	51(42)	24(65)	27(32)	<0.01
4500–7000 (150–233 USD)	35(29)	8(22)	27(32)	
> 7000 Baht (>233 USD)	35(29)	5(14)	30(36)	

Table 2

Substance and sexual risk behaviors (N=121)

	Overall Median (IQR)	Lesbian/ Bisexual Median (IQR)	Heterosexual Median (IQR)	Wilcoxon rank-sum p-value
Alcohol use				
Age at first drink	15(14–17)	15(14–16)	16(15–18)	<0.01
Standard drinks/day	0.6(0.2–2.2)	1.3(0.3–2.3)	0.5(0.2–1.9)	0.09
Drinking frequency (days/month)	8(3–13.5)	10(4–16)	7(1–12)	0.12
Drunkenness frequency (days/month)	2(0–5.5)	3(1–7)	1(0–5)	0.05
Positive alcohol expectancy score	7(4–9)	9(6–11)	6(3–8)	<0.01
Harmful drinking: > 16 AUDIT score (%)	47(39)	21(57)	26(31)	<0.01*
Drug use				
Ever used methamphetamine (%)	23(19)	12(32)	11(13)	0.01*
Ever used marijuana (%)	21(17)	9(24)	12(14)	0.18*
Sexual risk				
Age at sexual debut	17(15–18)	15(15–16)	18(16–19)	<0.01
Identifies as tomboy	14(12)	14(38)	0(0)	<0.01*
Number of lifetime sexual partners	3(2–5)	6(3–9)	2(1–3)	<0.01
Reports both male and female sexual partners	13(11)	10(27)	3(4)	<0.01*
Any casual sexual partners in past three mos. (%)	11(11)	7(20)	4(6)	0.04*
Any sex while drunk in the past three mos. (%)	77(79)	31(89)	46(73)	0.07*

* χ^2 *p*-value

Table 3

Regression analysis comparing substance- and sexual-related risk behaviors (N=121)

	Positive alcohol expectancy score		Harmful drinking (> 16 AUDIT score)	
Risk factor	**Crude β (95% CI)**	**Adjusted[a] β (95% CI)**	**Crude PR (95% CI)**	**Adjusted[a] PR (95% CI)**
Lesbian identity	**2.65(1.57,3.73)**	**1.94(0.75,3.13)**	**1.83(1.2,2.81)**	1.43(0.89,2.32)
Drinking < age 15	**1.37(0.16,2.58)**	0.67(−0.46,1.79)	1.51(0.97,2.35)	1.29(0.85,1.96)
Ever used MA	1.16(−0.21,2.53)	−0.3(−1.73,1.14)	**2.20(1.48,3.27)**	**2.19(1.37,3.48)**
> 16 AUDIT score	**1.95(0.88,3.01)**	**1.43(0.36,2.49)**	--	--

	Age at sexual debut		Total[b] lifetime sexual partners	
Risk factor	**Crude β (95% CI)**	**Adjusted[a] β (95% CI)**	**Crude RR (95% CI)**	**Adjusted[a, c] RR (95% CI)**
Lesbian identity	**−1.97(−2.61,−1.32)**	**−0.85(−1.46,−0.23)**	**2.33(1.67,3.24)**	**1.70(1.22,2.37)**
Drinking < 15 years of age	**−1.70(−2.4,−1.00)**	**−1.10(−1.65,−0.54)**	**1.52(1.05,2.20)**	0.95(0.70,1.28)
Ever used MA	**−0.94(−1.78,−0.09)**	−0.14(−0.86,0.58)	**2.68(1.85,3.89)**	**1.83(1.26,2.66)**
>16 AUDIT score	**−1.14(−1.81,−0.48)**	−0.46(−1.00,0.08)	**1.99(1.43,2.76)**	1.15(0.85,1.56)
>7 Alcohol expectancy score	**−0.75(−1.42,−0.07)**	0.07(−0.46,0.60)	**1.78(1.28,2.48)**	1.31(0.98,1.75)

[a] Adjusted for all risk factors in the left-hand column, as well as age, high school completion, and income tertile.

[b] Includes male and female partners combined

[c] Additionally adjusted for age at sexual debut